

UNIT COST COMPENDIUM

Data & Algorithms for Estimating Costs Associated With “Cradle-to-Grave” Management of RCRA Solid and Hazardous Wastes

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Introduction to the Unit Cost Compendium

This Unit Cost Compendium (UCC) is designed to provide for greater accuracy and consistency in the use of unit costs across the USEPA Office of Solid Waste (OSW), as well as increased accessibility to unit costs inside and outside the OSW. The UCC compiles data from Economic Assessments, Regulatory Impact Analyses (RIAs), Information Collection Requests (ICRs), and various cost studies and web sites (e.g. chiefly the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software, and the 1999 Environmental Cost Handling Options and Solutions (ECHOS) database). It is OSW's intent that the compendium be regularly updated to correct out-of-date information and to include new data where available.

The UCC contains unit cost data for over 125 individual cost items involving the management (i.e. storage, treatment, disposal, recycling) of solid and hazardous wastes:

- RCRA Subtitle C: hazardous solid wastes (40 CFR 260 to 299)
- RCRA Subtitle D: non-hazardous solid wastes (40 CFR 240 to 259)

These individual cost items are organized into 14 cost categories (e.g., waste pre-treatment) listed below. Cost categories are generally ordered and presented in this document according to the "cradle-to-grave" progression (sequence) of waste generation and subsequent waste management steps (i.e., from permitting a facility, through treatment/disposal of waste, to corrective action at a facility). The 14 cost categories of this compendium are:

- A. Permitting and RCRA Administrative Costs
- B. Waste Pre-Treatment
- C. Solid/Sludge Disposal
- D. Liquid Disposal
- E. Thermal Treatment
- F. Other Land Treatment / Storage / Containment
- G. Aqueous Waste Treatment
- H. Recycling
- I. Waste Transportation
- J. Miscellaneous Costs
- K. Site Investigation
- L. Corrective Action
- M. Labor Wage Rates
- N. Analytical (Waste Chemical Constituent Sampling & Analysis)

The compendium is made up of a main cost table, followed by 14 background appendices. For each individual cost item, the table presents the cost data (unit cost or cost equation), source and original year of the cost, and an updated cost (in 2000 dollars).

The Appendices (one for each cost category) provide background information on the references, assumptions and computations behind the unit cost data for given cost items. Background information is usually included for cost items when the data are later than 1996. (In a few cases, information is included for cost items earlier than 1996.) The final Appendix of this compendium (O. Inflation Rates) includes information on the data used to update the price levels of the unit costs to a common 2000 dollars (2000 \$US) basis.

Unit Cost Compendium: Table of Contents

<u>Cost Item</u>	<u>Page</u>
A. Permitting and RCRA Administrative Costs	7
A.1 RCRA Part A Permit	
A.2 RCRA Part B Permit	
A.3 Recording and Record Keeping (for RCRA Part 257 requirements)	
A.4 Waste Stream Notification	
A.5 Waste Analysis Plan	
A.6 OSHA Training	
A.7 Manifests	
A.8 Environmental Audit	
A.9 Corporate Guarantee	
A.10 Financial Assurance	
A.11 Letters of Credit	
A.12 Surety Bond	
A.13 Trust Fund	
A.14 Environmental Damage Liability Insurance	
A.15 Insurance	
A.16 Third Party Liability Coverage	
A.17 Compliance Testing / Incinerator Trial Burn	
A.18 Flue Gas Emission Testing/Annual Monitoring	
B. Waste Pre-Treatment	14
B.1 Stabilization (On-Site & Off-Site)	
B.2 Other Waste Pre-Treatment	
B.2.1 Dewatering/Filtration	
B.2.2 Vitrification	
B.2.3 Crushing	
B.2.4 Milling	
C. Solid/Sludge Disposal	16
C.1 Non-Hazardous Waste Landfill (Subtitle D)	
– Industrial Waste (Off-Site & On-Site)	
– Municipal Waste, Off-Site	
C.2 Hazardous Waste Landfill (Subtitle C)	
C.2.1 With Stabilization, Off-Site	
C.2.2 Without Stabilization (Off-Site & On-Site)	
C.3 Low-Level Radioactive Waste Landfill	
C.3.1 Mixed Waste, Off-Site	
C.3.2 Non-Mixed Waste, Off-Site	
D. Liquid Disposal	20
D.1 Deepwell Injection	
D.2 Non-Hazardous POTW Discharge	
D.3 Hazardous POTW/TSD Discharge/Disposal	
E. Thermal Treatment	21
E.1 Thermal Desorber (Off-Site & On-Site)	

E.2	Incineration (Off-Site & On-Site)	
E.3	Boilers and Industrial Furnaces	
E.3.1	Utility Co-Burning, Off-Site	
E.3.2	Cement Kiln, Off-Site	
F.	Other Land Treatment / Storage / Containment	23
F.1	Land Treatment	
F.1.1	On-Site, Non-Hazardous Waste	
F.1.2	Hazardous Waste (On-Site & Off-Site)	
F.2	Surface Impoundment	
F.2.1	Non-Hazardous Wastewater Storage	
F.2.2	Non-Hazardous Wastewater (Subtitle D) Treatment	
F.2.3	Hazardous Wastewater (Subtitle C) Treatment	
F.3	Waste Pile	
F.3.1	Non-Hazardous Waste (Subtitle D)	
F.3.2	Hazardous Waste (Subtitle C)	
F.4	Aboveground Storage Tank (AST)	
F.4.1	7-Day Storage Tank	
F.4.2	Concrete Pad Secondary Containment	
F.4.3	Earth Diking with Synthetic Lining Secondary Containment	
F.4.4	Silo	
F.4.5	Chute for Silo/Hopper	
F.5	Underground Storage Tank (UST)	
F.5.1	Single-Wall UST	
F.5.2	Double-Wall UST	
F.5.3	Concrete Vault Secondary Containment	
F.5.4	Concrete Vault with Polymer or Resin Based Sealer Secondary Containment	
F.5.5	Steel Box Secondary Containment	
F.5.6	Synthetic Liner Secondary Containment	
F.6	Containers	
F.6.1	55-Gallon Drum	
F.6.2	20-cy Roll-Off Container	
F.6.3	Storage and Handling Building	
G.	Aqueous Waste Treatment	32
G.1	Equalization Tank	
G.2	Oil/Water Separation	
G.3	Gravity Separation	
G.4	Neutralization	
G.5	Precipitation	
G.6	Air Stripping	
G.7	Distillation	
G.8	Ozonation	
G.9	Granular Activated Carbon	
G.10	Biological Treatment	
H.	Recycling	36
H.1	Metals Recycling	
H.1.1	HTMR/Smelting (Copper, Nickel, Zinc, Lead, Precious Metals)	

	H.1.2 Mercury Retorts	
H.2	Fuel Blending	
H.3	Other Recycling/Recovery	
	H.3.1 Solvent Extraction	
	H.3.2 Catalyst Reclamation/Regeneration	
	H.3.3 Use as Ingredient in Products (e.g., Asphalt, Brick, Cement) Placed on Land	
I.	Transportation	39
	I.1 Dump Truck Transportation	
	I.2 Van Trailer Transportation	
	I.3 Tanker Trailer Transportation	
	I.4 Other Costs Associated with Truck Transportation of Wastes	
	I.5 Tarp Cover for Truck	
	I.6 Barge	
	I.7 Rail	
J.	Miscellaneous Costs	42
	J.1 Application of Water to Unpaved Roads for Dust Control	
	J.2 Watering Truck with Auxiliaries	
	J.3 Water Supply	
	J.4 Site Security	
	J.5 Fencing	
	J.6 Land Purchase	
	J.7 Clearing Land	
	J.8 Oxygen and Carbon Monoxide Monitoring System	
K.	Site Investigation	44
	K.1 RCRA Facility Investigation	
	K.2 Corrective Measures Study	
	K.3 Hydrogeologic Study	
	K.4 Groundwater Well Installation	
	K.5 Groundwater Monitoring	
	K.6 Surface Water Monitoring	
L.	Corrective Action	46
	L.1 Cap	
	L.1.1 Soil and Vegetative Cap	
	L.1.2 Composite Cap (Clay/Synthetic) to Cover Non-Hazardous Waste (Subtitle D)	
	L.1.3 Composite Cap (Clay/ Synthetic) to Cover Hazardous Waste (Subtitle C)	
	L.2 Soil Removal	
	L.2.1 Excavation	
	L.2.2 Backfill	
	L.3 Soil/Waste Treatment	
	L.3.1 In-Situ Stabilization	
	L.3.2 Soil Vapor Extraction	
	L.3.3 In-Situ Bioremediation	
	L.3.4 Ex-Situ Bioremediation	
	L.3.5 Soil Washing	
	L.4 Groundwater Removal/Containment	
	L.4.1 Groundwater Extraction Wells	

	L.4.2 French Drain	
	L.4.3 Slurry Wall	
M.	Labor Wage Rates	51
	M.1 Unskilled Labor	
	M.2 Operator	
	M.3 Technician	
	M.4 Professional (e.g., Engineer, Hydrogeologist)	
	M.5 Manager	
	M.6 Clerical	
	M.7 Attorney	
N.	Analytical (Waste Chemical Constituent Sampling & Analysis)	53
	N.1 Sampling	
	N.2 Priority 17 Metals	
	N.3 RCRA Metals	
	N.4 EP Toxicity Metals	
	N.5 Pesticides/PCBs	
	N.6 Volatile Organics	
	N.7 BTEX/MTBE	
	N.8 BTEX/MTBE (GC/MS)	
	N.9 Chlorinated Hydrocarbons	
	N.10 Non-Halogenated Volatile Organics	
	N.11 PAHs	
	N.12 Base Neutral & Acid Extractable Organics	
	N.13 TCLP Extraction Only	
	N.14 TCLP Full	
	N.15 TCLP Full (less pesticides/herbicides)	
	N.16 Permeability Test	
	N.17 Cyanide Total	
	Appendices (Background Data & References)	55
	Appendix A: Permitting & RCRA Administrative Costs	56
	Appendix B: Waste Pre-Treatment	63
	Appendix C: Solid/ Sludge Disposal	70
	Appendix D: Liquid Disposal	73
	Appendix E: Thermal Treatment	74
	Appendix F: Other Treatment/ Storage/ Containment	76
	Appendix G: Aqueous Waste Treatment	80
	Appendix H: Recycling	87
	Appendix I: Waste Transportation	90
	Appendix J: Miscellaneous Costs	94
	Appendix K: Site Investigation	96
	Appendix L: Corrective Action	102
	Appendix M: Labor Wage Rates	111
	Appendix N: Analytical (Waste Chemical Constituent Sampling & Analysis)	118
	Appendix O: Inflation Rates (for Updating Unit Cost Price Levels)	121

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
1 RCRA Part A Permit	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	Lower Bound: \$2,319 Upper Bound: \$5,299 Typical: \$3,738	1997	1 076	Lower Bound: \$2,495 Upper Bound: \$5,702 Typical: \$4,022
2 RCRA Part B Permit	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	General Facility Rqmts: \$43,693 Container Rqmts: \$9,371 Tank System Rqmts: \$8,780 Surface Impoundment Rqmts: \$18,872 Waste Pile Rqmts: \$15,260 Land Treatment Rqmts: \$14,220 Landfill Rqmts: \$24,465 Incinerator Rqmts: \$22,296	1997	1 076	General Facility Rqmts: \$47,014 Container Rqmts: \$10,083 Tank System Rqmts: \$9,447 Surface Impoundment Rqmts: \$20,306 Waste Pile Rqmts: \$16,420 Land Treatment Rqmts: \$15,301 Landfill Rqmts: \$26,324 Incinerator Rqmts: \$23,990
3 Recording and Record Keeping for RCRA Part 257	Supporting Statement for Continuing EPA Information Collection Request 1745 02, Criteria for Classification for Solid Waste Disposal Facilities and Practices (RCRA Part 257) (February 1999)	State and Respondent Reporting and Recordkeeping Burden: Annual Burden: \$393,428 One-Time Burden: \$17,857	1999	1 025	State and Respondent Reporting and Recordkeeping Burden: Annual Burden: \$403,264 One-Time Burden: \$18,303
4 Waste Stream Notification	Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes (April 1998)	For Facilities Recycling a Waste Stream: One-time notification cost = \$100	1998*	1 050	For Facilities Recycling a Waste Stream: One-time notification cost = \$105
5 Waste Analysis Plan	Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes (April 1998)	For Facilities Disposing of a Waste: One-time waste analysis plan cost = \$935 Annual sampling cost = \$470	1998*	1 050	For Facilities Disposing of a Waste: One-time waste analysis plan cost = \$982 Annual sampling cost = \$494

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
6 OSHA Training	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	Initial Training Costs – 24 TSD and On-The-Job Training: \$19,140 Annual Training Costs - 8 Hour Annual: \$4,650	1997	1 076	Initial Training Costs – 24 TSD and On-The-Job Training: \$20,595 Annual Training Costs - 8 Hour Annual: \$5,003
7 Manifests	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Organic Dye and Pigment Industries (Nov 1994)	Annual Part 262 Costs (Complete manifests for approx 4 to 6 wastes, packaging and labeling of hazardous waste for shipment, annual biennial report filing): \$800/year	1994	1 175	Annual Part 262 Costs (Complete manifests for approx 4 to 6 wastes, packaging and labeling of hazardous waste for shipment, annual biennial report filing): \$940/year
8 Environmental Audit	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	Environmental Audit Costs: Initial - \$13,946 On-Going - \$8,910 Implementation Plan Costs: TSD - \$23,867 Generator - \$9,111	1997	1 076	Environmental Audit Costs: Initial - \$15,006 On-Going - \$9,587 Implementation Plan Costs: TSD - \$25,681 Generator - \$9,803
9 Corporate Guarantee	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	First Year: \$181 Subsequent Years (Annual Updated Information): \$84	1997	1 076	First Year: \$195 Subsequent Years (Annual Updated Information): \$90
10 Financial Assurance	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	Select Financial Assurance Mechanism (1 st Year): \$499 Est Financial Test (1 st Year): \$975 Est Financial Test (subsequent years): \$732	1997	1 076	Select Financial Assurance Mechanism (1 st Year): \$537 Est Financial Test (1 st Year): \$1,049 Est Financial Test (subsequent years): \$788

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
11 Letters of Credit	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	First Year: \$920 + Approximately 1.5% of assured costs (0.5 to 2%, depending on Firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Subsequent Years: Approximately 1.5% of assured costs (0.5 to 2%, depending on Firm's credit)	1997	1.076	First Year: \$990 + Approximately 1.5% of assured costs (0.5 to 2%, depending on Firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Subsequent Years: Approximately 1.5% of assured costs (0.5 to 2%, depending on Firm's credit)
12 Surety Bond	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	First Year: \$756 + approximately 1.5% of assured costs (0.5 to 3%, depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Subsequent Years: Approximately 1.5% of assured costs (0.5 to 3%, depending on firm's credit)	1997	1.076	First Year: \$813 + approximately 1.5% of assured costs (0.5 to 3%, depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Subsequent Years: Approximately 1.5% of assured costs (0.5 to 3%, depending on firm's credit)

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
13 Trust Fund	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	<p>First Year: \$851 + approximately 0.5% of assured costs + total assured costs divided by number of years in pay-in period + 50% of assured costs multiplied by trust fund rate of return and marginal tax rate (State and Federal)</p> <p>Subsequent Years: Approximately 0.5% of assured costs + total assured costs divided by number of years in pay-in period + 50% of assured costs multiplied by trust fund rate of return and marginal tax rate (State and Federal)</p>	1997	1.076	<p>First Year: \$916 + approximately 0.5% of assured costs + total assured costs divided by number of years in pay-in period + 50% of assured costs multiplied by trust fund rate of return and marginal tax rate (State and Federal)</p> <p>Subsequent Years: Approximately 0.5% of assured costs + total assured costs divided by number of years in pay-in period + 50% of assured costs multiplied by trust fund rate of return and marginal tax rate (State and Federal)</p>
14 Environmental Damage Liability Insurance	Revised Estimation of Baseline Costs for Hazardous Waste Combustors for Final MACT Rule (August 1998)	\$150,000 (for minimum coverage required by RCRA)	1998*	1.050	\$150,000 (for minimum coverage required by RCRA, not subject to inflation)
15 Insurance	Estimating Costs for the Economic Benefits of RCRA Noncompliance (September 1997)	<p>First Year: \$756 (labor) + \$1,846 administrative fee + Total Assured Costs Divided by Estimated Facility Life + obtain site-specific collateral estimate from appropriate financial institution</p> <p>Subsequent Years: \$1,846 administrative fee + Total Assured Costs Divided by Estimated Facility Life</p>	1997	1.076	<p>First Year: \$813 (labor) + \$1,986 administrative fee + Total Assured Costs Divided by Estimated Facility Life + obtain site-specific collateral estimate from appropriate financial institution</p> <p>Subsequent Years: \$1,986 administrative fee + Total Assured Costs Divided by Estimated Facility Life</p>
16 Third Party Liability	Estimating Costs for the	First Year:	1997	1.076	First Year:

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
Coverage	Economic Benefits of RCRA Noncompliance (September 1997)	<p>Select Liability Coverage Mechanism - \$499 Financial Test (First Year) - \$975 Corporate Guarantee (First Year) - \$181 Letter of Credit (First Year) - \$697 + Approximately 1.5% of liability coverage (0.5 to 2% depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Surety Bond (First Year) - \$718 + Approximately 1.5% of liability coverage (0.5 to 3% depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Trust Fund (First Year) - \$745 + Approximately 1% of liability coverage Maintain Insurance (First Year) - \$697 + Liability coverage + approximately 1% of liability coverage + liability coverage multiplied by Trust Fund rate of return and marginal tax rule (State and Federal)</p> <p>Subsequent Years: Financial Test (subsequent years) - \$669 Corporate Guarantee (subsequent years) - \$21 Letter of Credit (subsequent years) - Approximately 1.5% of</p>			<p>Select Liability Coverage Mechanism - \$537 Financial Test (First Year) - \$1,049 Corporate Guarantee (First Year) - \$195 Letter of Credit (First Year) - \$750 + Approximately 1.5% of liability coverage (0.5 to 2% depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Surety Bond (First Year) - \$773 + Approximately 1.5% of liability coverage (0.5 to 3% depending on firm's credit) + obtain site-specific collateral estimate from appropriate financial institution Trust Fund (First Year) - \$802 + Approximately 1% of liability coverage Maintain Insurance (First Year) - \$750 + Liability coverage + approximately 1% of liability coverage + liability coverage multiplied by Trust Fund rate of return and marginal tax rule (State and Federal)</p> <p>Subsequent Years: Financial Test (subsequent years) - \$720 Corporate Guarantee (subsequent years) - \$23 Letter of Credit (subsequent</p>

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
		liability coverage (0.5 to 2% depending on firm's credit) Surety Bond (subsequent years) - Approximately 1.5% of liability coverage (0.5 to 3% depending on firm's credit) Trust Fund (subsequent years) - Approximately 1% of liability coverage Maintain Insurance (subsequent years) - Approximately 1% of liability coverage + liability coverage multiplied by Trust Fund rate of return and marginal tax rule (State and Federal)			years) - Approximately 1.5% of liability coverage (0.5 to 2% depending on firm's credit) Surety Bond (subsequent years) - Approximately 1.5% of liability coverage (0.5 to 3% depending on firm's credit) Trust Fund (subsequent years) - Approximately 1% of liability coverage Maintain Insurance (subsequent years) - Approximately 1% of liability coverage + liability coverage multiplied by Trust Fund rate of return and marginal tax rule (State and Federal)
17 Compliance Testing/Incinerator Trial Burn	Revised Estimation of Baseline Costs for Hazardous Waste Combustors for Final MACT Rule (August 1998)	\$300,000 every 5 years	1998*	1.050	\$315,000 every 5 years

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
A. Permitting and RCRA Administrative Costs					
18 Flue Gas Emission Testing/Annual Monitoring	Regulatory Impact Assessment for Proposed Hazardous Waste Combustion MACT Standards <i>Draft</i> (November 1995)	<p>Lowest Cost - Baseline Continuous Emission Monitoring (CEM) System for CO and HC: Sm Cement Kiln: \$77,500/yr Lg Cement Kiln: \$80,500/yr Lightweight Aggregate Kilns: \$84,900/yr Sm Incinerator: \$80,400/yr Med Incinerator: \$81,500/yr Lg Incinerator: \$84,200/yr</p> <p>Medium Cost - CEM System for CO, HC, PM and Hg: Sm Cement Kiln: \$125,500/yr Lg Cement Kiln: \$128,400/yr Lightweight Aggregate Kilns: \$132,900/yr Sm Incinerator: \$127,000/yr Med Incinerator: \$128,500/yr Lg Incinerator: \$131,700/yr</p> <p>Highest Cost - Full CEM System for CO, HC, PM, HCl, Cl₂, PICs and Hg: Sm Cement Kiln: \$187,500/yr Lg Cement Kiln: \$128,400/yr Lightweight Aggregate Kilns: \$192,700/yr Sm Incinerator: \$187,300/yr Med Incinerator: \$188,800/yr Lg Incinerator: \$192,000/yr</p>	1995	1 138	<p>Lowest Cost - Baseline Continuous Emission Monitoring (CEM) System for CO and HC: Sm Cement Kiln: \$88,200/yr Lg Cement Kiln: \$91,600/yr Lightweight Aggregate Kilns: \$96,600/yr Sm Incinerator: \$91,500/yr Med Incinerator: \$92,700/yr Lg Incinerator: \$95,800/yr</p> <p>Medium Cost - CEM System for CO, HC, PM and Hg: Sm Cement Kiln: \$142,800/yr Lg Cement Kiln: \$146,100/yr Lightweight Aggregate Kilns: \$151,200/yr Sm Incinerator: \$144,500/yr Med Incinerator: \$146,200/yr Lg Incinerator: \$149,900/yr</p> <p>Highest Cost - Full CEM System for CO, HC, PM, HCl, Cl₂, PICs and Hg: Sm Cement Kiln: \$213,400/yr Lg Cement Kiln: \$216,700/yr Lightweight Aggregate Kilns: \$219,300/yr Sm Incinerator: \$213,100/yr Med Incinerator: \$214,800/yr Lg Incinerator: \$218,500/yr</p>

* Presumed year of cost data The source of cost data did not directly indicate the year the cost data is based upon In these cases, a year of data is assumed from the date of the source document or references within the source document

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
B. Waste Pre-Treatment					
<i>1. Stabilization</i>					
1.1 On-Site Stabilization	Memo: Cement and Trisodium Phosphate Stabilization Cost Functions, ICF Consulting, September 15, 1997 www.gearsinc.com www.nitc.edu	\$48 to \$153/mt based on a waste quantity range of 900 to 300,000 metric tons per year, respectively	1985, updated to 1995	1.138	\$55 to \$174/mt based on a waste quantity range of 900 to 300,000 metric tons per year, respectively
1.2 Off-Site Stabilization	Hazardous Waste Resource Center - January 2000 Incinerator and Landfill Cost Data www.epa.gov/costsurvey3.cfm	Bulk waste: \$87/ton Drummed Waste: \$38/drum Soil: \$84/ton	1999	1.025	Bulk waste: \$89/ton Drummed Waste: \$39/drum Soil: \$86/ton
<i>2. Other Waste Pre-Treatment</i>					
2.1 Dewatering /Filtration (Centrifuge)	Memo: Documentation for Phase IV LDR Cost Equations July 1997 No source of cost data identified for plate and frame filter press or vacuum drum filter press operations	Capital: $\$ = 143,244 + 689 (\text{gpd})^{0.5}$ $2,000 \leq \text{gpd} < 250,000$ $\$ = 297,045 + 0.65 (\text{gpd})$ $250,000 \leq \text{gpd} \leq 5,200,000$ O&M: $\$ = 18,560 + 330 (\text{gpd})^{0.5}$ $2,000 \leq \text{gpd} < 250,000$ $\$ = 76,360 + 0.46 (\text{gpd})$ $250,000 \leq \text{gpd} \leq 5,200,000$ (See Appendix B2.1 for more detail)	1995	1.138	Capital: $\$ = 163,048 + 785 (\text{gpd})^{0.5}$ $2,000 \leq \text{gpd} < 250,000$ $\$ = 397,978 + 0.75 (\text{gpd})$ $250,000 \leq \text{gpd} \leq 5,200,000$ O&M: $\$ = 21,120 + 375 (\text{gpd})^{0.5}$ $2,000 \leq \text{gpd} < 250,000$ $\$ = 87,315 + 0.52 (\text{gpd})$ $250,000 \leq \text{gpd} \leq 5,200,000$
2.2 Vitrification	Economic Assessment of the Revised LDR Treatment Standards for Spent Aluminum Potliner (K088) (March 2000)	\$300/ton	1999	1.025	\$308/ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
B. Waste Pre-Treatment					
2.3 Crushing	Economic Assessment of the Revised LDR Treatment Standards for Spent Aluminum Potliner (K088) (March 2000)	$\$/\text{ton} = 100 * (\text{unit capacity in tons per year})^{-0.4} + 54 * (\text{unit capacity in tons per year})^{-0.1}$ Annualized cost based on a 10 year operating life assuming a 7% interest rate	1999	1.025	$\$/\text{ton} = 103 * (\text{unit capacity in tons per year})^{-0.4} + 55 * (\text{unit capacity in tons per year})^{-0.1}$ Annualized cost based on a 10 year operating life assuming a 7% interest rate
2.4 Milling	Economic Assessment of the Revised LDR Treatment Standards for Spent Aluminum Potliner (K088) (March 2000)	$\$/\text{ton} = 180 * (\text{unit capacity in tons per year})^{-0.4} + 86 * (\text{unit capacity in tons per year})^{-0.1}$ Annualized cost based on a 10 year operating life assuming a 7% interest rate	1999	1.025	$\$/\text{ton} = 185 * (\text{unit capacity in tons per year})^{-0.4} + 88 * (\text{unit capacity in tons per year})^{-0.1}$ Annualized cost based on a 10 year operating life assuming a 7% interest rate

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
C. Solid/Sludge Disposal					
<i>1. Non-Hazardous Waste Landfill (Subtitle D)</i>					
1 1 Industrial Waste, Off-Site	Remediation Market Report, March 2000 and 1999 Environmental Cost Handling Options and Solutions (ECHOS) Environmental Remediation Cost Data	petroleum-contaminated soil: \$30 10/ton solid bulk waste: \$64 67/ton	2000 1999	1 000 1 025	petroleum-contaminated soil: \$30 10/ton solid bulk waste: \$66 29/ton
1 2 Industrial Waste, On-Site	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	Unlined: With Daily Cover: 3,000 tons/yr: \$51 66/ton 30,000 tons/yr: \$12 76/ton 300,000 tons/yr: \$3 22/ton 1,500,000 tons/yr: \$1 69/ton 2,400,000 tons/yr: \$1 34/ton Without Daily Cover: 3,000 tons/yr: \$50 74/ton 30,000 tons/yr: \$10 33/ton 300,000 tons/yr: \$2 67/ton 1,500,000 tons/yr: \$1 45/ton 2,400,000 tons/yr: \$1 12/ton Clay-lined with Clay Final Cap: With Daily Cover: 3,000 tons/yr: \$100 49/ton 30,000 tons/yr: \$37 93/ton 300,000 tons/yr: \$15 18/ton 1,500,000 tons/yr: \$8 90/ton 2,400,000 tons/yr: \$7 57/ton Without Daily Cover: 3,000 tons/yr: \$81 92/ton 30,000 tons/yr: \$28 35/ton 300,000 tons/yr: \$11 73/ton	1995	1 138	Unlined: With Daily Cover: 3,000 tons/yr: \$58 79/ton 30,000 tons/yr: \$14 52/ton 300,000 tons/yr: \$3 66/ton 1,500,000 tons/yr: \$1 92/ton 2,400,000 tons/yr: \$1 52/ton Without Daily Cover: 3,000 tons/yr: \$57 74/ton 30,000 tons/yr: \$11 76/ton 300,000 tons/yr: \$3 04/ton 1,500,000 tons/yr: \$1 65/ton 2,400,000 tons/yr: \$1 27/ton Clay-lined with Clay Final Cap: With Daily Cover: 3,000 tons/yr: \$114 36/ton 30,000 tons/yr: \$43 16/ton 300,000 tons/yr: \$17 27/ton 1,500,000 tons/yr: \$10 13/ton 2,400,000 tons/yr: \$8 61/ton Without Daily Cover: 3,000 tons/yr: \$93 22/ton 30,000 tons/yr: \$32 26/ton 300,000 tons/yr: \$13 35/ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
C. Solid/Sludge Disposal					
		1,500,000 tons/yr: \$7 00/ton 2,400,000 tons/yr: \$5 93/ton Synthetic-lined with Synthetic Final Cap: With Daily Cover: 3,000 tons/yr: \$67 32/ton 30,000 tons/yr: \$12 49/ton 300,000 tons/yr: \$7 73/ton 1,500,000 tons/yr: \$4 53/ton 2,400,000 tons/yr: \$3 84/ton Without Daily Cover: 3,000 tons/yr: \$61 45/ton 30,000 tons/yr: \$15 60/ton 300,000 tons/yr: \$5 61/ton 1,500,000 tons/yr: \$3 39/ton 2,400,000 tons/yr: \$2 85/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add leachate collection system, site access controls, run-on/run-off controls, dust suppression measures, or groundwater and surface water monitoring			1,500,000 tons/yr: \$7 97/ton 2,400,000 tons/yr: \$6 75/ton Synthetic-lined with Synthetic Final Cap: With Daily Cover: 3,000 tons/yr: \$76 61/ton 30,000 tons/yr: \$14 21/ton 300,000 tons/yr: \$8 80/ton 1,500,000 tons/yr: \$5 16/ton 2,400,000 tons/yr: \$4 37/ton Without Daily Cover: 3,000 tons/yr: \$69 93/ton 30,000 tons/yr: \$17 75/ton 300,000 tons/yr: \$6 38/ton 1,500,000 tons/yr: \$3 86/ton 2,400,000 tons/yr: \$3 24/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add leachate collection system, site access controls, run-on/run-off controls, dust suppression measures, or groundwater and surface water monitoring
1 3 Municipal Waste, Off-Site	Solid Waste Digest, Vol 7, No 8, August 1997 (publication of Chartwell Information Publishers)	\$37 02/ton	1997	1 076	\$39 83/ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
C. Solid/Sludge Disposal					
<i>2. Hazardous Waste Landfill (Subtitle C)</i>					
2.1 With Stabilization, Off-Site	Hazardous Waste Resource Center January 2000 Incinerator and Landfill Cost Data	Bulk: \$185/ton Drummed: \$118/drum Soil: \$181/ton	1999	1.025	Bulk: \$190/ton Drummed: \$121/drum Soil: \$186/ton
2.2 Without Stabilization, Off-Site	Hazardous Waste Resource Center January 2000 Incinerator and Landfill Cost Data	Bulk: \$98/ton Drummed: \$80/drum Soil: \$97/ton	1999	1.025	Bulk: \$100/ton Drummed: \$82/drum Soil: \$99/ton
2.3 Without Stabilization, On-Site	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	With Daily Cover: 3,000 tons/yr: \$530.04/ton 30,000 tons/yr: \$62.39/ton 300,000 tons/yr: \$15.62/ton 1,500,000 tons/yr: \$11.46/ton 2,400,000 tons/yr: \$11.07/ton Without Daily Cover: 3,000 tons/yr: \$458.11/ton 30,000 tons/yr: \$53.70/ton 300,000 tons/yr: \$13.25/ton 1,500,000 tons/yr: \$9.66/ton 2,400,000 tons/yr: \$9.32/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate	1995	1.138	With Daily Cover: 3,000 tons/yr: \$603.19/ton 30,000 tons/yr: \$71.00/ton 300,000 tons/yr: \$17.78/ton 1,500,000 tons/yr: \$13.04/ton 2,400,000 tons/yr: \$12.60/ton Without Daily Cover: 3,000 tons/yr: \$521.33/ton 30,000 tons/yr: \$61.11/ton 300,000 tons/yr: \$15.08/ton 1,500,000 tons/yr: \$10.99/ton 2,400,000 tons/yr: \$10.61/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
C. Solid/Sludge Disposal					
<i>3. Low-Level Radioactive Waste Landfill</i>					
3 1 Mixed Waste, Off-Site	Regulatory Impact Analysis: Relief from Regulatory Requirements for Storage and Disposal of Mixed Waste, Draft (July 1999)	Envirocare of Utah = \$100/cf Chem-Nuclear, Inc , Barnwell, South Carolina = \$500/cf (if new disposal facility built) US Ecology, Richland, Washington = \$500/cf (if new disposal facility built)	1999	1 025	Envirocare of Utah = \$103/cf Chem-Nuclear, Inc , Barnwell, South Carolina = \$513/cf (if new disposal facility built) US Ecology, Richland, Washington = \$513/cf (if new disposal facility built)
3 2 Non-Mixed Waste, Off-Site	Regulatory Impact Analysis: Relief from Regulatory Requirements for Storage and Disposal of Mixed Waste, Draft (July 1999)	Envirocare of Utah = \$80/cf Chem-Nuclear, Inc , Barnwell, South Carolina = \$400/cf US Ecology, Richland, Washington = \$290/cf	1999	1 025	Envirocare of Utah = \$82/cf Chem-Nuclear, Inc , Barnwell, South Carolina = \$410/cf US Ecology, Richland, Washington = \$297/cf

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
D. Liquid Disposal					
1 Deepwell Injection	Estimating Costs for the Economic Benefits of RCRA Noncompliance (Sept 1997)	Mixed Organic/Inorganic Liquids and Inorganic Liquids with Metals: Bulk - \$175/ton or \$0.77/gal Drummed - \$55/drum* * derived from bulk prices with a 50 percent price increase to account for drum handling	1997	1.076	Mixed Organic/Inorganic Liquids and Inorganic Liquids with Metals: Bulk - \$188/ton or \$0.83/gal Drummed - \$59/drum* * derived from bulk prices with a 50 percent price increase to account for drum handling
2 Non-Hazardous POTW Discharge (e.g., Leachate Disposal)	Economic Impact Analysis of the Petroleum Hazardous Waste Listing (K169-K172) on Leachate Management Costs for Municipal and Industrial Waste Landfills Containing Petroleum Wastes - Addendum (February 1999)	truck off site to POTW for management = \$0.07/gallon (excludes transportation) discharge to POTW (sewer) = \$1.50/1,000 gallons	1998	1.050	truck off site to POTW for management = \$0.07/gallon (excludes transportation) discharge to POTW (sewer) = \$1.58/1,000 gallons
3 Hazardous POTW/TSD Discharge/Disposal (e.g., Leachate Disposal)	Economic Impact Analysis of the Petroleum Hazardous Waste Listing (K169-K172) on Leachate Management Costs for Municipal and Industrial Waste Landfills Containing Petroleum Wastes - Addendum (February 1999)	\$1.75/gallon to \$2.96/gallon	1998	1.050	\$1.84/gallon to \$3.11/gallon

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
E. Thermal Treatment					
<i>1. Thermal Desorber</i>					
1 1 Off-Site	VOC-contaminated soil costs were developed from the 1999 Remedial Action Cost Engineering and Requirements (RACER 1999) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database PAH-contaminated soil costs were obtained from Memo: Costs of the Phase IV LDRs on MGP Wastes, January 1998	VOC-contaminated soil: \$48 67/ton PAH-contaminated soil: \$117/ton	1999 1998*	1 025 1 050	VOC-contaminated soil: \$49 89/ton PAH-contaminated soil: \$123/ton
1 2 On-Site	Memo: Costs of the Phase IV LDRs on MGP Wastes, January 1998	\$135 75/ton	1998*	1 050	\$142 54/ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
E. Thermal Treatment					
<i>2. Incineration</i>					
2.1 Off-Site	Hazardous Waste Resource Center January 2000 Incinerator and Landfill Cost Data	Drummed Halogen Liquid Organics: \$192 00/drum Drummed Non-Halogen Liquid: \$124 00/drum Bulk Non-Halogen Liquid: \$0 59/gallon Lab Packs: \$2 42/lb Drummed Pumpable Sludge: \$207 00/drum Bulk Pumpable Sludge: \$651 00/ton Bulk Contaminated Soils: \$559 00/ton Aerosols: \$0 47/lb	1999	1 025	Drummed Halogen Liquid Organics: \$196 80/drum Drummed Non-Halogen Liquid: \$127 10/drum Bulk Non-Halogen Liquid: \$0 60/gallon Lab Packs: \$2 48/lb Drummed Pumpable Sludge: \$212 18/drum Bulk Pumpable Sludge: \$667 28/ton Bulk Contaminated Soils: \$573 00/ton Aerosols: \$0 48/lb
2.2 On-Site	Memo: Costs of the Phase IV LDRs on MGP Wastes, January 1998	\$333/ton	1998*	1 050	\$350/ton
<i>3. Boilers and Industrial Furnaces</i>					
3.1 Utility Co-Burning, Off-Site	Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes	\$135/ton	1998*	1 050	\$142/ton
3.2 Cement Kiln, Off-Site	Memo: Costs of the Phase IV LDRs on MGP Wastes, January 1998	Hazardous: \$450/ton Non-hazardous: \$53/ton	1998*	1 050	Hazardous: \$473/ton Non-hazardous: \$56/ton

* Presumed year of cost data. The source of cost data did not directly indicate the year the cost data is based upon. In these cases, a year of data is assumed from the date of the source document or references within the source document.

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
<i>1. Land Treatment</i>					
1 1 On-Site, Non-hazardous	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	1,000 tons/yr: \$98 52/ton 5,000 tons/yr: \$24 67/ton 10,000 tons/yr: \$15 44/ton 25,000 tons/yr: \$9 90/ton 50,000 tons/yr: \$8 05/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate See 1996 reference if you wish to add costs for site access controls, run-on/run-off controls, dust suppression measures, monitoring, or final cover These costs add between \$30 12/ton and \$2 05/ton	1995	1 138	1,000 tons/yr: \$112 12/ton 5,000 tons/yr: \$28 07/ton 10,000 tons/yr: \$17 57/ton 25,000 tons/yr: \$11 27/ton 50,000 tons/yr: \$9 16/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate See 1996 reference if you wish to add costs for site access controls, run-on/run-off controls, dust suppression measures, monitoring, or final cover These costs add between \$32 41/ton and \$2 21/ton
	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Petroleum Refining Industry (Sept 1995)	\$79/ton Note: This estimate could be a mixture of treating non-hazardous and hazardous wastes	1992	1 238	\$98/ton Note: This estimate could be a mixture of treating non-hazardous and hazardous wastes
1 2 On-Site, Hazardous	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	1,000 tons/yr: \$234 55/ton 5,000 tons/yr: \$123 21/ton 10,000 tons/yr: \$93 37/ton 25,000 tons/yr: \$64 72/ton 50,000 tons/yr: \$49 05/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate	1997	1 076	1,000 tons/yr: \$252 38/ton 5,000 tons/yr: \$132 57/ton 10,000 tons/yr: \$100 47/ton 25,000 tons/yr: \$69 64/ton 50,000 tons/yr: \$52 78/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
1.3 Off-Site	Memo: Costs for Subtitle D and C Management Units (Sept 29, 1995)	\$71/ton Note: This estimate could be a mixture of treating non- hazardous and hazardous wastes	1992	1.238	\$88/ton Note: This estimate could be a mixture of treating non- hazardous and hazardous wastes
2. Surface Impoundment					
2.1 Non-Hazardous Wastewater Storage	Regulatory Impact Analysis of the Supplemental Proposed Rule Applying Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes, April 15, 1997	Lined Impoundments: $Y = 0.0704x + 1955.1$ Unlined Surface Impoundments with Groundwater Monitoring: $Y = 0.0626x + 1605.4$ Unlined, Unmonitored Surface Impoundments: $Y = 0.0491x + 1413.7$ (See Appendix F-2.1 for assumptions)	1995	1.138	Lined Impoundments: $Y = 0.0801x + 2224.9$ Unlined Surface Impoundments with Groundwater Monitoring: $Y = 0.0712x + 1826.9$ Unlined, Unmonitored Surface Impoundments: $Y = 0.0559x + 1608.8$

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
2.2 Non-Hazardous Wastewater Treatment	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept. 27, 1996)	Unlined: 32,000 kgal/yr: \$0.21/kgal 160,000 kgal/yr: \$0.07/kgal 320,000 kgal/yr: \$0.05/kgal 800,000 kgal/yr: \$0.04/kgal 1,600,000 kgal/yr: \$0.03/kgal 2,400,000 kgal/yr: \$0.03/kgal Clay-lined: 32,000 kgal/yr: \$0.31/kgal 160,000 kgal/yr: \$0.14/kgal 320,000 kgal/yr: \$0.11/kgal 800,000 kgal/yr: \$0.09/kgal 1,600,000 kgal/yr: \$0.08/kgal 2,400,000 kgal/yr: \$0.08/kgal Synthetic-lined: 32,000 kgal/yr: \$0.25/kgal 160,000 kgal/yr: \$0.10/kgal 320,000 kgal/yr: \$0.07/kgal 800,000 kgal/yr: \$0.06/kgal 1,600,000 kgal/yr: \$0.05/kgal 2,400,000 kgal/yr: \$0.05/kgal Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add costs for aeration, freeboard, site access controls, groundwater and surface water monitoring, annual dredging, final cover, or leachate collection system.	1995	1.138	Unlined: 32,000 kgal/yr: \$0.24/kgal 160,000 kgal/yr: \$0.08/kgal 320,000 kgal/yr: \$0.06/kgal 800,000 kgal/yr: \$0.05/kgal 1,600,000 kgal/yr: \$0.03/kgal 2,400,000 kgal/yr: \$0.03/kgal Clay-lined: 32,000 kgal/yr: \$0.35/kgal 160,000 kgal/yr: \$0.16/kgal 320,000 kgal/yr: \$0.13/kgal 800,000 kgal/yr: \$0.10/kgal 1,600,000 kgal/yr: \$0.09/kgal 2,400,000 kgal/yr: \$0.09/kgal Synthetic-lined: 32,000 kgal/yr: \$0.28/kgal 160,000 kgal/yr: \$0.11/kgal 320,000 kgal/yr: \$0.08/kgal 800,000 kgal/yr: \$0.07/kgal 1,600,000 kgal/yr: \$0.06/kgal 2,400,000 kgal/yr: \$0.06/kgal Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add costs for aeration, freeboard, site access controls, groundwater and surface water monitoring, annual dredging, final cover, or leachate collection system.

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
2.3 Hazardous (Subtitle C) Treatment	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept. 27, 1996)	<p>without aeration: 32,000 kgal/yr: \$5.33/kgal 160,000 kgal/yr: \$1.41/kgal 320,000 kgal/yr: \$0.90/kgal 800,000 kgal/yr: \$0.58/kgal 1,600,000 kgal/yr: \$0.49/kgal 2,400,000 kgal/yr: \$0.46/kgal</p> <p>with aeration: 32,000 kgal/yr: \$5.66/kgal 160,000 kgal/yr: \$1.49/kgal 320,000 kgal/yr: \$0.97/kgal 800,000 kgal/yr: \$0.62/kgal 1,600,000 kgal/yr: \$0.53/kgal 2,400,000 kgal/yr: \$0.50/kgal</p> <p>Costs include capital and O&M costs as well as closure and post-closure costs as appropriate. Costs include annual dredging. Annualized cost based on a 20 year operating life assuming a 7% interest rate.</p>	1995	1.138	<p>without aeration: 32,000 kgal/yr: \$6.07/kgal 160,000 kgal/yr: \$1.60/kgal 320,000 kgal/yr: \$1.02/kgal 800,000 kgal/yr: \$0.66/kgal 1,600,000 kgal/yr: \$0.56/kgal 2,400,000 kgal/yr: \$0.52/kgal</p> <p>with aeration: 32,000 kgal/yr: \$6.44/kgal 160,000 kgal/yr: \$1.70/kgal 320,000 kgal/yr: \$1.10/kgal 800,000 kgal/yr: \$0.71/kgal 1,600,000 kgal/yr: \$0.60/kgal 2,400,000 kgal/yr: \$0.57/kgal</p> <p>Costs include capital and O&M costs as well as closure and post-closure costs as appropriate. Costs include annual dredging. Annualized cost based on a 20 year operating life assuming a 7% interest rate.</p>

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
<i>3. Waste Pile</i>					
3.1 Non-Hazardous Waste (Subtitle D)	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	Unlined: 1,000 tons/yr: \$30.35/ton 5,000 tons/yr: \$9.16/ton 10,000 tons/yr: \$5.47/ton 25,000 tons/yr: \$2.77/ton 50,000 tons/yr: \$1.65/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add costs for monitoring, site access controls, run-on/run-off controls, final cover, or dust suppression	1995	1.138	Unlined: 1,000 tons/yr: \$34.54/ton 5,000 tons/yr: \$10.42/ton 10,000 tons/yr: \$6.22/ton 25,000 tons/yr: \$3.15/ton 50,000 tons/yr: \$1.88/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate. See reference if you wish to add costs for monitoring, site access controls, run-on/run-off controls, final cover, or dust suppression

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
3 2 Hazardous Waste (Subtitle C)	Memo: Costs for Subtitle D and C Management Units (Sept 29, 1995)	\$15 to \$82/ton Costs include site preparation, run-on and run-off controls, groundwater monitoring wells, a containment system, and other RCRA related costs and fees Annualized cost based on a 20 year operating life assuming a 7% interest rate	1992	1 238	\$19 to \$102/ton Costs include site preparation, run-on and run-off controls, groundwater monitoring wells, a containment system, and other RCRA related costs and fees Annualized cost based on a 20 year operating life assuming a 7% interest rate
	Memo: Hazardous Waste Identification Rule for Process Wastes: Waste Management Cost Data (Sept 27, 1996)	1,000 tons/yr: \$221 45/ton 5,000 tons/yr: \$93 91/ton 10,000 tons/yr: \$64 91/ton 25,000 tons/yr: \$39 83/ton 50,000 tons/yr: \$27 53/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate Includes RCRA pad, containment, and closure requirements	1995	1 138	1,000 tons/yr: \$252 01/ton 5,000 tons/yr: \$106 87/ton 10,000 tons/yr: \$73 87/ton 25,000 tons/yr: \$45 33/ton 50,000 tons/yr: \$27 53/ton Note: Annualized cost based on a 20 year operating life assuming a 7% interest rate Includes RCRA pad, containment, and closure requirements

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containment					
<i>4. Aboveground Storage Tank (AST)</i>					
4 1 7-Day Storage Tank	Regulatory Impact Analyses: Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes (April 15, 1997)	Annual Cost = $-4 \cdot 10^{-8} Q^2 + 0.1175 Q + 3,679.5$ Q = Quantity of material presented for treatment in metric tons per year One metric ton equals 1.1023 short tons (english) Annualized cost based on a 20 year operating life assuming a 7% interest rate	1995	1.138	Annual Cost = $-4.6 \cdot 10^{-8} Q^2 + 0.1337 Q + 4,187.3$ Q = Quantity of material presented for treatment in metric tons per year One metric ton equals 1.1023 short tons (english) Annualized cost based on a 20 year operating life assuming a 7% interest rate
4 2 Concrete Pad Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept 1993)	Capital Cost = $30.054x^{0.6332}$ x = Capacity of tank in gallons	1993	1.216	Capital Cost = $36.55x^{0.6332}$ x = Capacity of tank in gallons
4 3 Earth Diking with Synthetic Lining Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept 1993)	Capital Cost = $0.8287x^{0.6588}$ x = Capacity of tank in gallons	1993	1.216	Capital Cost = $1.01x^{0.6588}$ x = Capacity of tank in gallons
4 4 Silo	Cost Functions for Alternative CKD Control Technologies <i>Draft July 1996 Report says do not cite or quote</i>	Capital Cost = $0.0811x + 3,959.7$ x = tons/yr	1996	1.105	Capital Cost = $0.0896x + 4,375.5$ x = tons/yr
4 5 Chute for Silo/Hopper	Cost Functions for Alternative CKD Control Technologies <i>Draft July 1996 Report says do not cite or quote</i>	Capital Cost = $0.3648x + 85.381$ x = tons/yr of cement kiln dust (CKD)	1996	1.105	Capital Cost = $0.4031x + 94.346$ x = tons/yr of cement kiln dust (CKD)

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)																
F. Other Treatment / Storage / Containment																					
5. Underground Storage Tank (UST)																					
5 1 Single-Wall UST	RACER 1999	Capital Cost = 2 5*(gallon capacity) + 23,990 O&M Cost: <table><tr><td>Gallon Capacity</td><td>Cost</td></tr><tr><td><= 12,000</td><td>\$342/year</td></tr><tr><td>12,001 to 29,999</td><td>\$564/year</td></tr><tr><td>>= 30,000</td><td>\$666/year</td></tr></table>	Gallon Capacity	Cost	<= 12,000	\$342/year	12,001 to 29,999	\$564/year	>= 30,000	\$666/year	1999	1 025	Capital Cost = 2 6*(gallon capacity) + 24,590 O&M Cost: <table><tr><td>Gallon Capacity</td><td>Cost</td></tr><tr><td><= 12,000</td><td>\$351/year</td></tr><tr><td>12,001 to 29,999</td><td>\$578/year</td></tr><tr><td>>= 30,000</td><td>\$683/year</td></tr></table>	Gallon Capacity	Cost	<= 12,000	\$351/year	12,001 to 29,999	\$578/year	>= 30,000	\$683/year
Gallon Capacity	Cost																				
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Gallon Capacity	Cost																				
<= 12,000	\$351/year																				
12,001 to 29,999	\$578/year																				
>= 30,000	\$683/year																				
5 2 Double-Wall UST	RACER 1999	Capital Cost = 2 9*(gallon capacity) + 27,161 O&M Cost: <table><tr><td>Gallon Capacity</td><td>Cost</td></tr><tr><td><= 12,000</td><td>\$342/year</td></tr><tr><td>12,001 to 29,999</td><td>\$564/year</td></tr><tr><td>>= 30,000</td><td>\$666/year</td></tr></table>	Gallon Capacity	Cost	<= 12,000	\$342/year	12,001 to 29,999	\$564/year	>= 30,000	\$666/year	1999	1 025	Capital Cost = 3 0*(gallon capacity) + 27,840 O&M Cost: <table><tr><td>Gallon Capacity</td><td>Cost</td></tr><tr><td><= 12,000</td><td>\$351/year</td></tr><tr><td>12,001 to 29,999</td><td>\$578/year</td></tr><tr><td>>= 30,000</td><td>\$683/year</td></tr></table>	Gallon Capacity	Cost	<= 12,000	\$351/year	12,001 to 29,999	\$578/year	>= 30,000	\$683/year
Gallon Capacity	Cost																				
<= 12,000	\$342/year																				
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12,001 to 29,999	\$578/year																				
>= 30,000	\$683/year																				
5 3 Concrete Vault Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept 1993)	Capital Cost = 269 74x ^{0.4108} x = Capacity of tank in gallons	1993	1 216	Capital Cost = 328 00x ^{0.4108} x = Capacity of tank in gallons																
5 4 Concrete Vault with Polymer or Resin Based Sealer Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept 1993)	Capital Cost = 321 93x ^{0.4593} x = Capacity of tank in gallons	1993	1 216	Capital Cost = 391 47x ^{0.4593} x = Capacity of tank in gallons																
5 5 Steel Box Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept 1993)	Capital Cost = 96 081x ^{0.4654} x = Capacity of tank in gallons	1993	1 216	Capital Cost = 116 835x ^{0.4654} x = Capacity of tank in gallons																

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
F. Other Treatment / Storage / Containmentment					
5.6 Synthetic Liner Secondary Containment	Evaluate the Economics of Secondary Containment, Chemical Engineering Progress (Sept. 1993)	Capital Cost = $12,066x^{0.5942}$ x = Capacity of tank in gallons	1993	1.216	Capital Cost = $14,672x^{0.5942}$ x = Capacity of tank in gallons
6. Containers					
6.1 55-Gallon Drum	RACER 1999	\$103 per 55-gallon drum	1999	1.025	\$106 per 55-gallon drum
6.2 40-cy Roll-Off Container	RACER 1999	Purchase: \$6,472 per 20 cy roll-off bin Rental: \$2 per day + \$435 delivery charge	1999	1.025	Purchase: \$6,634 per 20 cy roll-off bin Rental: \$2 per day + \$446 delivery charge
6.3 Storage and Handling Building	RACER 1999	Capital Cost = $0.06 \times (\text{area in square feet})^2 + 46.2 \times (\text{area in square feet}) + 4,995$	1999	1.025	Capital Cost = $0.06 \times (\text{area in square feet})^2 + 47.36 \times (\text{area in square feet}) + 5,120$

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
G. Aqueous Waste Treatment					
1 Equalization Tank	RACER 1999 In addition, the third edition of Wastewater Engineering: Treatment, Disposal, and Reuse provided general information on the standard design of equalization tanks	Tank: Cost = $-2 \times 10^{-7} Q^2 + 0.77Q + 51,953$ Tank With Mixing: Cost = $-2 \times 10^{-7} Q^2 + 0.82Q + 52,393$ Mixing: Cost = $-6 \times 10^{-9} Q^2 + 0.06Q + 440$ Q = tank capacity in gallons	1999	1.025	Tank: Cost = $-2 \times 10^{-7} Q^2 + 0.79Q + 53,252$ Tank With Mixing: Cost = $-2 \times 10^{-7} Q^2 + 0.84Q + 53,703$ Mixing: Cost = $-6 \times 10^{-9} Q^2 + 0.06Q + 451$ Q = tank capacity in gallons
2 Oil/Water Separation	RACER 1999	Capital: Cost = $110Q + 19,880$ O&M: Cost = $75Q - 0.06Q^2 + 11,767$ Q = Flow rate in gpm	1999	1.025	Capital: Cost = $113Q + 20,377$ O&M: Cost = $77Q - 0.06Q^2 + 12,061$ Q = Flow rate in gpm
3 Gravity Separation	Regulatory Impact Assessment for Proposed Hazardous Waste Combustion MACT Standards <i>Draft</i> , November 13, 1995	Fixed O&M Costs: Soils/Sludges (\$/ton) \$27-\$207 Estimated Capital Equipment Life --15 years	1995*	1.138	Fixed O&M Costs: Soils/Sludges (\$/ton) \$31-\$236 Estimated Capital Equipment Life --15 years
4 Neutralization	RACER 1999	Capital: Cost = $1,034Q + 35,315$ Annual O&M for Acidic Waste Stream: Cost = $1,570Q - 2.34Q^2 + 10,437$ Annual O&M for Basic Waste Stream: Cost = $855Q - 2Q^2 + 10,210$ Q = flow rate in gpm	1999	1.025	Capital: Cost = $1,060Q + 36,138$ Annual O&M for Acidic Waste Stream: Cost = $1,609Q - 2.40Q^2 + 10,698$ Annual O&M for Basic Waste Stream: Cost = $876Q - 2Q^2 + 10,465$ Q = flow rate in gpm

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
G. Aqueous Waste Treatment					
5 Precipitation	RACER 1999	Capital: Cost = $1,805Q + 135,522$ Annual O&M: Cost = $1,586Q + 20,212$ Q = flow rate in gpm	1999	1.025	Capital: Cost = $1,850Q + 138,910$ Annual O&M: Cost = $1,626Q + 20,717$ Q = flow rate in gpm
6 Air Stripping	RACER 1999 and Handbook of Hazardous Waste Treatment and Disposal 1989	See appendix for cost table Look up cost based on flow rate	1999	1.025	See appendix for cost table Look up cost based on flow rate
7 Distillation	Regulatory Impact Assessment for Proposed Hazardous Waste Combustion MACT Standards <i>Draft</i> , November 13, 1995	Initial Capital Cost: \$1,050,000 Fixed O&M Costs: Soils/Sludges (\$/ton) \$70 - \$380 Variable O&M Costs: Liquids (\$/1000 gal) \$0.01 Estimated Capital Equipment Life - ~10 years	1995*	1.138	Initial Capital Cost: \$1,194,900 Fixed O&M Costs: Soils/Sludges (\$/ton) \$80 - \$432 Variable O&M Costs: Liquids (\$/1000 gal) \$0.01 Estimated Capital Equipment Life - ~10 years

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
G. Aqueous Waste Treatment					
8 Ozonation	Regulatory Impact Assessment for Proposed Hazardous Waste Combustion MACT Standards <i>Draft</i> , November 13, 1995	Initial Capital Cost: \$70,000 - \$260,000 Source: Alternative Technology Information Center \$130,000 - \$160,000 Source: Pollution Prevention October 1994 Fixed O&M Costs: Soils/Sludges (\$/ton) \$30-\$175 Liquids (\$/1000 gal) \$0.25-\$17 Liquids (converted to \$/ton) \$0.06 - \$4.08 Estimated Capital Equipment Life - ~10 years	1995*	1.138	Initial Capital Cost: \$79,660 - \$295,880 Source: Alternative Technology Information Center \$147,940 - \$182,080 Source: Pollution Prevention October 1994 Fixed O&M Costs: Soils/Sludges (\$/ton) \$34-\$199 Liquids (\$/1000 gal) \$0.28-\$19 Liquids (converted to \$/ton) \$0.07 - \$4.64 Estimated Capital Equipment Life - ~10 years
9 Granular Activated Carbon	RACER 1999	Flow Rates < 20 gpm: Capital: \$8,651 Annual O&M: \$5,041 Flow Rate > 20 and < 200 gpm Capital = $2,018Q + 9,024$ Annual O&M = $462Q - 0.799Q^2 - 190$ Flow Rate > 200 gpm Capital = $3,319Q^{0.7763}$ Annual O&M = $1,598Q + 25,489$ Q = flow rate in gpm	1999	1.025	Flow Rates < 20 gpm: Capital: \$8,867 Annual O&M: \$5,167 Flow Rate > 20 and < 200 gpm Capital = $2,068Q + 9,250$ Annual O&M = $474Q - 0.819Q^2 - 195$ Flow Rate > 200 gpm Capital = $3,402Q^{0.7763}$ Annual O&M = $1,638Q + 26,126$ Q = flow rate in gpm

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
G. Aqueous Waste Treatment					
10 Biological Treatment	RACER 1999	Capital (50 ppm COD and 5 to 100 gpm) = \$61,625 (gpm) ^{0.4269} Capital (500 ppm COD and 5 to 100 gpm) = \$46,312 (gpm) ^{0.5170} Capital (1,000 ppm COD and 5 to 50 gpm) = \$61,294 (gpm) ^{0.5084} Annual O&M (50 to 1,000 ppm COD and 5 to 100 gpm) = \$5,389 (gpm) ^{0.7702}	1999	1.025	Capital (50 ppm COD and 5 to 100 gpm) = \$63,166 (gpm) ^{0.4269} Capital (500 ppm COD and 5 to 100 gpm) = \$47,470 (gpm) ^{0.5170} Capital (1,000 ppm COD and 5 to 50 gpm) = \$62,826 (gpm) ^{0.5084} Annual O&M (50 to 1,000 ppm COD and 5 to 100 gpm) = \$5,524 (gpm) ^{0.7702}

* Presumed year of cost data The source of cost data did not directly indicate the year the cost data is based upon In these cases, a year of data is assumed from the date of the source document or references within the source document

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
H. Recycling					
<i>1. Metals Recycling</i>					
1 1 HTMR/Smelting (Copper, Nickel, Zinc, Lead, Precious Metals)	U S EPA, <u>Regulatory Impact Analysis of the Final Rule for a 180-Day Accumulation Time for F006 Wastewater Treatment Sludges</u> , prepared by DPRA Incorporated, (November 1999)	\$0 10/lb to \$0 20/lb	1999	1 025	\$0 10/lb to \$0 21/lb
1 2 Mercury Retorts	U S EPA, <u>Modification of the Hazardous Waste Program: Hazardous Waste Lamps - Final Economic Assessment</u> , (March 1999)	Fluorescent lamp retorting: Transportation and Tipping Fee = \$1 31/lamp Lamp Crushing = \$78 67/ton Drum Cost = \$44 96/drum	1997	1 076	Fluorescent lamp retorting: Transportation and Tipping Fee = \$1 41/lamp Lamp Crushing = \$84 65/ton Drum Cost = \$48 38/drum
	HWIR 1995 Draft RIA	HWIR retorting costs: <= 4,700 tons: \$856/ton > 4,700 and <= 47,000 tons: \$446/ton >47,000 tons: \$194/ton	1995	1 138	HWIR retorting costs: <= 4,700 tons: \$974/ton > 4,700 and <= 47,000 tons: \$508/ton >47,000 tons: \$221/ton
<i>2. Fuel Blending</i>					
2 1 Fuel Blending	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Organic Dye and Pigment Industries (Nov 1994)	Subtitle D Fuel Blending = \$99 17/Mton	1994	1 175	Subtitle D Fuel Blending = \$116 52/Mton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
H. Recycling					
<i>3. Other Recycling/Recovery</i>					
3 1 Solvent Extraction	RACER 1999	<u>Soil</u> Capital (5,000 to 13,300 cy/yr) = \$635,000 Capital (> 13,300 cy/yr) = \$1,227,000 O&M = 20,724 (cy/yr) ^{0.5710} Closure = 1,212 8 (cy/yr) ^{0.4854} <u>Sludge</u> Capital (5,000 to 13,300 cy/yr) = \$543,000 Capital (> 13,300 cy/yr) = \$1,065,000 O&M = 20,887 (cy/yr) ^{0.5698} Closure = 1,212 8 (cy/yr) ^{0.4854} <u>Liquid</u> Capital (1,000,000 to 2,700,000 gal/yr) = \$543,000 Capital (> 2,700,000 gal/yr) = \$1,065,000 O&M = 1,119 7 (gal/yr) ^{0.5638} Closure = 103 53 (gal/yr) ^{0.4783} To convert from gallons to cubic yards, divide by 202 (e g . 2,700,000 gal/yr = 13,300 cy)	1999	1 025	<u>Soil</u> Capital (5,000 to 13,300 cy/yr) = \$650,875 Capital (> 13,300 cy/yr) = \$1,257,675 O&M = 21,242 (cy/yr) ^{0.5710} Closure = 1,243 1 (cy/yr) ^{0.4854} <u>Sludge</u> Capital (5,000 to 13,300 cy/yr) = \$556,575 Capital (> 13,300 cy/yr) = \$1,091,625 O&M = 21,409 (cy/yr) ^{0.5698} Closure = 1,243 1 (cy/yr) ^{0.4854} <u>Liquid</u> Capital (1,000,000 to 2,700,000 gal/yr) = \$556,575 Capital (> 2,700,000 gal/yr) = \$1,091,625 O&M = 1,147 7 (gal/yr) ^{0.5638} Closure = 106 12 (gal/yr) ^{0.4783} To convert from gallons to cubic yards, divide by 202 (e g . 2,700,000 gal/yr = 13,300 cy)
3 2 Catalyst Reclamation/Regeneration	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Petroleum Refining Industry (Sept 1995)	\$725/metric ton	1992	1 238	\$898/metric ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
H. Recycling					
3.3 Use as an Ingredient in Products (e.g., Asphalt, Brick, and Cement) Placed on Land	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Petroleum Refining Industry (Sept. 1995)	\$50/Mton	1992	1.238	\$62/Mton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
I. Waste Transportation					
1 Dump Truck Hazardous Waste Transportation	Environmental Cost Handling Options and Solutions (ECHOS), <u>Environmental Remediation Cost Data-Unit Price</u> , 5 th Annual Edition, published by R S Means, 1999, Assembly #33 19 0209 through 0217	\$650 00 minimum transport charge \$2 32/mi , 200-299 mi \$1 97/mi , 300-399 mi \$1 84/mi , 400-499 mi \$1 76/mi , 500-599 mi \$1 74/mi , 600-699 mi \$1 70/mi , 700-799 mi \$1 68/mi , 800-899 mi \$1 67/mi , 900-999 mi \$1 65/mi , 1,000+ mi	1999	1 025	\$666 25 minimum transport charge \$2 38/mi , 200-299 mi \$2 02/mi , 300-399 mi \$1 88/mi , 400-499 mi \$1 80/mi , 500-599 mi \$1 78/mi , 600-699 mi \$1 74/mi , 700-799 mi \$1 72/mi , 800-899 mi \$1 71/mi , 900-999 mi \$1 69/mi , 1,000+ mi
2 Van Trailer Hazardous Waste Transportation	Environmental Cost Handling Options and Solutions (ECHOS), <u>Environmental Remediation Cost Data-Unit Price</u> , 5 th Annual Edition, published by R S Means, 1999, Assembly #33 19 0229 through 0240	\$683 33 minimum transport charge \$2 41/mi , 200-299 mi \$2 31/mi , 300-399 mi \$2 11/mi , 400-499 mi \$2 01/mi , 500-599 mi \$1 98/mi , 600-699 mi \$1 91/mi , 700-799 mi \$1 89/mi , 800-999 mi \$1 87/mi , 1,000+ mi	1999	1 025	\$700 41 minimum transport charge \$2 47/mi , 200-299 mi \$2 37/mi , 300-399 mi \$2 16/mi , 400-499 mi \$2 06/mi , 500-599 mi \$2 03/mi , 600-699 mi \$1 96/mi , 700-799 mi \$1 94/mi , 800-999 mi \$1 92/mi , 1,000+ mi
3 Tanker Trailer Hazardous Waste Transportation	Environmental Cost Handling Options and Solutions (ECHOS), <u>Environmental Remediation Cost Data-Unit Price</u> , 5 th Annual Edition, published by R S Means, 1999, Assembly #33 19 0253 through 0262	\$750 00 minimum transport charge \$2 48/mi , 200-299 mi \$2 45/mi , 300-399 mi \$2 40/mi , 400-499 mi \$2 35/mi , 500-599 mi \$2 33/mi , 600-699 mi \$2 29/mi , 700-799 mi \$2 27/mi , 800-899 mi \$2 26/mi , 900-999 mi \$2 24/mi , 1,000+ mi	1999	1 025	\$769 00 minimum transport charge \$2 54/mi , 200-299 mi \$2 51/mi , 300-399 mi \$2 46/mi , 400-499 mi \$2 41/mi , 500-599 mi \$2 39/mi , 600-699 mi \$2 35/mi , 700-799 mi \$2 33/mi , 800-899 mi \$2 32/mi , 900-999 mi \$2 30/mi , 1,000+ mi

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
I. Waste Transportation					
4 Other Costs Associated with Truck Transportation of Wastes	Environmental Cost Handling Options and Solutions (ECHOS), <u>Environmental Remediation Cost Data-Unit Price</u> , 5 th Annual Edition, published by R S Means, 1999	Dump Truck Loading : \$2 14/cy and \$99 31/hr rental of 4 cy wheel loader; Dump Truck Unloading: \$2 14/cy; Tank Truck Loading: \$290 44 per 5,000 gallon load Tank Truck Unloading: \$290 44 per 5,000 gallon unloaded Van Trailer Loading: \$2 95/drum loaded Van Trailer Unloading: \$2 95/drum unloaded Manifest Completion/Filing: \$40/stop for truck driver and generator administrator; Manifest Discrepancies: \$50 per manifest discrepancy; Demurrage (Truck Waiting Idle for loading/unloading) Costs: \$62 50 to \$63 33/hour \$591 67/overnight \$700 max /24-hour period Charges for Additional Stops: \$58 33/stop (<= 3 stops) \$50/stop (> 3 stops) Truck Washout/Decontam : \$150/washout	1999	1 025	Dump Truck Loading : \$2 19/cy and \$101 79/hr rental of 4 cy wheel loader; Dump Truck Unloading: \$2 19/cy; Tank Truck Loading: \$297 70 per 5,000 gallon load Tank Truck Unloading: \$297 70 per 5,000 gallon unloaded Van Trailer Loading: \$3 02/drum loaded Van Trailer Unloading: \$3 02/drum unloaded Manifest Completion/Filing: \$41/stop for truck driver and generator administrator; Manifest Discrepancies: \$51 per manifest discrepancy; Demurrage (Truck Waiting Idle for loading/unloading) Costs: \$64 06 to \$64 91/hour \$606 46/overnight \$718 max /24-hour period Charges for Additional Stops: \$59 79/stop (<= 3 stops) \$51/stop (> 3 stops) Truck Washout/Decontam : \$154/washout

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
I. Waste Transportation					
5 Tarp Cover for Truck	Technical Background Document: Compliance Cost Estimates for the Proposed Land Management Regulation of Cement Kiln Dust, April 10, 1998	Capital Costs = 0 189 * (MT/yr) / (specific gravity of waste hauled) Annual O&M = 0 155 * (MT/yr) / (specific gravity of waste hauled)	1995	1 138	Capital Costs = 0 215 * (MT/yr) / (specific gravity of waste hauled) Annual O&M = 0 176 * (MT/yr) / (specific gravity of waste hauled)
6 Barge	Cost and Economic Impact Analysis of Listing Hazardous Wastes from the Petroleum Refining Industry (Sept 1995)	\$300/metric ton	1992	1 238	\$371/metric ton
7 Rail	Environmental Cost Handling Options and Solutions (ECHOS), <u>Environmental Remediation Cost Data-Unit Price</u> , 5 th Annual Edition, published by R S Means, 1999	Rail Boxcar Transport = \$3 00 per CWT Rail Tanker Transport = \$4 00 per CWT Rail Gondola Transport = \$5 00 per CWT Rail Flatbed Transport = \$6 00 per CWT CWT = 100 lbs	1999	1 025	Rail Boxcar Transport = \$3 08 per CWT Rail Tanker Transport = \$4 10 per CWT Rail Gondola Transport = \$5 13 per CWT Rail Flatbed Transport = \$6 15 per CWT CWT = 100 lbs

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
J. Miscellaneous Costs					
1 Application of Water to Unpaved Roads for Dust Control	Technical Background Document: Compliance Cost Estimates for the Proposed Land Management Regulation of Cement Kiln Dust, April 10, 1998	Annual O&M = \$52,540/yr assumes 300 days/yr and 10 miles of road sprayed per day	1995	1.138	Annual O&M = \$59,791/yr assumes 300 days/yr and 10 miles of road sprayed per day
2 Watering Truck with Auxiliaries	Technical Background Document: Compliance Cost Estimates for the Proposed Land Management Regulation of Cement Kiln Dust, April 10, 1998	Capital Cost = \$101,000	1995	1.138	Capital Cost = \$114,938
3 Water Supply	Technical Background Document: Compliance Cost Estimates for the Proposed Land Management Regulation of Cement Kiln Dust, April 10, 1998	\$2 per 1,000 gallons = \$0.02/gal	1995	1.138	\$2.30 per 1,000 gallons = \$0.023/gal
4 Site Security	ECHOS 1999	\$10.98/hr	1999	1.025	\$11.25/hr
5 Fencing	RACER 1999	Fencing: \$30.05/LF Signage: \$4.28/LF	1999	1.025	Fencing: \$30.70/LF Signage: \$4.39/LF

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
J. Miscellaneous Costs					
6 Land	<p>Technical Background Document: Compliance Cost Estimates for the Proposed Land Management Regulation of Cement Kiln Dust, April 10, 1998</p> <p>Regulatory Impact Analysis for Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Wastes, April 15, 1997 [source of the cost is from the CKD Monofill Model Cost Documentation, 1995]</p>	<p>\$1,000/acre</p> <p>\$2,500/acre</p>	1995	1.138	<p>\$1,138/acre</p> <p>\$2,845/acre</p>
7 Clearing Land	RACER 1999	\$4,152/acre	1999	1.025	\$4,256/acre
8 Oxygen and Carbon Monoxide Monitoring System	Estimating Costs for the Economic Benefits of RCRA Noncompliance (Sept 1997)	<p>Capital Costs: Lower Bound - \$51,286 Upper Bound - \$60,140</p> <p>Annual O&M: Clean Systems - \$29,936 Dirty Systems - \$36,488</p>	1997	1.076	<p>Capital Costs: Lower Bound - \$55,184 Upper Bound - \$64,711</p> <p>Annual O&M: Clean Systems - \$32,211 Dirty Systems - \$39,261</p>

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
K. Site Investigation					
1 RCRA Facility Investigation	RACER 1999	small = \$298,000 moderate = \$542,000 large = \$954,000 very large = \$1,955,000	1999	1 025	small = \$305,450 moderate = \$555,550 large = \$977,850 very large = \$2,003,875
2 Corrective Measures Study	RACER 1999	limited = \$94,000 moderate = \$132,000 complex = \$390,000 very complex = \$691,000	1999	1 025	limited = \$96,350 moderate = \$135,300 complex = \$399,750 very complex = \$708,275
3 Hydrogeologic Study	RACER 1999	small = \$134,000 moderate = \$242,000 large = \$462,000 very large = \$1,032,000	1999	1 025	small = \$137,350 moderate = \$248,050 large = \$473,550 very large = \$1,057,800
4 Groundwater Monitoring Well Installation	RACER 1999	Capital Cost = $118 * (\text{depth of well in feet}) + 1,040$	1999	1 025	Capital Cost = $121 * (\text{depth of well in feet}) + 1,066$
5 Groundwater Monitoring	RACER 1999	Sampling only (no analytical): Cost = $1.4D + 260$ Sampling and analytical for VOCs: Cost = $1.2D + 838$ SVOCs: Cost = $1.3D + 1,140$ Fuels: Cost = $1.3D + 1,180$ Metals: Cost = $1.2D + 973$ D = depth of sample in feet costs are per sample	1999	1 025	Sampling only (no analytical): Cost = $1.4D + 267$ Sampling and analytical for VOCs: Cost = $1.2D + 859$ SVOCs: Cost = $1.3D + 1,169$ Fuels: Cost = $1.3D + 1,210$ Metals: Cost = $1.2D + 997$ D = depth of sample in feet costs are per sample

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
K. Site Investigation					
6 Surface Water Monitoring	RACER 1999	Sampling only (no analytical): Cost = \$100/per sample Sampling and analytical for VOCs: Cost = \$671/per sample SVOCs: Cost = \$1,022/per sample Fuels: Cost = \$1,022/per sample Metals: Cost = \$815/per sample	1999	1.025	Sampling only (no analytical): Cost = \$103/per sample Sampling and analytical for VOCs: Cost = \$688/per sample SVOCs: Cost = \$1,048/per sample Fuels: Cost = \$1,048/per sample Metals: Cost = \$835/per sample

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
L. Corrective Action					
<i>1. Cap</i>					
1 1 Soil and Vegetative Cap	RACER 1999	Capital = 119,843*(area in acres)+17,196 General O&M = 1,492*(area in acres) + 1,167 Miscellaneous O&M = 2,615*(area in acres) + 390	1999	1 025	Capital = 122,839*(area in acres)+17,626 General O&M = 1,529*(area in acres) + 1,196 Miscellaneous O&M = 2,680*(area in acres) + 400
1 2 Composite Cap for Non-Hazardous Waste (Subtitle D)	RACER 1999	Capital = 314,707*(area in acres)+11,621 General O&M = 1,089*(area in acres) + 2360 Miscellaneous O&M = 6,583*(area in acres) + 764	1999	1 025	Capital = 322,575*(area in acres)+11,912 General O&M = 1,116*(area in acres) + 2,419 Miscellaneous O&M = 6,748*(area in acres) + 783
1 3 Composite Cap for Hazardous Waste (Subtitle C)	RACER 1999	Capital = 373,251*(area in acres)+10,844 General O&M = 1,498*(area in acres) + 844 Miscellaneous O&M = 7,793*(area in acres) + 870	1999	1 025	Capital = 382,582*(area in acres)+11,115 General O&M = 1,535*(area in acres) + 865 Miscellaneous O&M = 7,988*(area in acres) + 892

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
L. Corrective Action					
<i>2. Soil/Waste Removal</i>					
2.1 Excavation	Memo: Costs of the Phase IV LDRs on MGP Wastes, January 1998	\$15/ton	1998*	1.050	\$16/ton
2.2 Backfill	RACER 1999	\$9.71/cy	1999	1.025	\$9.95/cy
<i>3. Soil/Waste Treatment</i>					
3.1 In-Situ Stabilization	Memorandum to Paul Borst, EPA/OSW from Kevin Guiney, ICF Incorporated (Jan. 28, 1998), regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes. The reference for the in-situ stabilization cost presented in this memorandum is the EPA/OSW document entitled <i>Application of the Phase IV Land Disposal Restrictions to Contaminated Media: Costs, Cost Savings, and Economic Impacts</i> (Jan. 28, 1998).	\$54/ton	1997	1.076	\$58/ton
3.2 Soil Vapor Extraction	RACER 1999	See Appendix for cost lookup table as a function of area, depth and soil type	1999	1.025	See Appendix for cost lookup table as a function of area, depth and soil type
3.3 In-Situ Bioremediation	Memorandum to Paul Borst, EPA/OSW from Kevin Guiney, ICF Incorporated (Jan. 28, 1998), regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes	\$67/ton	1998*	1.050	\$70/ton

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
L. Corrective Action					
3 4 Ex-Situ Bioremediation	Memorandum to Paul Borst, EPA/OSW from Kevin Guiney, ICF Incorporated (Jan. 28, 1998), regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes. The reference for the ex-situ bioremediation cost presented in this memorandum is EPRI's <i>Guide to Site Restoration Strategies – Volume IV: Site Restoration</i> , Revision 1, October 1995.	Landfarming = \$41/ton Solid Phase Bioremediation = \$76/ton Slurry Phase Bioremediation = \$70-\$190/ton	1995*	1 138	Landfarming = \$47/ton Solid Phase Bioremediation = \$86/ton Slurry Phase Bioremediation = \$80-\$216/ton
3 5 Soil Washing	RACER 1999	Cost (25 tons/hour) = 78 (LCY) + 541,296 Cost (50 tons/hour) = 55 (LCY) + 598,863 Cost (100 tons/hour) = 41 (LCY) + 693,330 LCY = Loose cubic yards Note: Costs do not include treatment or disposal of remaining fines	1999	1 025	Cost (25 tons/hour) = 80 (LCY) + 554,828 Cost (50 tons/hour) = 56 (LCY) + 613,835 Cost (100 tons/hour) = 42 (LCY) + 710,663 LCY = Loose cubic yards Note: Costs do not include treatment or disposal of remaining fines

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
L. Corrective Action					
<i>4. Groundwater Removal/Containment</i>					
4.1 Groundwater Extraction Wells	RACER 1999	Depth to Groundwater 20 feet: Capital Cost (per well) = $0.10 Q^2 + 23Q + 11,970$ O&M (per well) = $12Q + 3,815$ Depth to Groundwater 100 feet: Capital Cost (per well) = $81Q + 21,063$ O&M (per well) = $30Q + 3,998$ Q = gallons per minute	1999	1.025	Depth to Groundwater 20 feet: Capital Cost (per well) = $0.10 Q^2 + 24Q + 12,269$ O&M (per well) = $12Q + 3,910$ Depth to Groundwater 100 feet: Capital Cost (per well) = $83Q + 21,590$ O&M (per well) = $31Q + 4,098$ Q = gallons per minute
4.2 French Drain	RACER 1999	Capital Cost = $111 L + 56,947$ O&M Cost = $6 L + 2,671$ L = Length of Drain in Feet	1999	1.025	Capital Cost = $114 L + 58,371$ O&M Cost = $6 L + 2,738$ L = Length of Drain in Feet

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
L. Corrective Action					
4.3 Slurry Wall	RACER 1999	Capital for 20 feet deep wall = $147 L + 11,451$ Capital for 50 feet deep wall = $316 L + 30,493$ Capital for 80 feet deep wall = $587 L + 30,011$ O&M = $1,500 (L/100)$ L = Length of Wall in Feet	1999	1.025	Capital for 20 feet deep wall = $151 L + 11,737$ Capital for 50 feet deep wall = $324 L + 31,255$ Capital for 80 feet deep wall = $602 L + 30,761$ O&M = $1,538 (L/100)$ L = Length of Wall in Feet

* Presumed year of cost data. The source of cost data did not directly indicate the year the cost data is based upon. In these cases, a year of data is assumed from the date of the source document or references within the source document.

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
M. Labor Wage Rates					
1 Unskilled Labor	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$21 50/hr Racer with multiplier: \$37 98/hr Bureau no multiplier: \$11 28/hr Bureau with multiplier: \$19 97/hr	1999	1 025	Racer no multiplier: \$22 04/hr Racer with multiplier: \$38 93/hr Bureau no multiplier: \$11 56/hr Bureau with multiplier: \$20 47/hr
2 Operator	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$21 60/hr Racer with multiplier: \$38 15/hr Bureau no multiplier: \$15 70/hr Bureau with multiplier: \$27 78/hr	1999	1 025	Racer no multiplier: \$22 14/hr Racer with multiplier: \$39 10/hr Bureau no multiplier: \$16 09/hr Bureau with multiplier: \$28 47/hr
3 Technician	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$14 43/hr Racer with multiplier: \$46 85/hr Bureau no multiplier: \$19 03/hr Bureau with multiplier: \$60 89/hr	1999	1 025	Racer no multiplier: \$14 79/hr Racer with multiplier: \$48 02/hr Bureau no multiplier: \$19 51/hr Bureau with multiplier: \$62 41/hr
4 Professional (e g , Engineer, Hydrogeologist)	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$32 35/hr Racer with multiplier: \$105 03/hr Bureau no multiplier: \$27 52/hr Bureau with multiplier: \$88 05/hr	1999	1 025	Racer no multiplier: \$33 16/hr Racer with multiplier: \$107 66/hr Bureau no multiplier: \$28 21/hr Bureau with multiplier: \$90 25/hr
5 Manager	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$24 38/hr Racer with multiplier: \$79 18/hr Bureau no multiplier: \$34 67/hr Bureau with multiplier: \$110 95/hr	1999	1 025	Racer no multiplier: \$24 99/hr Racer with multiplier: \$81 16/hr Bureau no multiplier: \$35 54/hr Bureau with multiplier: \$113 72/hr
6 Clerical	RACER 1999 and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "	Racer no multiplier: \$12 45/hr Racer with multiplier: \$40 40/hr Bureau no multiplier: \$13 57/hr Bureau with multiplier: \$43 44/hr	1999	1 025	Racer no multiplier: \$12 76/hr Racer with multiplier: \$41 41/hr Bureau no multiplier: \$13 91/hr Bureau with multiplier: \$44 53/hr

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
M. Labor Wage Rates					
7 Attorney	The U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997"	Bureau no multiplier: \$36 41/hr Bureau with multiplier: \$116 53/hr	1999	1 025	Bureau no multiplier: \$37 32/hr Bureau with multiplier: \$119 44/hr

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
N. Analytical (Waste Chemical Constituent Sampling & Analysis)					
1 Sampling Cost	RACER 1999 and DPRA Environmental estimate	\$41/sample	1999	1 025	\$42/sample
2 Priority 17 Metals	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$170 63/sample (excluding markups)	2000	1 000	\$170 63/sample (excluding markups)
3 RCRA Metals	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$89 00/sample (excluding markups)	2000	1 000	\$89 00/sample (excluding markups)
4 EP Toxicity Metals	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$194 00/sample (excluding markups)	2000	1 000	\$194 00/sample (excluding markups)
5 Pesticides/PCBs	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$175 90/sample (excluding markups)	2000	1 000	\$175 90/sample (excluding markups)
6 Volatile Organics	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$97 50/sample (excluding markups)	2000	1 000	\$97 50/sample (excluding markups)
7 BTEX/MTBE	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$59 58/sample (excluding markups)	2000	1 000	\$59 58/sample (excluding markups)
8 BTEX/MTBE (GC/MS)	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$64 00/sample (excluding markups)	2000	1 000	\$64 00/sample (excluding markups)
9 Chlorinated Hydrocarbons	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$198 33/sample (excluding markups)	2000	1 000	\$198 33/sample (excluding markups)
10 Non-Halogenated Volatile Organics	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$110 00/sample (excluding markups)	2000	1 000	\$110 00/sample (excluding markups)

Type of Cost Item	Sources of Cost/ Pricing Data	Format of Cost Data	Year of Data	Update Factor	Updated Cost (2000\$)
N. Analytical (Waste Chemical Constituent Sampling & Analysis)					
11 PAHs	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$105 30/sample (excluding markups)	2000	1 000	\$105 30/sample (excluding markups)
12 Base Neutral & Acid Extractable Organics	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$317 10/sample (excluding markups)	2000	1 000	\$317 10/sample (excluding markups)
13 TCLP Extraction Only	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$68 96/sample (excluding markups)	2000	1 000	\$68 96/sample (excluding markups)
14 TCLP Full	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$791 26/sample (excluding markups)	2000	1 000	\$791 26/sample (excluding markups)
15 TCLP Full (less pesticides/herbicides)	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$555 98/sample (excluding markups)	2000	1 000	\$555 98/sample (excluding markups)
16 Permeability Test	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$145 69/sample (excluding markups)	2000	1 000	\$145 69/sample (excluding markups)
17 Cyanide Total	Nine sources including RACER 1999 and vendor quotes (see appendix)	\$32 17/sample (excluding markups)	2000	1 000	\$32 17/sample (excluding markups)

APPENDICES

(Background Data, Computations & References)

Appendix A-3

Permitting and RCRA Administrative Costs: Recording and Record Keeping for RCRA Part 257

Source

Supporting Statement for Continuing EPA Information Collection Request 1745 02, Criteria for Classification for Solid Waste Disposal Facilities and Practices (RCRA Part 257), February 1999

Application (range)

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing, and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data bases; complete and review the collection of information; and transmit or otherwise disclose information.

Assumptions and Limitations

Respondent Hourly Rates:

Legal	\$86 00
Managerial	\$65 00
Technical	\$43 00
Clerical	\$22 00

Agency/State Hourly Rates:

Legal	\$56 00
Managerial	\$36 00
Technical	\$25 00
Clerical	\$15 00

State Recordkeeping/Reporting Cost Burden:

Annual Locations Restrictions:

0 Notifications X ((\$25 00 (1 Technical Hour)) + (\$37 50 (2 5 Clerical Hours))) = \$0

One-Time Location Restrictions:

2 Notifications X ((\$25 00 (1 Technical Hour)) + (\$37 50 (2 5 Clerical Hours))) = \$125

Annual Groundwater Monitoring and Corrective Action:

196 Notifications X ((\$25 00 (1 Technical Hour)) + (\$37 50 (2 5 Clerical Hours))) = \$12,250

One-Time Groundwater Monitoring and Corrective Action:

12 Notifications X ((\$25 00 (1 Technical Hour)) + (\$37 50 (2 5 Clerical Hours))) = \$750

Respondent Recordkeeping/Reporting Cost Burden:

Respondent means the number of municipal solid waste landfills that receive hazardous wastes from conditionally exempt small quantity generators (CESQGs).

Annual Recordkeeping Burden and Cost:

Activity	No. of Respondents	Hours/Cost Per Year
Floodplains - 257 8	0	0
Wetlands - 257 9	0	0
No Migration Petition - 257 21(b)	0	0
Small and Remote Facilities - 257 21(h)	0	0
Small and Remote Facilities - 257 21(i)	0	0
Establish GWM System - 257 23	0	0
Detection Monitoring Program - 257 24	154	x (\$43 (1 Technical Hour)) + (\$22 (1 Clerical Hour))) = \$10,010
Assessment Monitoring Program - 257 25	21	x (\$43 (1 Technical Hour)) + (\$22 (1 Clerical Hour))) = \$1,365
Selection of Remedy - 257 27	21	x (\$129 (3 Technical Hours)) + (\$66 (3 Clerical Hours))) = \$4,095
Recordkeeping Requirements - 257 30	0	0
Total	196	476/\$15,470

One-Time Recordkeeping Burden and Cost:

Activity	No. of Respondents	Hours/Cost Per Year
----------	--------------------	---------------------

Floodplains - 257 8	2	x	(\$130 (2 Managerial Hours)) + (\$172 (4 Technical Hours)) + (\$88 (4 Clerical Hours))) = \$780
Wetlands - 257 9	0		0
No Migration Petition - 257 21(b)	1	x	(\$43 (1 Technical Hour)) + (\$22 (1 Clerical Hour))) = \$65
Small and Remote Facilities - 257 21(h)	3	x	(\$130 (2 Managerial Hours)) + (\$129 (3 Technical Hours)) + (\$110 (5 Clerical Hours))) = \$1,107
Small and Remote Facilities - 257 21(i)	0		0
Establish GWM System - 257 23	8	x	(\$129 (3 Technical Hours)) + (\$66 (3 Clerical Hours))) = \$1,560
Detection Monitoring Program - 257 24	0		0
Assessment Monitoring Program - 257 25	0		0
Selection of Remedy - 257 27	0		0
Recordkeeping Requirements - 257 30	1	x	(\$130 (2 Managerial Hours)) + (\$172 (4 Technical Hours)) + (\$88 (4 Clerical Hours))) = \$390
Total	15		110/\$3,902

Annual Reporting Burden and Cost:

<u>Activity</u>	<u>No of Respondents</u>		<u>Hours/Cost Per Year</u>
Floodplains - 257 8	0		0
Wetlands - 257 9	0		0
No Migration Petition - 257 21(b)	0		0
Small and Remote Facilities - 257 21(h)	0		0
Small and Remote Facilities - 257 21(i)	0		0
Establish GWM System - 257 23	0		0
Detection Monitoring Program - 257 24	154	x	(\$390 (6 Managerial Hours)) + (\$516 (12 Technical Hours)) + (\$308 (14 Clerical Hours))) = \$186,956
Assessment Monitoring Program - 257 25	21	x	(\$172 (2 Legal Hours)) + (\$390 (6 Managerial Hours)) + (\$516 (12 Technical Hours)) + (\$264 (12 Clerical Hours))) = \$28,182
Selection of Remedy - 257 27	21	x	(\$860 (10 Legal Hours)) + (\$1,950 (30 Managerial Hours)) + (\$1,720 (40 Technical Hours)) + (\$2,640 (120 Clerical Hours))) = \$150,570
Recordkeeping Requirements - 257 30	0		0
Total	196		9,800/\$365,708

One-Time Reporting Burden and Cost:

<u>Activity</u>	<u>No of Respondents</u>		<u>Hours/Cost Per Year</u>
Floodplains - 257 8	2	x	(\$43 (1 Technical Hour)) + (\$22 (1 Clerical Hours))) = \$130
Wetlands - 257 9	0		0
No Migration Petition - 257 21(b)	1	x	(\$430 (5 Legal Hours)) + (\$1,300 (20 Managerial Hours)) + (\$2,580 (60 Technical Hours)) + (\$330 (15 Clerical Hours))) = \$4,640
Small and Remote Facilities - 257 21(h)	3	x	(\$43 (1 Technical Hour)) + (\$22 (1 Clerical Hour))) = \$198
Small and Remote Facilities - 257 21(i)	0		0
Establish GWM System - 257 23	8	x	(\$172 (2 Legal Hours)) + (\$325 (5 Managerial Hours)) + (\$473 (11 Technical Hours)) + (\$44 (2 Clerical Hours))) = \$8,112
Detection Monitoring Program - 257 24	0		0
Assessment Monitoring Program - 257 25	0		0
Selection of Remedy - 257 27	0		0
Recordkeeping Requirements - 257 30	0		0
Total	14		270/\$13,080

Costs

State Reporting and Recordkeeping Burden

Annual Burden		One-Time Burden	
Hours	Costs	Hours	Costs
66	\$12,250	49	\$875

Respondent Reporting and Recordkeeping Burden

Annual Burden		One-Time Burden	
Hours	Costs	Hours	Costs
10,276	\$381,178	380	\$16,982

Total Estimated Burden

Annual Burden		One-Time Burden	
Hours	Costs	Hours	Costs
10,962	\$393,428	429	\$17,857

Appendix A-4

Permitting and RCRA Administrative Costs: Waste Stream Notification

Source

Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes, Regulatory Impact Analysis, April 30, 1998

Application (range)

These costs are derived from the Regulatory Impact Analysis for mineral processing wastes no longer exempt from Subtitle C requirements under the Bevill Exemption. Previously exempt Bevill mineral processing wastes destined for disposal need to be treated to meet RCRA Universal Treatment Standards (UTS) before management or disposal in a land-based unit.

Assumptions and Limitations

- 15 EPA assumes that each facility recycling a waste stream would incur a one time notification cost of \$100.¹
- 16 If a facility is partially recycling a waste stream and partially disposing of it, the facility would incur the one time notification cost of \$100 plus a one time waste analysis plan cost of \$935 as well as an annual sampling cost of \$470.

Costs

One-time notification cost = \$100

Appendix A-5

Permitting and RCRA Administrative Costs: Waste Analysis Plan

Source

Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes, Regulatory Impact Analysis, April 30, 1998

Application (range)

These costs are derived from the Regulatory Impact Analysis for mineral processing wastes no longer exempt from Subtitle C requirements under the Bevill Exemption. Previously exempt Bevill mineral processing wastes destined for disposal need to be treated to meet RCRA Universal Treatment Standards (UTS) before management or disposal in a land-based unit.

Assumptions and Limitations

- 1 EPA assumes that each facility disposing of a waste would incur a one time waste analysis plan cost of \$935 as well as an annual sampling cost of \$470.²
- 2 If a facility is partially recycling a waste stream and partially disposing of it, the facility would incur the two aforementioned costs plus a one-time notification cost of \$100.
- 3 EPA annualized the one-time costs for each waste stream and added the annual sampling costs to determine the total sector administrative costs.

Costs

One-time waste analysis plan cost = \$935

Annual sampling cost = \$470

¹Costs are derived from *Supporting Statement for EPA Information Collection Request 1442.15 Land Disposal Restrictions - Phase IV: Treatment Standards for Wastes from Toxicity Characteristic Metals, Mineral Processing Secondary Materials, and the Exclusion of Recycled Wood Preserving Wastewaters*, April 1998.

²Costs are derived from *Supporting Statement for EPA Information Collection Request 1442.15 Land Disposal Restrictions - Phase IV: Treatment Standards for Wastes from Toxicity Characteristic Metals, Mineral Processing Secondary Materials, and the Exclusion of Recycled Wood Preserving Wastewaters*, April 1998.

Permitting and RCRA Administrative Costs: OSHA TrainingSource*Estimating Costs for the Economic Benefits of RCRA Noncompliance*, September 1997Application (range)

OSHA training costs apply to training requirements including RCRA-required training, OSHA-required training for RCRA treatment, storage and disposal (TSD) facilities, and other training, which, depending on the facility, may be part of a facility training program

U S EPA small quantity generator (SQG) regulations do not specify or give additional guidance on training requirements Training for SQG facilities is generally less detailed than for Part 264/265 facilities Specific regulatory requirements for personnel training under RCRA Subtitle C include:

- 40 CFR 262 34(d)(5) for SQGs;
- 40 CFR 262 34(a)(4) for Large Quantity Generators (LQGs);
- 40 CFR 264 16 for permitted TSD facilities; and
- 40 CFR 265 16 for interim status facilities

Assumptions and Limitations

- 1 The training costs for compliance with a typical 40 CFR Part 264 facility are approximately the same as for a Part 265 facility, and by extension, a LQG facility
- 2 It is a common practice in the hazardous waste industry to structure training courses to meet the requirements of both RCRA (40 CFR 264/265) and OSHA (1910 120)
- 3 Costs associated with providing owner/operator-developed training are approximately the same as those for hiring a local consulting firm to provide training
- 4 The regulatory-required training represents the minimum training at a facility; additional on-the-job or classroom training is typically provided to employees having specialized technical responsibilities (e g , equipment operator, hazardous waste technician) or supervisory responsibilities
- 5 Costs of providing training documentation are included in the training provider costs
- 6 The facility will have administrative and clerical support available for training records maintenance and management The cost estimates reflect that records management is performed by the facility
- 7 The wage rates and the assumptions used to calculate the training costs include (1997\$):

General Facility Laborer	\$ 30/hr
Equipment Operator	\$ 40/hr
Chemist	\$ 50/hr
Supervisor	\$142/hr
Engineer	\$103/hr
- 8 Labor costs represent costs for time away from work at basic salary rate
- 9 Training hours represent the number of hours devoted to lecture, leaning activities, small group work sessions, demonstration, evaluations, or hands-on experience
- 10 Records Management costs (\$100), represent additional training costs associated with each job

Costs*Initial Training Costs – 24 TSD and On-The-Job (OTJ) Training (1997\$)*

General Facility Laborer	(15 hours training and 24 hours labor + \$100 Records Management)	\$ 1,270
Equipment Operator	(22 5 hours training and 48 hours labor + \$100 Records Management)	\$ 2,920
Chemist	(15 hours training and 40 hours labor + \$100 Records Management)	\$ 2,850
Supervisor	(8 45 hours training and 40 hours labor + \$100 Records Management)	\$ 6,980
Engineer	(8 74 hours training and 40 hours labor + \$100 Records Management)	<u>\$ 5,120</u>
		\$19,140

Annual Training Costs - 8 Hour Annual (1997\$)

General Facility Laborer	(5 hours training and 8 hours labor + \$100 Records Management)	\$ 970
Equipment Operator	(3 75 hours training and 8 hours labor + \$100 Records Management)	\$ 570
Chemist	(3 hours training and 8 hours labor + \$100 Records Management)	\$ 650
Supervisor	(1 1 hour training and 8 hours labor + \$100 Records Management)	\$1,386
Engineer	(1 5 hours training and 8 hours labor + \$100 Records Management)	<u>\$1,074</u>
		\$4,650

Permitting and RCRA Administrative Costs: Environmental AuditSource

Estimating Costs for the Economic Benefits of RCRA Noncompliance, September 1997

Application (range)

These costs are applicable to small- and medium-sized Generator Facilities and small- and medium-sized Treatment, Storage, and Disposal Facilities (TSDs)

Assumptions and Limitations

- 1 The cost estimates represent small- to medium-sized facilities since these types of facilities are more likely to be non-notifiers and, as a result, have multiple RCRA violations
- 2 Costs are based on the assumption that an industrial facility decides to initiate an audit program and hires an environmental consulting firm to conduct the audit. There is no regulatory agency involvement in this audit.
- 3 The costs are only applicable to the hazardous and solid waste regulations. The environmental audit costs provided here are not intended to be a comprehensive facility audit, which would look at compliance with all environmental regulations, in addition to those for hazardous and solid waste.
- 4 Lower bound, upper bound, and typical cost estimates are developed because the time required to conduct an environmental audit and develop a RCRA implementation plan is dependent on the size of the facility, the number of hazardous waste streams, and the waste management technology.
- 5 Hour estimates for conducting audits and developing RCRA implementation plans are based on consultant experience in environmental audits, RCRA Facility Assessments, and other similar EPA-related inspections.
- 6 The wage rates and the assumptions used to calculate the wage rates include (1997\$):

Facility Labor:	President	\$137/hr
	Plant Manager	\$118/hr
	Facility Engineer	\$ 71/hr
	Environmental Coordinator	\$ 51/hr
	Plant Laborer	\$ 23/hr
	Clerical	\$ 21/hr
Consultant/Outside Firms Labor:	Attorney	\$ 99/hr
	Project Manager	\$142/hr
	Paralegal	\$ 38/hr
	Project Engineer	\$103/hr
	Engineering Assistant	\$ 53/hr
	Drafting	\$ 49/hr
	Field Technician	\$ 40/hr
	Clerical	\$ 26/hr
- 7 Costs are not included for equipment, travel, per diem, and other direct expenses because of their site and project-specific nature.
- 8 The initial and on-going environmental compliance audits include several phases including:
 - Define Scope of Audit
 - Collect and Review Preliminary Information
 - Prepare for Site Inspection
 - Conduct Site Inspection
 - Prepare and Review Audit Report
- 9 The development of an Implementation Plan for a Generator Facility include the following components:
 - Executive Summary
 - Objectives of Implementation Plan
 - Description of Facility and Operations (includes 3 subcomponents)
 - Alternatives for Waste Management (includes 1 subcomponent)
 - Compliance Requirements (includes 14 subcomponents)
 - Cost Estimate for Implementation Components
 - Conclusions and Recommendations
 - Other Costs and Clerical Support
- 10 The development of an Implementation Plan for a TSD Facility include the following components:
 - Executive Summary
 - Objectives of Implementation Plan

- Description of Facility and Operations (includes 3 subcomponents)
- Alternatives for Waste Management (includes 2 subcomponents)
- Compliance Requirements (includes 30 subcomponents)
- Cost Estimate for Implementation Components
- Conclusions and Recommendations
- Other Costs and Clerical Support

Costs

Environmental Audit Costs (1997\$)

	<u>Lower Bound Cost</u>	<u>Upper Bound Cost</u>	<u>Typical Cost</u>
Initial Audit	\$8,008 (130 hrs)	\$24,446 (383 hrs)	\$13,946 (220 hrs)
On-Going Audit	<u>\$5,156 (83 hrs)</u>	<u>\$17,655 (284 hrs)</u>	<u>\$ 8,910 (141 hrs)</u>
	\$13,164 (213 hrs)	\$42,101 (667 hrs)	\$22,856 (361 hrs)

Implementation Plan Costs (1997\$)

	<u>Lower Bound Cost</u>	<u>Upper Bound Cost</u>	<u>Typical Cost</u>
Generator	\$ 5,273 (56 7 hrs)	\$14,249 (153 9 hrs)	\$ 9,111 (98 6 hrs)
TSD	\$12,381 (128 3 hrs)	\$35,844 (371 3 hrs)	\$23,867 (247 1 hrs)

Appendix A-14

Permitting and RCRA Administrative Costs: Environmental Damage Liability Insurance

Source

Revised Estimation of Baseline Costs for Hazardous Waste Combustors for Final MACT Rule, August 20, 1998 (Appendix B of the Assessment of the Potential Costs, Benefits, & Other Impacts of the Hazardous Waste Combustion MACT Standards Final Rule, July 1999)

Application (range)

These costs apply to hazardous waste combustion facilities including:

- Hazardous Waste Incinerators – commercial, on-site, and government
- Industrial Kilns – Cement Kilns and Lightweight Aggregate Kilns

Assumptions and Limitations

- 1 Assumes the minimum coverage required by RCRA of \$4 million per occurrence, \$8 million total, and a \$100,000 deductible
- 2 The cost is not incremental to on-site and government incinerators because these facilities are required to carry this insurance because of hazardous waste generation and storage regulations

Costs

The yearly premium for environmental damage liability insurance is \$150,000 per year

Appendix A-17

Permitting and RCRA Administrative Costs: Compliance Testing/Incinerator Trial Burn

Source

Revised Estimation of Baseline Costs for Hazardous Waste Combustors for Final MACT Rule, August 20, 1998 (Appendix B of the Assessment of the Potential Costs, Benefits, & Other Impacts of the Hazardous Waste Combustion MACT Standards Final Rule, July 1999)

Application (range)

These costs are to conduct a trial burn to obtain or renew a Part B Permit or obtain interim status from the EPA

Assumptions and Limitations

- 1 Assumed to be required every 5 years

Costs

The cost of about \$300,000 per trial burn is based on current testing firm vendor estimates and is assumed to be required every 5 years

Appendix B-1.1

Waste Pre-Treatment: Stabilization, Subtitle C, On-site

Source

Memorandum from ICF Consulting Group to EPA, regarding Cement and Trisodium Phosphate Stabilization Cost Functions, September 15, 1997. This document cites two primary sources used in developing the cost estimates: "Stabilization of Hazardous Waste," Chemtech, Jesse Conners, December 1993, and Unit Operations in Environmental Engineering, Robert Noyes, Ed., Noyes Publications, 1994. In addition, two internet sources provide general information on types and sizes of equipment used in the stabilization process: Gears Inc (www.gearsinc.com) and National Technology Transfer Center (www.nttc.edu)

Application (range)

The cost equation is based on a waste quantity range of 900 through 300,000 metric tons per year, with a unit cost range of \$153/mt to \$48/mt, respectively

Assumptions and Limitations

The following data and assumptions were used to develop the cost for stabilization processes at eight different flow rates:

- 1 The waste has a solids content of 60 percent;
- 2 The ratio of cement to waste to water is 36:100:10 by weight, based on information from the Portland Cement Association, and McCutcheon Enterprise;
- 3 Five days worth of water and cement would be stored;
- 4 The density of cement is 85 lbs/ft³ (which is the density of crushed furnace slag);
- 5 The front end loader can move 20 shovelfuls per hour;
- 6 The front end loader must be rented for full days. The number of days of operation was calculated by assuming that the facility operator would only run the waste treatment equipment when enough waste was available for a full day's operation. This assumption maximizes use of equipment while ensuring that waste is treated within 90 days of generation;
- 7 Freight and installation of major equipment would be approximately 30 percent of the purchase price, if not included in the price quotation
- 8 Operating time is based on 300 days per year, up to 10 hours per day. In some cases, facilities may opt to operate fewer days per year to run equipment at full capacity;
- 9 The amount of solidified waste disposed of in a landfill is 1.46 times the quantity, on a weight basis, of the waste generated. The density of this stabilized waste is 110 lb/ft³;
- 10 Stabilization is performed in a less-than-90 day accumulation treatment tank (40 CFR 262.34), so that a RCRA permit is not required

Costs

Unit cost of \$48 to \$153 per metric ton is based on a waste quantity range of 900 to 300,000 metric tons per year. One metric ton is equivalent to 1.102 short tons (english).

Waste Pre-Treatment: Stabilization, Subtitle C, Off-site

Source

Hazardous Waste Resource Center - January 2000 Incinerator and Landfill Cost Data

<http://www.etc.org/costsurvey3.cfm>

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 The average unit cost is the difference between the cost of Subtitle C landfill disposal with stabilization and the cost of Subtitle C landfill disposal without stabilization
- 2 The average unit costs presented were calculated based on a survey of an unknown number of companies conducted between July and December 1999
- 3 Transportation costs are not included
- 4 One drum equals 500 lbs

Costs

The average unit cost for bulk waste is \$87 per ton, the average unit cost for drummed waste is \$38 per drum, and the average unit cost for soil is \$84 per ton

Appendix B-2.1

Waste Pre-Treatment: Dewatering

Source

Memo: Documentation for Phase IV LDR Cost Equations July 1997

Application (range)

See tables below

Assumptions and Limitations

See tables below

Costs

DEWATERING DESIGN SPECIFICATIONS

Small System

Description	2,000 gpd	5,000 gpd	50,000 gpd	250,000 gpd
Cavity Pump	0 75 hp 5 gpm	2 hp 10 gpm	3 hp 20 gpm	5 hp 80 gpm
Centrifuge	7 5 hp	7 5 hp	10 hp	25 hp
Polymer Feed System	0 5 hp	0 5 hp	1 hp	1 hp
Holding Tank	1,500 gal	1,500 gal	5,000 gal	10,000 gal
Centrate Pump	0 5 hp 3 gpm	0 5 hp 3 gpm	0 75 hp 20 gpm	2 hp 80 gpm

April 1993 Design

DEWATERING DESIGN SPECIFICATIONS

Large System

Description	250,000 gpd	600,000 gpd	2,500,000 gpd	5,200,000 gpd
Cavity Pump	5 hp 80 gpm	10 hp 126 gpm	15 hp (2) 260 gpm	15 hp (4) 260 gpm
Centrifuge	25 hp	40 hp	80 hp (2)	80 hp (4)
Polymer Feed System	1 hp	1 hp	2 5 hp	7 5 hp
Holding Tank	10,000 gal	10,000 gal	20,000 gal	40,000 gal
Centrate Pump	2 hp 80 gpm	3 hp 139 gpm	5 hp (2) 250 gpm	10 hp (2) 510 gpm

April 1993 Design

DEWATERING OPERATING SPECIFICATIONS

Small System

Description	2,000 gpd	5,000 gpd	50,000 gpd	250,000 gpd
Insurance and G&A	2% of Capital	2% of Capital	2% of Capital	2% of Capital
Maintenance Materials	3% of Capital	3% of Capital	3% of Capital	3% of Capital
Labor	530 hr \$29 71 /hr	730 hr \$29 71 /hr	1,460 hr \$29 71 /hr	1,825 hr \$29 71 /hr
Supervisor	53 hr \$44 57 /hr	73 hr \$44 57 /hr	146 hr \$44 57 /hr	183 hr \$44 57 /hr
Energy	16,970 hp-hr \$0 04 /hp-hr	42,360 hp-hr \$0 04 /hp-hr	81,770 hp-hr \$0 04 /hp-hr	220,375 hp-hr \$0 04 /hp-hr
Polymer	73 ton \$25 58 /ton	182 ton \$25 58 /ton	475 ton \$25 58 /ton	3,036 ton \$25 58 /ton
Centrifuge Rebuild	6 hr \$158 /hr	16 hr \$158 /hr	58 hr \$158 /hr	58 hr \$158 /hr

DEWATERING OPERATING SPECIFICATIONS

Large System

Description	250,000 gpd	600,000 gpd	2,500,000 gpd	5,200,000 gpd
Insurance and G&A	2% of Capital	2% of Capital	2% of Capital	2% of Capital
Maintenance Materials	3% of Capital	3% of Capital	3% of Capital	3% of Capital
Labor	1,825 hr \$29 71 /hr	3,285 hr \$29 71 /hr	6,570 hr \$29 71 /hr	13,140 hr \$29 71 /hr
Supervisor	183 hr \$44 57 /hr	328 hr \$44 57 /hr	657 hr \$44 57 /hr	1,310 hr \$44 57 /hr
Energy	220,375 hp-hr \$0 04 /hp-hr	525,469 hp-hr \$0 04 /hp-hr	2,077,748 hp-hr \$0 04 /hp-hr	4,042,895 hp-hr \$0 04 /hp-hr
Polymer	3,036 ton \$25 58 /ton	7,287 ton \$25 58 /ton	30,361 ton \$25 58 /ton	63,127 ton \$25 58 /ton
Centrifuge Rebuild	58 hr \$158 /hr	87 hr \$158 /hr	175 hr \$158 /hr	349 hr \$158 /hr

April 1993 Design, 1995\$

DEWATERING CAPITAL COSTS

Small System

Description	2,000 gpd	5,000 gpd	50,000 gpd	250,000 gpd
Cavity Pump	\$2,122	\$3,105	\$4,658	\$8,559
Centrifuge	\$77,108	\$83,835	\$142,520	\$206,586
Polymer Feed System	\$7,245	\$7,245	\$20,855	\$27,583
Holding Tank	\$9,315	\$9,315	\$19,147	\$25,875
Centrate Pump	\$580	\$580	\$978	\$2,774
Roll-off Bins	\$1,035	\$2,070	\$4,140	\$8,280
Subtotal	\$97,405	\$106,150	\$192,298	\$279,657
Piping (8%)	\$7,792	\$8,492	\$15,384	\$22,373
Instrumentation (5%)	\$4,870	\$5,308	\$9,615	\$13,983
Electrical (3%)	\$2,922	\$3,184	\$5,769	\$8,390
Subtotal	\$112,989	\$123,134	\$223,066	\$324,403
Overhead and Profit (15%)	\$16,948	\$18,470	\$33,460	\$48,660
Engineering Fees (17%)	\$19,208	\$20,933	\$37,921	\$55,149
Contingency (15%)	\$16,948	\$18,470	\$33,460	\$48,660
Total	\$166,093	\$181,007	\$327,907	\$476,872

April 1993 Design, 1995\$

DEWATERING CAPITAL COSTS

Large System

Description	250,000 gpd	600,000 gpd	2,500,000 gpd	5,200,000 gpd
Cavity Pump	\$8,559	\$11,954	\$33,079	\$66,157
Centrifuge	\$206,586	\$318,056	\$951,993	\$1,903,986

Description	250,000 gpd	600,000 gpd	2,500,000 gpd	5,200,000 gpd
Polymer Feed System	\$27,583	\$27,583	\$41,504	\$61,582
Holding Tank	\$25,875	\$25,875	\$37,570	\$54,648
Centrate Pump	\$2,774	\$3,726	\$7,866	\$10,557
Roll-off Bins	\$8,280	\$16,560	\$33,120	\$66,240
Subtotal	\$279,657	\$403,754	\$1,105,132	\$2,163,170
Piping (8%)	\$22,373	\$32,300	\$88,411	\$173,054
Instrumentation (5%)	\$13,983	\$20,188	\$55,257	\$108,159
Electrical (3%)	\$8,390	\$12,113	\$33,154	\$64,895
Subtotal	\$324,403	\$468,355	\$1,281,954	\$2,509,278
Overhead and Profit (15%)	\$48,660	\$70,253	\$192,293	\$376,392
Engineering Fees (17%)	\$55,149	\$79,620	\$217,932	\$426,577
Contingency (15%)	\$48,660	\$70,253	\$192,293	\$376,392
Total	\$476,872	\$688,481	\$1,884,472	\$3,688,639

April 1993 Design, 1995\$

DEWATERING O&M COSTS

Small System

Description	2,000 gpd	5,000 gpd	50,000 gpd	250,000 gpd
Insurance and G&A	\$3,300	\$3,600	\$6,700	\$9,600
Maintenance Materials	\$5,000	\$5,500	\$9,900	\$14,400
Labor	\$15,800	\$21,700	\$43,400	\$54,300
Supervisor	\$2,400	\$3,300	\$6,500	\$8,200
Energy	\$700	\$1,700	\$3,300	\$8,800
Polymer	\$1,900	\$4,700	\$12,200	\$77,700
Centrifuge Rebuild	\$1,000	\$2,500	\$9,300	\$9,300
Oil and Grease	\$1,100	\$1,100	\$1,100	\$1,100
Total	\$31,200	\$44,100	\$92,400	\$183,400

April 1993 Design, 1995\$

DEWATERING O&M COSTS

Large System

Description	250,000 gpd	600,000 gpd	2,500,000 gpd	5,200,000 gpd
Insurance and G&A	\$9,600	\$14,000	\$38,000	\$74,000
Maintenance Materials	\$14,400	\$21,000	\$57,000	\$111,000
Labor	\$54,300	\$98,000	\$195,000	\$391,000
Supervisor	\$8,200	\$14,000	\$30,000	\$59,000
Energy	\$8,800	\$21,000	\$83,000	\$160,000
Polymer	\$77,700	\$186,000	\$777,000	\$1,615,000
Centrifuge Rebuild	\$9,300	\$14,000	\$28,000	\$56,000

Oil and Grease	\$1,100	\$2,000	\$2,000	\$5,000
Total	\$183,400	\$370,000	\$1,210,000	\$2,471,000

April 1993 Design, 1995\$

DEWATERING CAPITAL COSTS

The following curve-fit equations were developed from the capital costs presented in the previous tables:

$$\begin{aligned} \$ &= 143,244 + 689 (\text{gpd})^{0.5} & 2,000 \text{ gpd} < 250,000 \\ \$ &= 297,045 + 0.65 (\text{gpd}) & 250,000 \text{ gpd} \leq 5,200,000 \end{aligned}$$

The cost equations that were required for Phase IV LDR dewatering have a different flowrate range than these equations and are expressed in terms of metric tons per years rather than gallons per day. With the exception of the lowest flowrate, the following costs are estimated using the above curve-fit equations:

Phase IV LDR Flowrate	Equivalent Flowrate	Capital Cost
351 MT/yr	274 gpd	not in equation range - assume \$40,000 based on engineering judgement
3,514 MT/yr	2,740 gpd	\$179,310
35,142 MT/yr	27,397 gpd	\$257,288
351,417 MT/yr	273,973 gpd	\$475,127

The following curve-fit equation was developed based on these costs for a more appropriate size range:

$$\$ = 95,354 + 664.48 Q^{0.5}, \text{ where } Q \text{ is the flowrate in MT/yr}$$

DEWATERING O&M COSTS

The following curve-fit equations were developed from the O&M costs presented in the previous tables:

$$\begin{aligned} \$ &= 18,560 + 330 (\text{gpd})^{0.5} & 2,000 \text{ gpd} < 250,000 \\ \$ &= 76,360 + 0.46 (\text{gpd}) & 250,000 \text{ gpd} \leq 5,200,000 \end{aligned}$$

The cost equations that were required for Phase IV LDR dewatering have a different flowrate range than these equations and are expressed in terms of metric tons per years rather than gallons per day. With the exception of the lowest flowrate, the following costs are estimated using the above curve-fit equations, assuming a 90 percent operating factor:

Phase IV LDR Flowrate	Equivalent Flowrate	O&M Cost
351 MT/yr	274 gpd	not in equation range - assume \$15,000 based on engineering judgement
3,514 MT/yr	2,740 gpd	\$32,250
35,142 MT/yr	27,397 gpd	\$65,864
351,417 MT/yr	273,973 gpd	\$182,149

The following curve-fit equation was developed based on these costs for a more appropriate size range:

$$\$ = 12,219 + 286.86 Q^{0.5}, \text{ where } Q \text{ is the flowrate in MT/yr}$$

Appendix B-2.2

Waste Pre-Treatment: Vitrification

Source

U S Environmental Protection Agency, Revised LDR Treatment Standards for Spent Aluminum Potliner (K088), prepared by DPRA Incorporated, March 1, 2000

Application (range)

The unit cost estimate is based on average commercial prices for vitrification; therefore, it is not applicable for extreme situations (i.e., very small or very large waste quantities). Unit cost is applicable for situations where a commercial vendor is hired to manage waste. The unit cost is not representative of a situation where a facility purchases, constructs and operates an on-site vitrification system.

Assumptions and Limitations

None provided

Costs

Assumed a commercial vitrification price of \$300 per ton based on the following data:

- \$300 per ton for in-situ soil vitrification (Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999);
- For a 3,000 ton per year vitrification system, NHW listed capital costs at \$1,000,000 and operating costs between \$150 and \$300 per ton (NHW Home Page, <http://www.qn.net/~nhw/nhwtoc.html>);
- GeoMelt listed commercial vitrification prices of between \$370 and \$420 per ton (GeoMelt Comparison with Alternative Technology Types, http://www.geomelt.com/geomeltnf_comparison_with_alternat.htm).

Appendix B-2.3

Waste Pre-Treatment: Crushing

Source

U S Environmental Protection Agency, Revised LDR Treatment Standards for Spent Aluminum Potliner (K088), report prepared by DPRA Incorporated, March 1, 2000
"Revised LDR Treatment Standards for Spent Aluminum Potliner (K088) Example Cost Calculations for Three Cases (Retrofit Commercial Off-Site Facility, Construct Commercial Off-Site Facility, Construct Noncommercial On-Site Facility)," table prepared by DPRA Incorporated, March 1, 2000

Application (range)

5,000 to 85,000 tons per year

Assumptions and Limitations

Crusher unit costs were developed by scaling a vendor cost estimate received from Nordberg, Inc. assuming a 7 percent interest rate on borrowed capital, a 7 percent discount rate (consistent with OMB Circular No. A-94, October, 1992), 10-year equipment life, 20-year plant life, and a 30 percent profit margin. Assumed asset equipment life of 10 years similar to mills used in mining. The 10-year equipment life estimate obtained from Peters and Timmerhaus, Plant Design and Economics for Chemical Engineers, 1980 McGraw-Hill Book Company, NY, p. 286. Capital costs were scaled by a factor of 0.6 and operation and maintenance costs were scaled by a factor of 0.9. The capital cost for a 10,950 ton per year hammer mill was quoted at \$144,000. The operating and maintenance cost for this size unit was quoted at \$180,000 per year.

Unit Costs:

5,000 tpy = \$26/ton/unit
10,000 tpy = \$24/ton/unit
30,000 tpy = \$21/ton/unit
55,000 tpy = \$19/ton/unit
85,000 tpy = \$18/ton/unit

Cost Equation:

unit cost = $(1.30 \text{ commercial profit factor}) * [(\$144,000 \text{ capital cost for a 10,950 ton per year unit}) * CRF_{10} * (\text{unit capacity in tons} / 10,950 \text{ ton unit})^{0.6} + (\$180,000 \text{ O\&M costs for 10,950 ton per year unit}) * (\text{unit capacity in tons} / 10,950 \text{ ton capacity unit})^{0.9} / (\text{unit capacity in tons})]$; where: 10-year Capital Recovery Factor (CRF_{10}) = 0.14238;

This equation converts to the following format:

$$\$/\text{yr} = 100 * (\text{unit capacity in tons per year})^{-0.4} + 54 * (\text{unit capacity in tons per year})^{0.1}$$

Appendix B-2.4

Waste Pre-Treatment: Milling

Sources

U S Environmental Protection Agency, Revised LDR Treatment Standards for Spent Aluminum Potliner (K088), prepared by DPRA Incorporated, March 1, 2000

“Revised LDR Treatment Standards for Spent Aluminum Potliner (K088) Example Cost Calculations for Three Cases (Retrofit Commercial Off-Site Facility, Construct Commercial Off-Site Facility, Construct Noncommercial On-Site Facility),” table prepared by DPRA Incorporated, March 1, 2000

Application (range)

5,000 to 85,000 tons per year

Assumptions and Limitations

Hammer mill unit costs were developed by scaling a vendor cost estimate (+200 mesh to 1" initial size) received from Nordberg, Inc assuming a 7 percent interest rate on borrowed capital, a 7 percent discount rate (consistent with OMB Circular No A-94, October, 1992), 10-year equipment life, 20-year plant life, and a 30 percent profit margin Assumed asset equipment life of 10 years similar to mills used in mining The 10-year equipment life estimate obtained from Peters and Timmerhaus, Plant Design and Economics for Chemical Engineers, 1980 McGraw-Hill Book Company, NY, p 286 Capital costs were scaled by a factor of 0.6 and operation and maintenance costs were scaled by a factor of 0.9 The capital cost for a 8,760 ton per year hammer mill was quoted at \$226,000 The operating and maintenance cost for this size unit was quoted at \$234,000 per year Impact milling costs are assumed to be similar to the crushing units

Unit Costs:

5,000 tpy	= \$43/ton
10,000 tpy	= \$39/ton
30,000 tpy	= \$34/ton
55,000 tpy	= \$31/ton
85,000 tpy	= \$30/ton

Cost Equation:

unit cost = (1.30 commercial profit factor) * [(\$226,000 capital cost for a 8,760 ton per year unit) * CRF₁₀ * (unit capacity in tons / 8,760 ton unit)^{0.6} + (\$234,000 O&M costs for 8,760 ton per year unit) * (unit capacity in tons / 8,760 ton capacity unit)^{0.9} / (unit capacity in tons)]; where: 10-year Capital Recovery Factor (CRF₁₀) = 0.14238;

This equation converts to the following format:

\$/ton = 180 * (unit capacity in tons per year)^{-0.4} + 86 * (unit capacity in tons per year)^{-0.1}

Appendix C-1.1

Solid/Sludge Disposal: Non-Hazardous Waste Landfill (Subtitle D): Industrial Waste, Off-Site

Source

Remediation Market Report, March 2000, Contaminated Soil Price Index

1999 Environmental Cost Handling Options and Solutions (ECHOS) Environmental Remediation Cost Data

Application (range)

The waste quantity range is dependent on the facility

Assumptions and Limitations

For petroleum-contaminated soil:

- 1 The weighted average unit cost is based on information provided by approximately 900 waste disposal facilities in 49 states surveyed by the publisher of the Remediation Market Report
- 2 The rates quoted by the facilities surveyed are for the disposal of non-hazardous petroleum contaminated soil
- 3 The rates quoted by the facilities surveyed are commercial rates, rather than residential rates
- 4 Transportation costs are not included

For solid bulk waste:

- 1 The rates are dependent upon the number of facilities surveyed by R S Means in their ECHOS cost database
- 2 Loading, containerization, overpacking, consolidation, compatibility testing, waste sampling, and transportation costs and state taxes and fees are not included

Costs

For petroleum-contaminated soil, the weighted average unit cost is \$30.10/ton

For non-hazardous solid bulk waste the unit cost is \$64.67/ton

Appendix C-1.3

Solid/Sludge Disposal: Non-Hazardous Waste Landfill (Subtitle D): Municipal Waste, Off-Site

Source

Solid Waste Digest, Volume 7, Number 8, August 1997, Solid Waste Price Index

Application (range)

The waste quantity range is dependent on the facility

Assumptions and Limitations

- 1 The weighted average unit cost is based on information provided by municipal solid waste disposal facilities in 48 states surveyed by the publisher of the Solid Waste Digest
- 2 The rates quoted by the facilities surveyed are for the disposal of non-residential and non-contract waste
- 3 The rates quoted by the facilities surveyed are commercial rates, rather than residential rates
- 4 Transportation costs are not included
- 5 Any sales taxes, surcharges, state licensing fees, or permit fees are included in reported figures

Costs

For municipal solid waste, the weighted average unit cost is \$37.02/ton (August 1997)

Appendix C-2.1

Solid/Sludge Disposal: Hazardous Waste Landfill (Subtitle C): With Stabilization, Off-Site

Source

Hazardous Waste Resource Center - January 2000 Incinerator and Landfill Cost Data

<http://www.etc.org/costsurvey3.cfm>

Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database *(For minimum disposal cost only)*

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 The average unit costs presented were calculated based on a survey of an unknown number of companies conducted between July and December 1999
- 2 Transportation costs are not included
- 3 One drum equals 500 lbs
- 4 A minimum charge is assumed for the disposal of waste. It is \$500 for drummed shipments and \$2,275 for bulk shipments requiring treatment or stabilization

Costs

The average unit cost for bulk waste is \$185 per ton, the average unit cost for drummed waste is \$118 per drum, and the average unit cost for soil is \$181 per ton

Appendix C-2.2

Solid/Sludge Disposal: Hazardous Waste Landfill (Subtitle C): Without Stabilization, Off-Site

Source

Hazardous Waste Resource Center - January 2000 Incinerator and Landfill Cost Data

<http://www.etc.org/costsurvey3.cfm>

Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database (*For minimum disposal cost only*)

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 The average unit costs presented were calculated based on a survey of an unknown number of companies conducted between July and December 1999
- 2 Transportation costs are not included
- 3 One drum equals 500 lbs
- 4 A minimum charge is assumed for the disposal of waste It is \$500 for drummed shipments and \$1,350 for bulk shipments

Costs

The average unit cost for bulk waste is \$98 per ton, the average unit cost for drummed waste is \$80 per drum, and the average unit cost for soil is \$97 per ton

Appendix C-3.1

Solid/Sludge Disposal: Low-Level Radioactive Waste Landfill: Mixed Waste, Off-Site

Source

Regulatory Impact Analysis: Relief from Regulatory Requirements for Storage and Disposal of Mixed Waste, Draft, July, 1999

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 Envirocare of Utah staff provided a cost estimate of \$100 per cubic foot for disposal of low-level radioactive mixed waste (LLMW) received from commercial generators, including all surcharges but excluding any costs associated with treatment
- 2 EPA assumed a new LLMW facility constructed elsewhere (i.e., in Barnwell, SC, or Richland, WA) would be 125% of the highest prices for low-level radioactive waste disposal (Barnwell) The resulting non-Envirocare assumed price is \$500 per cubic foot

Costs

Envirocare of Utah = \$100/cf

Chem-Nuclear, Inc., Barnwell, South Carolina = \$500/cf (if new disposal facility built)

US Ecology, Richland, Washington = \$500/cf (if new disposal facility built)

Appendix C-3.2

Solid/Sludge Disposal: Low-Level Radioactive Waste Landfill: Non-Mixed Waste, Off-Site

Source

Regulatory Impact Analysis: Relief from Regulatory Requirements for Storage and Disposal of Mixed Waste, Draft, July, 1999

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 Envirocare of Utah staff provided a cost estimate of less than \$80 per cubic foot for disposal of low-level radioactive waste (LLW) assuming the waste is similar in quantity and other characteristics to wastes usually received from NRC licensees
- 2 Based on typical characteristics of incinerator ash, EPA estimated that the Chem-Nuclear, Inc facility in Barnwell, SC would charge \$400 per cubic foot
- 3 U S Ecology in Richland, WA bases its price on waste volume and radioactivity levels and charges per shipment and per container It includes local taxes and fees Based on similar waste characteristics assumed for Barnwell, EPA estimated that U S Ecology would charge \$290 per cubic foot

Costs

Envirocare of Utah =	\$100/cf
Chem-Nuclear, Inc , Barnwell, South Carolina =	\$290/cf
U S Ecology, Richland, Washington =	\$400/cf

Appendix D-2

Non-Hazardous POTW Discharge (e.g., Leachate Disposal)

Source

U S Environmental Protection Agency, Addendum to the Background Document for the Cost And Economic Impact Analysis of Listing Four Petroleum Refining Wastes As Hazardous under RCRA Subtitle C: Economic Impact Analysis of the Petroleum Hazardous Waste Listing (K169-K172) On Leachate Management Costs For Municipal and Industrial Waste Landfills Containing Petroleum Wastes, prepared by DPRA Incorporated, February 5, 1999

Application (range)

The unit cost estimate reflects the average commercial prices for off-site liquid waste disposal at a POTW; therefore, it is not applicable for extreme situations (i e , very small or very large waste quantities or extremely easy or extremely difficult waste to treat)

Assumptions and Limitations

Liquid waste (leachate) management cost data were provided by BFI and WMX in comments received by the RCRA Docket Information Center, Office of Solid Waste pursuant to the Notice of Data Availability and Request for Comment on the newly listed Petroleum Refinery Wastes (K169-K172) These data were used to develop an average unit cost to truck leachate to an off-site POTW (\$0.07/gallon) It does not include loading and transportation costs

Costs

Assumed \$0.07 per gallon to treat nonhazardous liquid waste trucked to an off-site POTW Assumed \$1.50 per 1,000 gallons as a direct discharge fee to a POTW (R S Means, Environmental Remediation Cost Data, 4th Annual Edition, 1998)

Appendix D-3

Hazardous POTW/TSD Discharge/Disposal (e.g., Leachate Disposal)

Source

U S Environmental Protection Agency, Addendum to the Background Document for the Cost And Economic Impact Analysis of Listing Four Petroleum Refining Wastes As Hazardous under RCRA Subtitle C: Economic Impact Analysis of the Petroleum Hazardous Waste Listing (K169-K172) On Leachate Management Costs For Municipal and Industrial Waste Landfills Containing Petroleum Wastes, prepared by DPRA Incorporated, February 5, 1999

Application (range)

The unit cost estimate reflects the average commercial prices for off-site liquid waste disposal at a POTW/TSD; therefore, it is not applicable for extreme situations (i.e., very small or very large waste quantities or extremely easy or extremely difficult waste to treat)

Assumptions and Limitations

This unit price reflects the cost to treat liquid waste at a POTW/TSD permitted to treat hazardous wastewaters. It does not include loading and transportation costs. The lower-end unit cost reflects the potential discounts an operator may receive as a steady customer. The upper-end unit cost reflects the typical unit cost currently paid by remediation firms on a one-time basis.

Costs

Assumed a unit commercial price range of \$1.75 - \$2.96/gallon based on the data presented below.

- 1 \$1.75/gallon (Back-calculated from a Browning-Ferris Industries estimate of \$52 million per year in total O&M compliance costs to treat leachate from landfills that have received any of the four petroleum wastes; Comments received by the RCRA Docket Information Center, Office of Solid Waste pursuant to the Notice of Data Availability and Request for Comment on the newly listed Petroleum Refinery Wastes (K169-K172); PR3A-00008)
- 2 \$2.96/gallon (R. S. Means, Environmental Remediation Cost Data, 4th Annual Edition, 1998)

Appendix E-1.1

Thermal Treatment: Thermal Desorber: Off-site

Source

Memorandum from ICF Consulting Group to EPA, regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes, January 28, 1998, as well as Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database.

Application (range)

There was no specified waste quantity range.

Assumptions and Limitations

- 1 The unit cost for PAH-contaminated soil was obtained from the January 1998 memo to EPA. No assumptions regarding the unit cost were included in the document.
- 2 The unit cost for VOC-contaminated soil was obtained from RACER. The low-average off-site LTLD unit cost was used for the VOC-contaminated soil.
- 3 One cubic yard of soil weighs 1.5 tons.
- 4 Transportation costs are not included.

Costs

The unit cost for VOC-contaminated soil is \$48.67 per ton. The unit cost for PAH-contaminated soil is \$117 per ton.

Appendix E-2.1

Thermal Treatment: Incineration: Off-Site

Source

Hazardous Waste Resource Center - January 2000 Incinerator and Landfill Cost Data
<http://www.etc.org/costsurvey3.cfm>

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

- 1 The average unit costs presented were calculated based on a survey of an unknown number of companies conducted between July and December 1999
- 2 Transportation costs are not included
- 3 One drum equals 500 lbs

Costs

The average unit cost for drummed halogen liquid organics is \$192 per drum, the average unit cost for drummed non-halogen liquid is \$124 per drum, the average unit cost for bulk non-halogen liquid is \$0.59 per gallon, the average unit cost for lab packs is \$2.42 per pound, the average unit cost for drummed pumpable sludge is \$207 per drum, the average unit cost for bulk pumpable sludge is \$651 per ton, the average unit cost for bulk contaminated soil is \$559 per ton, and the average unit cost for aerosols is \$0.47 per pound

Appendix E-3.1

Thermal Treatment: Boilers and Industrial Furnaces: Utility Co-Burning, Off-Site

Source

Application of Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes - Regulatory Impact Analysis, Office of Solid Waste, United States Environmental Protection Agency, April 30, 1998

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

No assumptions or limitations were stated

Costs

The stated unit cost is \$135 per ton

Appendix E-3.2

Thermal Treatment: Boilers and Industrial Furnaces: Cement Kiln, Off-Site

Source

Memorandum from ICF Consulting Group to EPA, regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes, January 28, 1998

Application (range)

There was no specified waste quantity range

Assumptions and Limitations

Transportation costs are not included

Costs

The average unit cost for hazardous waste is \$450 per ton, and the average unit cost for non-hazardous waste is \$53 per ton

Appendix F-2.1

Other Land Treatment/Storage/Containment: Non-Hazardous Wastewater Storage

Source

Regulatory Impact Analysis of the Supplemental Proposed Rule Applying Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes, U S EPA Office of Solid Waste, April 15, 1997

Application (range)

The surface impoundment storage cost function includes the capital cost of land, site preparation, a liner, and piping of liquids to the surface impoundment. Liquid Materials would be piped from the point of generation to the surface impoundment. When these materials are going to be reused, they would be piped back through the same pipes to the point of reentry, where they would be handled by the normal feed equipment.

Assumptions and Limitations

Storage of Liquid Materials in Lined Surface Impoundments:

- 1 Liquid materials are stored for a maximum of 30 days;
- 2 The density of liquid materials is the same as water (62.4 lb/ft³);
- 3 The purchase cost of land is \$2,500/acre (from CKD Monofill Model Cost Documentation, 1995);
- 4 The cost of excavation is \$0.1077/ft³ (from CKD Monofill Model Cost Documentation, 1995); the cost of a 40 mil HDPE geomembrane liner is 0.5602/ft² (from CKD Monofill Model Cost documentation, 1995);
- 5 The area of the surface impoundment is calculated using the formulas described in section D.7;
- 6 The distance from the point of generation to the surface impoundment, and from the surface impoundment back to the point of reentry, are a function of the amount of material to be stored, but the minimum distance is 500 feet. Larger quantities of material to be stored will need to be piped 1000 feet away;
- 7 There is no cost associated with pumping the material to and from the surface impoundment; and
- 8 Once the liquid has been returned to the point of reentry it will be handled by the normal processing equipment, and would not incur any further "storage" costs.

Storage of Liquid Material in Unlined Surface Impoundments with Groundwater Monitoring:

- 1 The costs of storing materials in unlined surface impoundments are very similar to the costs of storing materials in lined surface impoundments, except the cost of the liner is not used and groundwater monitoring costs have been added.
- 2 If monitoring reveals contamination, the facility is responsible for the costs of corrective action. However, even without adding the potential costs of corrective action, these costs of regular monitoring are higher than the costs of liners.

Storage of Liquid Material in Unlined, Unmonitored Surface Impoundments:

The costs of storing materials in unlined, unmonitored surface impoundments are very similar to the costs of storing materials in lined surface impoundments, except the cost of the liner is not used.

Cost Equations

Lined Impoundments:	$Y = 0.0704x + 1955.1$
Unlined Surface Impoundments with Groundwater Monitoring:	$Y = 0.0626x + 16054$
Unlined, Unmonitored Surface Impoundments:	$Y = 0.0491x + 1413.7$

Appendix F-5.1

Other Land Treatment/Storage/Containment: Underground Storage Tank (UST) - Single Wall

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equation was developed using incremental UST capacities ranging from 550 gallons to 30,000 gallons. UST capacities beyond the range of 550 to 30,000 gallons will depart from the known costs and are not verifiable

Annual tank tightness testing uses three ranges: equal to or less than 12,000 gallon capacity, 12,001 to 29,999 gallon capacity, and greater than or equal to 30,000 gallon capacity

Assumptions and Limitations

- 1 Assumes one single walled steel UST with exterior fiberglass coating for corrosion protection
- 2 No permitting cost or regulatory obligations for reporting are included
- 3 Three lengths of steel product piping are assumed, 100 feet for tanks 550 to 4,999 gallons in capacity, 500 feet for tanks 5,000 to 14,999 gallons in capacity, and 1,000 feet for tanks over 14,999 gallons in capacity. On sacrificial anode is assumed for every 300 feet of piping as corrosion protection
- 4 The UST area is assumed to be paved over with asphalt
- 5 Annual maintenance is based on one annual tank tightness test
- 6 Overflow control and sensors are included
- 7 A leak detection system, consisting of a control panel and probes mounted in the tank and in the secondary containment collar
- 8 Tank closure and/or removal is not included
- 9 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub contractor markup and profit

Cost Equations

Capital Cost: $2.5 * (\text{gallon capacity}) + 23,990$

O&M Cost:

$\leq 12,000$ gallon capacity:	\$342/year
12,001 to 29,999 gallon capacity:	\$564/year
$\geq 30,000$ gallon capacity:	\$666/year

Appendix F-5.2

Other Land Treatment/Storage/Containment: Underground Storage Tank - Double Wall

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equation was developed using incremental UST capacities ranging from 550 gallons to 30,000 gallons. UST capacities beyond the range of 550 to 30,000 gallons will depart from the known costs and are not verifiable

Annual tank tightness testing uses three ranges: equal to or less than 12,000 gallon capacity, 12,001 to 29,999 gallon capacity, and greater than or equal to 30,000 gallon capacity

Assumptions and Limitations

- 1 Assumes one double walled steel UST with exterior fiberglass coating for corrosion protection
- 2 No permitting cost or regulatory obligations for reporting are included
- 3 Three lengths of steel product piping are assumed, 100 feet for tanks 550 to 4,999 gallons in capacity, 500 feet for tanks 5,000 to 14,999 gallons in capacity, and 1,000 feet for tanks over 14,999 gallons in capacity. On sacrificial anode is assumed for every 300 feet of piping as corrosion protection
- 4 The UST area is assumed to be paved over with asphalt
- 5 Annual maintenance is based on one annual tank tightness test
- 6 Overflow control and sensors are included
- 7 A leak detection system, consisting of a control panel and probes mounted in the tank, secondary containment collar, and interstitial space between the tank walls
- 8 Tank closure and/or removal is not included
- 9 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub contractor markup and profit

Cost Equations

Capital Cost: $2.9 * (\text{gallon capacity}) + 27,161$

O&M Cost:

<= 12,000 gallon capacity:	\$342/year
12,001 to 29,999 gallon capacity:	\$564/year
>= 30,000 gallon capacity:	\$666/year

Appendix F-6.1

Other Land Treatment/Storage/Containment: Containers - 55-gallon Drum

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost is developed assuming one steel 55-gallon drum purchase

Assumptions and Limitations

- 1 Drum is assumed to be a steel, with a removable lid, and DOT approved
- 2 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub contractor markup and profit

Costs

\$103 per 55-gallon drum

Appendix F-6.2

Other Land Treatment/Storage/Containment: Containers - 40-cy Roll-Off Container

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost is developed assuming one 20 cubic yard open top roll-off container purchase

Roll-off bins are typically utilized for transporting soils to disposal facilities. The material to be transported must be dry or stabilized. A poly liner generally is utilized for transporting hazardous materials to prevent leakage or contact with the materials.

Assumptions and Limitations

- 1 Roll-off bin is assumed to be open top and have a capacity of 20 cubic yards
- 2 Decontamination measures such as poly liners or steam pressure washing is not assumed
- 3 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub contractor markup and profit

Costs

Purchase: \$6,472 per 20 cy roll-off bin

Rental: \$2 per day + \$435 delivery charge

Appendix F-6.3

Other Land Treatment/Storage/Containment: Containers - Storage and Handling Building

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equation is based on four building areas: 30 sf, 120 sf, 240 sf, and 480 sf. Storage and handling buildings beyond the range of 30 to 480 square feet will depart from the known costs and are not verifiable. To develop costs for areas greater than 480 square feet, divide the area into segments that are within the above range. This will provide the cost for multiple buildings equaling the total area required.

Assumptions and Limitations

- 1 The facilities are limited to storage of materials for less than 90 days and must be built and managed in compliance with RCRA Rules (40 CFR 264)
- 2 Building is composed of concrete flooring with steel framing and corrugated steel siding
- 3 One non-skid concrete ramp is assumed in the cost
- 4 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub contractor markup and profit

Cost Equations

Capital Cost = $0.06 \times (\text{area in square feet})^2 + 46.2 \times (\text{area in square feet}) + 4,995$

Appendix G-1

Aqueous Waste Treatment: Equalization Tank

Source

RACER 1999 cost estimating software In addition, the third edition Wastewater Engineering: Treatment, Disposal, and Reuse provided general information on the standard design of equalization tanks

Application (range)

Costs are provided for four tank sizes 50,000 gallons, 100,000 gallons, 500,000 gallons, and 1,000,000 gallons These tanks and combinations of these can be used in parallel to obtain the desired capacity The retention time depends on the waste stream and intent of equalization Standard retention times are 2 to 4 hours To determine necessary tank size, multiply the flow rate by the desired retention time Mixing is optional and may be selected based on waste conditions and requirements Mixing may be required to prevent stagnant conditions, equalize mass loadings, prevent solids from settling, etc

Assumptions and Limitations

The following data and assumptions were used to develop the cost for 4 different sized equalization tanks

- 1 Prestressed concrete tanks were assumed to be set at grade with the bottom of the tank at ground level on a concrete platform;
- 2 Mixing rates were based on the average requirements of a medium-strength municipal wastewater having a suspended solids content of approximately 220 mg/L (i e , 0 03 hp / 1000 gal);
- 3 Mixer costs were obtained from RACER Mixing rates were obtained by combining the smallest number of mixers to obtain the desired mixing rate;
- 4 All mixers are single propeller, six inch diameter mixers;
- 5 Cost equations were obtained by creating a polynomial equation from the four data points;
- 6 Costs include markups that decrease with the increasing scale of the project

Costs - 1999\$

50,000 gallon tank:	\$55,102	1 5 hp mixer:	\$3,090
100,000 gallon tank:	\$168,575	Two 1 5 hp mixers:	\$5,995
500,000 gallon tank:	\$384,966	Eight 2 hp mixers:	\$26,491
1,000,000 gallon tank:	\$649,564	Fifteen 2 hp mixers:	\$49,653

Cost Equations

Tank:	$\text{Cost} = -2 \times 10^{-7} Q^2 + 0.77Q + 51,953$
Tank With Mixing:	$\text{Cost} = -2 \times 10^{-7} Q^2 + 0.82Q + 52,393$
Mixing:	$\text{Cost} = -6 \times 10^{-9} Q^2 + 0.06Q + 440$

Q = tank capacity in gallons

*Aqueous Waste Treatment: Oil/Water Separation*Source

RACER 1999 cost estimating software

Application (range)

Costs are valid for system flow rates of 1 gallon per minute (gpm) through 500 gpm. The smallest separator has a flow capacity of 10 gpm, therefore, the capital cost is constant for flow rates between 1 and 10 gpm.

Assumptions and Limitations

- 1 Oil/water separator is assumed to be set at grade with the bottom of the tank at ground level on a concrete platform
- 2 Assumed influent is pumped into the oil/water separator. Pump costs are included.
- 3 Assumed oil and effluent is removed via gravity draw-off.
- 4 Assumed 100 feet of above ground piping into, 20 feet for effluent out of the separator, and 50 feet of piping to the recovered oil storage tank.
- 5 Cost estimate does not include transportation or disposal costs of recovered oil. The amount and type of recovered oil will vary greatly depending on flow characteristics. For example a refinery would produce a high-volume of waste water with a low percentage of oil to be recovered, but would recover sufficient quantities with the high flow rate to be able to recycle this product back into the refinery, therefore, avoiding disposal costs. However, a groundwater treatment flow will have a small percentage of product and would likely require off site disposal. Disposal methods and costs vary depending on product type (e.g., disposal of a LNAPL is much less expensive than a tarry DNAPL). Therefore, this cost estimate is for separation and storage only.
- 6 Costs include a storage tank for recovered product. Assumed a 550 gallon steel tank for flow rates of 1, 10, and 25 gpm, a 1,000 gallon steel tank for flow rates of 50 and 100 gpm, a 1,500 gallon steel tank for flow rates of 200 and 300 gpm, and a 2,000 gallon steel tank for a flow rate of 500 gpm.
- 7 Operation and maintenance costs include labor, monthly analytical sampling for TDS, TSS, TPH, Ethylene Dibromide, BTEX/MTBE/TVPH, and PAHs, and electricity.
- 8 Costs do not include a building or heat for building to house the unit.
- 9 Cost curve was obtained by using 8 data points: 1, 10, 25, 50, 100, 200, 300, and 500 gpm.
- 10 Costs include markups that decrease with the increasing scale of the project.

Costs - 1999\$

Oil/Water Separation		
System Size (gpm)	Capital - 1999\$	O&M - 1999\$
1	\$18,934	\$10,065
10	\$18,934	\$12,374
25	\$24,730	\$14,454
50	\$26,360	\$16,288
100	\$31,562	\$19,411
200	\$41,708	\$24,227
300	\$49,757	\$27,442
500	\$76,655	\$33,729

Cost Equations

Capital: Cost = $110Q + 19,880$
 O&M: Cost = $75Q - 0.06Q^2 + 11,767$

Q = Flow rate in gpm

*Aqueous Waste Treatment: Neutralization*Source

RACER 1999 cost estimating software

Application (range)

Costs are valid for system flow rates of 5 gallon per minute (gpm) through 100 gpm. Costs are provided to treat either an acidic or basic waste stream. The acidic waste stream was assumed to have a pH of 2 and the basic waste stream was assumed to have a pH of 12.

Assumptions and Limitations

- 1 Neutralization tank is placed at grade with the bottom of the tank at ground level on a concrete platform
- 2 Assume effluent pH of 7
- 3 Included capital costs for a pH control system and two digital pH meters, one for influent and one for effluent
- 4 Capital costs include a continuous neutralization system, piping, concrete slab, and a pH control system. Operation and maintenance costs include chemicals (i.e., lime and sulfuric acid), labor, electricity, and annual maintenance materials
- 5 No sampling and analysis costs are included
- 6 Sludge disposal costs are not included. The volume generated and disposal requirements vary dramatically depending on pH and waste stream characteristics. For example, an acidic waste stream with high metals content will precipitate out a large volume of sludge which may or may not be hazardous. However, a basic waste stream with relatively no dissolved solids will generate little, if any, sludge.
- 7 Costs do not include a building or heat for building to house the unit
- 8 Costs include markups that decrease with the increasing scale of the project

Costs - 1999\$

Neutralization			
Flow Rate (gpm)	Capital Cost - 1999\$	Annual O&M - 1999\$ Acidic Waste Stream (pH 2)	Annual O&M - 1999\$ Basic Waste Stream (pH 12)
5	\$41,432	\$17,742	\$13,741
10	\$44,704	\$26,241	\$18,921
30	\$66,185	\$55,845	\$34,815
70	\$107,901	\$108,417	\$59,132
100	\$138,667	\$144,221	\$75,407
Cost Equation	$\text{Cost} = 1,034Q + 35,315$	$\text{Cost} = 1,570Q - 2.34Q^2 + 10,437$	$\text{Cost} = 855Q - 2Q^2 + 10,210$

Q = Flow rate in gpm

Aqueous Waste Treatment: PrecipitationSource

RACER 1999 cost estimating software In addition, the third edition Wastewater Engineering: Treatment, Disposal, and Reuse provided general information on the standard uses and design of chemical precipitation units Precipitation is essentially the same as neutralization with an additional step for settling of the precipitated solids

Application (range)

Costs are valid for system flow rates of 5 to 100 gpm Waste characteristics were obtained from EPA Project Summary *Waste Minimization Audits at Generators of Corrosive and Heavy Metal Wastes*, EPA/600/S2-87/055 November 1987

Assumptions and Limitations

- 1 Waste flow was assumed to have a pH of 2, contain 200 mg/L of heavy metals (e g , cadmium, chromium, copper, nickel, silver, and zinc), a total suspended solids content of 50 mg/L, and 2,000 mg/L of other anions and cations (e g , calcium, iron, magnesium, and sulfate) Waste characteristics based on a spent pickle liquor waste stream
- 2 Capital costs include a continuous neutralization system, pumps, piping, concrete slab, clarifier and a pH control system Operation and maintenance costs include chemicals (i e , lime and sulfuric acid), labor, electricity, and annual maintenance materials
- 3 Sampling and analysis of discharge is not included
- 4 Sludge management costs are not included (e g , costs associated with sludge collection, dewatering, storage, or disposal) Sludge disposal requirements depend greatly on waste stream characteristics Sludge production can be estimated based on flow rate and influent solids content See Appendix B-1 for sludge dewatering and storage tank costs See Appendix C for disposal costs
- 5 Costs do not include a building or heat for building to house the unit
- 6 Costs include markups that decrease with the increasing scale of the project

Costs - 1999\$

Precipitation		
Flow Rate (gpm)	Capital Cost - 1999\$	Annual O&M - 1999\$
5	\$144,839	\$24,757
10	\$148,676	\$35,597
30	\$198,988	\$72,239
70	\$253,977	\$133,067
100	\$319,296	\$176,470
Cost Equation	$\text{Cost} = 1,805Q + 135,522$	$\text{Cost} = 1,586Q + 20,212$

Q = Flow rate in gpm

*Aqueous Waste Treatment: Air Stripping*Source

RACER 1999 cost estimating software Guidelines for system design were obtained from McGraw Hill, Handbook of Hazardous Waste Treatment and Disposal, 1989

Application (range)

Costs are valid for packed tower air stripper with system flow rates of 10 to 2,250 gpm Moderately volatile contaminant Air strippers are usually only effective on waste streams with relatively dilute contaminant concentrations (i.e., less than 100 ppm) The contaminants must be volatile organics with a Henry's law (H) constant of greater than 10 atm/mole fraction

Assumptions and Limitations

- 1 Waste flow was assumed to contain a moderately volatile organic compound such as toluene, benzene, xylene, chloroform, or methylene chloride A 95% removal percentage was assumed
- 2 Costs were obtained from RACER for 7 flow rates (10, 50, 100, 500, 1000, 1600, and 2,250 gpm) A cost curve is not provided because the costs did not provide reliable results There are too many variables for the tower design to develop a reliable equation The capital and O&M costs for the 7 flow rates are provided below
- 3 Capital costs include a packed tower air stripper, electrical controls, pump, piping, concrete slab, blower, packing for air stripper, and a sump Operation and maintenance costs include electricity, labor, annual reconditioning of the packing, and annual maintenance materials
- 4 Sampling and analysis costs are not included
- 5 Costs do not include a building or heat for building to house the unit
- 6 Costs include markups that decrease with the increasing scale of the project
- 7

Costs - 1999\$ and 2000\$

Air Stripping		
Flow Rate (gpm)	Capital Cost - 1999\$	Annual O&M - 1999\$
10	\$46,666	\$11,766
50	\$57,320	\$19,909
100	\$80,453	\$25,391
500	\$146,880	\$55,245
1000	\$160,392	\$91,424
1600	\$263,348	\$128,972
2250	\$273,269	\$167,607

Air Stripping		
Flow Rate (gpm)	Capital Cost - 2000\$	Annual O&M - 2000\$
10	\$47,833	\$12,060
50	\$58,753	\$20,407
100	\$82,464	\$26,026
500	\$150,552	\$56,626
1000	\$164,402	\$93,710
1600	\$269,932	\$132,196
2250	\$280,101	\$171,797

*Aqueous Waste Treatment: Granular Activated Carbon*Source

RACER 1999 cost estimating software

Application (range)

Costs are valid for flow rates between 1 and 2,000 gpm. The smallest GAC unit has a flow capacity of 25 gpm, therefore, the capital cost is relatively constant for flow rates less than 25 gpm. Costs for the 20 and 25 gpm systems are slightly higher due to a larger pump requirement. Treatment is best suited to remove organics with relatively high molecular weights, low water solubility, low polarity, and low degree of ionization. Influent streams with high suspended solids (>50 mg/L), oil and grease, or metals may cause GAC fouling. GAC is most applicable as a polishing step in treatment or to treat waste streams with low contaminant concentrations.

Assumptions and Limitations

- 1 Assumed waste stream with 10 ppm total organics and 5 ppm chlorinated organics
- 2 Obtained costs from RACER for 15 flow rates (1, 5, 10, 20, 25, 35, 50, 75, 100, 200, 300, 500, 1,000, 1,500, and 2,000 gpm)
- 3 For flow rates less than or equal to 200 gpm, modular permanent absorbers were used. For flow rates greater than 200 gpm a dual bed carbon absorption system was used. Both systems used two adsorption units in series.
- 4 Capital costs include carbon adsorbers, pump, and concrete slab. Operation and maintenance costs include electricity, labor, carbon removal and regeneration fee, replacement carbon, and annual maintenance materials.
- 5 Sampling and analysis costs are not included.
- 6 Costs do not include a building or heat for building to house the unit.
- 7 Costs include markups that decrease with the increasing scale of the project.

Costs - 1999\$

Granular Activated Carbon		
Flow Rate (gpm)	Capital Cost - 1999\$	Annual O&M - 1999\$
1	\$8,651	\$5,014
5	\$8,651	\$5,014
10	\$8,651	\$5,014
20	\$8,891	\$47,807
25	\$9,935	\$58,295
35	\$16,110	\$79,428
50	\$20,601	\$110,233
75	\$30,093	\$161,177
100	\$37,861	\$211,713
200	\$60,294	\$411,925
300	\$271,403	\$502,241
500	\$409,136	\$824,648
1,000	\$793,146	\$1,627,801
1,500	\$907,022	\$2,422,448
2,000	\$1,197,139	\$3,219,756

Flow rates < 20 gpm

Capital: \$8,651

O&M: \$5,014

Flow rates 20 gpm ≤ Q ≤ 200 gpm

Capital: $Y = 2018Q + 9,024$ O&M: $Y = 462Q - 0.799Q^2 - 190$

Flow rates > 200 gpm

Capital: $Y = 3,319Q^{0.7763}$ O&M: $Y = 1,598Q + 25,489$

Q = Flow Rate in gpm

*Aqueous Waste Treatment: Biological Treatment*Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equations are based on a range of 5 to 100 gallons per minute (gpm) of aqueous waste with chemical oxygen demand (COD) ranging from 50 to 1,000 ppm. Three sets of capital cost equations were developed for CODs of 50, 500, and 1,000 ppm as a function of flowrate. The maximum system size is 50 gpm with 1,000 ppm COD. One annual O&M cost equation was developed as a function of flowrate because annual O&M costs vary little with increasing COD.

Aqueous biological treatment uses microorganisms to degrade contaminants such as semi-volatile organic compounds (SVOCs) and fuel hydrocarbons, as well as some pesticides and halogenated organic compounds.

Assumptions and Limitations

1. Costs are based on a fixed film system in which microorganisms aerobically degrade contaminants in an aqueous waste.
2. Capital costs include system design, construction, and startup. Costs for sampling and analysis, air pollution controls, sludge disposal, electrical and gas distribution, fencing, and treatment building are not included.
3. Costs include nutrient addition for growth of microorganisms existing in the waste. Costs do not include addition of microorganisms.
4. The pH range for optimal biological growth is 6 to 9. Costs for pH adjustment are not included.
5. Influent water temperature is assumed to be 55°F. Process water is heated to a temperature of 80°F.
6. High contaminant concentrations may be toxic to microorganisms.
7. Costs include markups that decrease with increasing scale of the project.

Costs - 1999\$

Flowrate	COD	Capital - 1999\$	Annual O&M - 1999\$
5 gpm	50 ppm	\$124,000	\$18,000
25 gpm	50 ppm	\$236,000	\$62,000
50 gpm	50 ppm	\$331,000	\$108,000
100 gpm	50 ppm	\$444,000	\$192,000
5 gpm	500 ppm	\$107,000	\$19,000
25 gpm	500 ppm	\$249,000	\$62,000
50 gpm	500 ppm	\$330,000	\$108,000
100 gpm	500 ppm	\$519,000	\$193,000
5 gpm	1,000 ppm	\$140,000	\$19,000
25 gpm	1,000 ppm	\$307,000	\$63,000
50 gpm	1,000 ppm	\$456,000	\$110,000

Cost Equations

$$\text{Capital (50 ppm COD)} = \$61,625 (\text{gpm})^{0.4269} \quad 5 \text{ to } 100 \text{ gpm}$$

$$\text{Capital (500 ppm COD)} = \$46,312 (\text{gpm})^{0.5170} \quad 5 \text{ to } 100 \text{ gpm}$$

$$\text{Capital (1,000 ppm COD)} = \$61,294 (\text{gpm})^{0.5084} \quad 5 \text{ to } 50 \text{ gpm}$$

$$\text{Annual O\&M (50 to 1,000 ppm COD)} = \$5,389 (\text{gpm})^{0.7702} \quad 5 \text{ to } 100 \text{ gpm}$$

Appendix H-1.1

HTMR/Smelting (Copper, Nickel, Zinc, Lead, Precious Metals)

Source

U S Environmental Protection Agency, Regulatory Impact Analysis of the Final Rule for a 180-Day Accumulation Time for F006 Wastewater Treatment Sludges, prepared by DPRA Incorporated, November 10, 1999

Application (range)

The unit cost estimate reflects the average commercial prices for metals recycling at a HTMR/smelter; therefore, it is not applicable for extreme situations (i.e., very small or very large waste quantities or precious mono-metal or difficult to recycle poly-metal waste)

Assumptions and Limitations

Recycling costs for recovering metals from F006 wastewater treatment sludges were estimated from 1993 cost data provided in Exhibit 7-1 of Cushnie, George C., CAI Engineering, "Pollution Prevention and Control Technology for Plating Operations," prepared for NCMS/NAMF. Transportation costs were subtracted from the estimated recycling costs. 1997 unit transportation prices reported in Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 4th Annual Edition, published by R S Means and Delta Technologies Group, Inc., 1998, were used to estimate transportation costs.

ECHOS lists the minimum 1997 charge for a bulk shipment of hazardous waste (not requiring stabilization) at \$1,350 for commercial landfill disposal. For this analysis, this value serves as a proxy for the minimum recycling charge for commercial metal recycling/recovery.³ The value is a good proxy because while the stabilized landfill price is, in theory, the highest minimum recycling charge, the unstabilized price reflects the practice of recyclers providing some credit to the generators for a percentage of the market value received for base metals and precious metals recovered from the sludge against the processing fee that generators pay the recyclers. Differences in average unit recycling costs are the result of variability in the amount various recyclers charge generators. A major factor contributing to the differences in recycling costs is metal content (i.e., concentration and type of metals present in the waste). Small facilities may incur generally lower costs due to the fact that these facilities tend to generate single-metal wastes which are more amenable to recycling.

An average unit recycling cost of \$0.20/lb was assumed as an upper-end typical price charged by a metals recovery facility based on the 1993 data provided in Cushnie. One recycler that was contacted provided an average 1998 price of approximately \$0.10/lb. Average recycling prices were estimated to range from \$0.10/lb to \$0.20/lb with a minimum recycling charge of \$1,350 per shipment.⁴ In some cases, when the metal value is very high, the charges can be somewhat lower.⁵ Minimum charges are at least sometimes avoided when the recycler actually picks up the F006 directly from the generator.⁶

Limitations include the following:

- 1 The presence of multiple metals in a waste may impact both the marketability and feasibility of recycling. For example, it is common practice for metal finishers to co-mingle rinse waters from a variety of different metal plating lines into one treatment tank, resulting in a poly-metal F006 waste precipitate. While this F006 sludge may contain recoverable levels of each metal present, commercial recyclers tend to prefer plating rinse waters of different metals to be kept separate so as to avoid having to separate the metals again into a mono-metal or bi-metal sludge.⁷ In certain instances, recyclers may charge a generator a process or treatment fee for the presence of any impurities (metals considered not to be of value by the recycler) in excess of a specified concentration.⁸
- 2 The type and percent concentration of metals present in a generator's waste may impact the price they must pay a recycling facility to manage their waste. The price recyclers charge generators is influenced by the market price the recyclers can obtain for the metals they recover. In certain instances, a waste stream with a high percentage of a valuable metal, may earn a generator a credit (i.e., the recycler pays the generator for the waste).
- 3 Typically, recycling facilities do not accept all types of waste. For certain generators the cost of transporting their waste to a recycling facility that will accept it may remain prohibitive, given the alternative of paying a landfill tipping fee.

Costs

Unit costs are assumed to be between \$0.10 and \$0.20 per pound.

³ This assumption was confirmed by industry contacts who accepted partial loads, or small lots (Sippel, 1999, Personal Communication, Noranda, Ontario, Canada; Shield, 1999, Personal Communication, American Nickeloid, Illinois). Other contacts indicated that the minimum charge concept was appropriate, but their companies did not deal in small lots as a matter of practice due to the inconvenience (Walker, 1999, Personal Communication, Inco Limited, Toronto, Ontario; LeCompte, 1999, Personal Communication, Cyprus Miami, Arizona).

⁴ The estimates of average recycling costs were confirmed by industry contacts (Jarvis, 1999, Personal Communication, Eritech, North Carolina; Anonymous, 1999, Personal Communication, Sun-Glo Plating, Florida).

⁵ Shields, 1999, Personal Communication, American Nickeloid, Illinois.

⁶ Jarvis, 1999, Personal Communication, Eritech, North Carolina; and Anonymous, 1999, Personal Communication, Dearborn Brass, Texas.

⁷ Borst, Paul A., U.S. EPA, Office of Solid Waste, Economic, Methods and Risk Assessment Division, "Recycling of Wastewater Treatment Sludges from Electroplating Operations," F006, 18th AESF/EPA Pollution Prevention and Control Conference, January 27-29, 1997, p. 179.

⁸ Lamancusa, James P., P.E., CEF, "Strategies at a Decorative Chromium Electroplating Facility: On-line vs. Off-line Recycling," Plating and Surface Finishing, April 1995, p. 48.

Mercury Retort

Source

- USEPA, Modification of the Hazardous Waste Program: Hazardous Waste Lamps - Final Economic Assessment, March 11, 1999
- USEPA Office of Solid Waste, Hazardous Waste Identification Rule (HWIR), 1995 Draft RIA

Application (range)

The unit cost estimate reflects the average commercial prices for lamp recycling at a mercury retort; therefore, it is not applicable for extreme situations (i.e., very small or very large waste quantities)

The unit costs for retorting presented in the HWIR analysis vary based on quantity

Assumptions and Limitations

For lamps sent to retorters, the tipping fee assumes that the lamps arrive crushed and contained in 55 gallon drums with 600 lamps per drum. Transportation, crushing, and packaging costs are not included in the tipping fees for retorters.

Costs

Fluorescent lamp retorting costs (1999\$):

Transportation and Tipping Fee = \$1.31/lamp

Lamp Crushing = \$78.67/ton

Drum Cost = \$44.96/drum

HWIR retorting costs (1995\$):

<= 4,700 tons: \$856/ton

> 4,700 and <= 47,000 tons: \$446/ton

>47,000 tons: \$194/ton

Recycling: Solvent Extraction

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equations are based on a waste quantity range of 13,300 to 160,000 cubic yards (cy) per year of soil or sludge or a range of 2,600,000 to 32,400,000 gallons per year of liquid. The equations are applicable for smaller quantities; however, solvent extraction is generally not cost effective for less than 5,000 cy per year of soil or sludge or 1,000,000 gallons per year of liquid. The equations are not applicable for larger quantities of soil, sludge, or liquid.

Solvent extraction is applicable for media contaminated with petroleum hydrocarbons, polychlorinated biphenyls (PCBs), organic pesticides, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), pentachlorophenols (PCPs), and dioxins. Solvent extraction is generally not applicable for media contaminated with inorganics and metals and is less effective on high molecular weight organic compounds.

Assumptions and Limitations

- 1 Soil is assumed to have a liquid content of 0 to 30 percent and is not pumpable. Sludge is assumed to have a liquid content of 31 to 70 percent and may be pumpable. Liquid is assumed to have a liquid content of 71 to 100 percent and is pumpable.
- 2 The density of liquid is assumed to be that of water (i.e., specific gravity 1.0).
- 3 Three sizes of process units were considered: 1,500 cy/month; 6,000 cy/month; and 18,000 cy/month.
- 4 Process systems are assumed to have a down time of 10 percent.
- 5 A contingency of 20 percent is assumed to account for treatment difficulties due to variabilities in water content, contaminant concentration, and type of material which may result in increased solvent consumption or increased extraction cycles.
- 6 Pretreatment by crushing and screening is included for soils.
- 7 Capital costs include site preparation, mobilization, system assembly, and startup, as well as crushing and screening for soils. O&M costs include labor, equipment, and materials. Closure costs include system decontamination and decommissioning. Costs include markups that decrease with the increasing scale of the project. Costs do not include extensive excavation or clearing, utility distribution, analytical sampling of the process stream, analytical sampling at closure, or process waste transportation, treatment, or disposal.

Costs - 1999\$

Soil:

Capital (5,000 to 13,300 cy/yr) = \$635,000

Capital (> 13,300 cy/yr) = \$1,227,000

O&M = $20,724 (\text{cy/yr})^{0.5710}$

Closure = $1,212.8 (\text{cy/yr})^{0.4854}$

Sludge:

Capital (5,000 to 13,300 cy/yr) = \$543,000

Capital (> 13,300 cy/yr) = \$1,065,000

O&M = $20,887 (\text{cy/yr})^{0.5698}$

Closure = $1,212.8 (\text{cy/yr})^{0.4854}$

Liquid:

Capital (1,000,000 to 2,700,000 gal/yr) = \$543,000

Capital (> 2,700,000 gal/yr) = \$1,065,000

O&M = $1,119.7 (\text{gal/yr})^{0.5638}$

Closure = $103.53 (\text{gal/yr})^{0.4783}$

Notes:

- Capital cost equations for the sludge and liquid systems are the same; crushing and screening is added for the soil system. The closure cost equations are the same for all media.
- To convert from gallons to cubic yards, divide by 202 (e.g., 2,700,000 gal/yr \approx 13,300 cy).

Appendix I-1

Dump Truck Transportation

Source

Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999, Assembly #33 19 0209 through 0217

Application (range)

These costs apply to the shipment of hazardous waste. Dump trucks are used to haul bulk solid waste (e.g., contaminated soil).

Assumptions and Limitations

- Costs are calculated based on one-way miles.
- See above reference for costs of shipping explosive wastes.
- This cost only reflects the mileage charge. It does not include other common cost components such as the following: (1) waste consolidation, containerization; (2) loading, unloading; (3) containers, drums, overpacks; (4) miscellaneous: tariffs, demurrage, manifest discrepancies, etc.; (5) truck wash-out. Costs for some of these components are included in Appendix I-4.
- Assume 20 cubic yard load capacity of dump truck.

Costs - 1999\$

\$650.00 minimum transport charge

\$2.32/mi, 200-299 mi

\$1.97/mi, 300-399 mi

\$1.84/mi, 400-499 mi

\$1.76/mi, 500-599 mi

\$1.74/mi, 600-699 mi

\$1.70/mi, 700-799 mi

\$1.68/mi, 800-899 mi

\$1.67/mi, 900-999 mi

\$1.65/mi, 1,000+ mi

Van Trailer Transportation

Source

Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999, Assembly #33 19 0229 through 0240

See the following reference for additional unit cost estimates for transportation of hazardous waste, hazardous material or nonhazardous material to recovery facilities: "Baseline Costs and Cost Comparisons Between Hazardous Waste, Hazardous Material, and Non-Hazardous Shipments," memorandum from Steve Brown, Bill Cowart, Gary Light, and Maribelle Rodriguez, ICF Consulting Group, to Allen Maples, EPA, August 31, 1998

Application (range)

These costs apply to the shipment of hazardous waste. The transportation of hazardous waste is more expensive than nonhazardous waste due to cargo liability (e.g., insurance), regulatory restraints (e.g., manifesting, transporter ID requirements, training), and equipment requirements (e.g., spill prevention and cleanup equipment). When comparing costs for the transportation of hazardous waste to the transportation of hazardous material (e.g., gasoline and chemicals) or nonhazardous material, costs are also higher because hazardous waste haulers typically do not have any possibilities for back hauling waste between the two distant destination points (i.e., generator and TSDR facility). Hazardous and non-hazardous material haulers have a higher probability of finding opportunities to haul materials among manufacturers/distributors between the two destination points. Van trailers are used to haul waste in drums, boxes, or jumbo bags.

Assumptions and Limitations

- Costs are calculated based on one-way miles
- See above reference for costs of shipping explosive wastes
- This cost only reflects the mileage charge. It does not include other common cost components such as the following: (1) waste consolidation, containerization; (2) loading, unloading; (3) containers, drums, overpacks; (4) miscellaneous: tariffs, demurrage, manifest discrepancies, etc.; (5) truck wash-out. Costs for some of these components are included in Appendix I-4
- Assume 18 ton load capacity of truck
- Unit costs reflect remediation conditions rather than regularly scheduled pickups at facilities. Facilities may negotiate discounts in their contracts

Costs - 1999\$

\$683.33 minimum transport charge

\$2.41/mi, 200-299 mi

\$2.31/mi, 300-399 mi

\$2.11/mi, 400-499 mi

\$2.01/mi, 500-599 mi

\$1.98/mi, 600-699 mi

\$1.91/mi, 700-799 mi

\$1.89/mi, 800-999 mi

\$1.87/mi, 1,000+ mi

Tanker Trailer Transportation

Source

Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999, Assembly #33 19 0253 through 0262

See the following reference for additional unit cost estimates for transportation of hazardous waste, hazardous material or nonhazardous material to recovery facilities: "Baseline Costs and Cost Comparisons Between Hazardous Waste, Hazardous Material, and Non-Hazardous Shipments," memorandum from Steve Brown, Bill Cowart, Gary Light, and Maribelle Rodriguez, ICF Consulting Group, to Allen Maples, EPA, August 31, 1998

Application (range)

These costs apply to the shipment of hazardous waste. The transportation of hazardous waste is more expensive than nonhazardous waste due to cargo liability (e.g., insurance), regulatory restraints (e.g., manifesting, transporter ID requirements, training), and equipment requirements (e.g., spill prevention and cleanup equipment). When comparing costs for the transportation of hazardous waste to the transportation of hazardous material (e.g., gasoline and chemicals) or nonhazardous material, costs are also higher because hazardous waste haulers typically do not have any possibilities for back hauling waste between the two distant destination points (i.e., generator and TSDR facility). Hazardous and non-hazardous material haulers have a higher probability of finding opportunities to haul materials among manufacturers/distributors between the two destination points. Tanker trailers are used to haul bulk liquid waste.

Assumptions and Limitations

- Costs are calculated based on one-way miles
- See above reference for costs of shipping explosive wastes
- This cost only reflects the mileage charge. It does not include other common cost components such as the following: (1) waste consolidation, containerization; (2) loading, unloading; (3) containers, drums, overpacks; (4) miscellaneous: tariffs, demurrage, manifest discrepancies, etc.; (5) truck wash-out. Costs for some of these components are included in Appendix I-4
- Assume 5,000 gallon bulk tank truck
- Unit costs reflect remediation conditions rather than regularly scheduled pickups at facilities. Facilities may negotiate discounts in their contracts. Irregular shipments may incur higher charges.

Costs - 1999\$

\$750.00 minimum transport charge

\$2.48/mi, 200-299 mi

\$2.45/mi, 300-399 mi

\$2.40/mi, 400-499 mi

\$2.35/mi, 500-599 mi

\$2.33/mi, 600-699 mi

\$2.29/mi, 700-799 mi

\$2.27/mi, 800-899 mi

\$2.26/mi, 900-999 mi

\$2.24/mi, 1,000+ mi

Other Costs Associated with Truck Transportation of Wastes

Source

Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999

Application (range)

These costs apply to the shipment of hazardous waste and should be applied according to the parameters of the project being analyzed

Assumptions and Limitations

See below

Loading/Unloading Costs - 1999\$

For loading a dump truck assume the following:

4 0 cubic yard wheel loader = \$99 31 per hour for rental (other sizes are presented in above reference)

Bulk solid hazardous waste loading/unloading into/from truck = \$2 14 per cubic yard

For loading into or unloading from a 5,000 gallon tanker truck assume the following:

\$290 44 to load 5,000 gallons

\$290 44 to unload 5,000 gallons

For loading drums into and from a van trailer assume the following:

Load drums on disposal vehicle = \$2 95 per drum

Unload drums from disposal vehicle = \$2 95 per drum

Manifest Costs -1999\$

Assume 0 5 hour of truck driver's wage (\$40/hour) and 0 5 hour of plant administrator's wage (\$40/hour) at generating facility for each stop to account for manifesting costs (DPRA assumption used in Regulatory Impact Analysis of the Final Rule for a 180-Day Accumulation Time for F006 Wastewater Treatment Sludges, November 10, 1999)

Manifest discrepancies = \$50 per manifest discrepancy

Demurrage (The charge that a shipper may be required to pay for detaining a truck longer than necessary to load it) Costs and Charges for Additional Stops

Demurrage for vacuum, drum and tanker trucks =	\$63 33 per hour
Demurrage for van trailer trucks =	\$62 50 per hour
Overnight demurrage =	\$591 67 per each night
Maximum 24 hour demurrage =	\$700 per 24-hour period
Charges for Additional Stops (<= 3) =	\$58 33 per stop
Charges for Additional Stops (> 3) =	\$50 per stop

Truck Washout/Decontamination Costs - 1999\$

Truck washout/decontamination = \$150 per washout

Appendix I-7

Rail

Source

Environmental Cost Handling Options and Solutions (ECHOS), Environmental Remediation Cost Data-Unit Price, 5th Annual Edition, published by R S Means, 1999

Application (range)

These costs apply to the shipment of hazardous waste

Assumptions and Limitations

Costs -1999\$

Rail Boxcar Transport =	\$3 00 per CWT
Rail Tanker Transport =	\$4 00 per CWT
Rail Gondola Transport =	\$5 00 per CWT
Rail Flatbed Transport =	\$6 00 per CWT

CWT = 100 pounds

Appendix J-4

Miscellaneous Costs: Site Security

Source

R S Means, Site Work & Landscape Data, 1999

Revised Estimation of Baseline Costs for Hazardous Waste Combustors for Final MACT Rule, August 20, 1998 (Appendix B of the *Assessment of the Potential Costs, Benefits, & Other Impacts of the Hazardous Waste Combustion MACT Standards Final Rule*, July 1999)

Application (range)

There was no specified range

Assumptions and Limitations

- 1 The unit cost reflects the cost for a watchman service to provide a uniformed security guard
- 2 The \$100,000 to \$300,000 per year cost estimate applies to hazardous waste combustion facilities including:
 - Hazardous Waste Incinerators – commercial, on-site, and government
 - Industrial Kilns – Cement Kilns and Lightweight Aggregate Kilns

Costs - 1999\$

The average unit cost is \$10 98 per hour

For hazardous waste combustion facilities, the cost of providing security as required by RCRA to prevent unauthorized access to hazardous materials contained at the facility, is estimated at \$100,000 to \$300,000 per year, depending on the site and type of facility. Cost is not incremental to on-site and government incinerators because it is required to meet regulations governing hazardous waste generation and storage activities at the facility.

Appendix J-5

Miscellaneous Costs: Fencing

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The unit cost for fencing applies to all ranges. Discounts may be obtained for larger-sized projects.

Assumptions and Limitations

- 1 Unit cost only includes the cost for materials, labor, equipment, overhead, and profit; no management costs are included.
- 2 The fence is assumed to be 10 feet tall galvanized steel with three strands of barbed wire.
- 3 Warning signs are assumed to be posted every 100 feet along the fence.

Costs - 1999\$

The unit cost for fencing is \$30.05 per linear foot (LF) installed. The unit cost for signage is an additional \$4.28 per LF.

Appendix J-7

Miscellaneous Costs: Clearing Land

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database.

Application (range)

The unit cost for clearing land applies to a range of 1 acre to 10,000 acres.

Assumptions and Limitations

- 1 There is no surface water located on the land to be cleared.
- 2 It is assumed that 30 trees with a diameter of 6 inches or less, 60 trees with a diameter of 6 to 12 inches, and 10 trees with a diameter of 12 to 24 inches are located on each acre to be cleared. Costs will be significantly lower for land containing only shrubs that can be bulldozed.
- 3 There is no burning or chipping of brush or debris.
- 4 Grubbing is assumed to be performed to a depth of 6 inches with a 105-horsepower bulldozer.
- 5 The above activities will create approximately 440 cubic yards of debris per acre that would require hauling.

Costs - 1999\$

The unit cost for clearing land is \$4,152 per acre.

Appendix K-1

Investigation: RCRA Facility Investigation

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

Costs were developed for four site investigation sizes: small, moderate, large, and very large sites. Costs are a function of the quantity of samples necessary to complete the investigation.

Assumptions and Limitations

- 1 Includes preparation of an RFI work plan, a data management plan, a health and safety plan, and a quality assurance project plan. Does not include evaluation of corrective measure technologies or community relations plans.
- 2 Site characterization includes fieldwork support; evaluation of site geology/hydrogeology, site soils/surface hydrology, meteorology, population and land usage, ecology, nature and extent of contamination, and contaminant fate and transport; and preparation of a baseline risk assessment and the RFI report. Does not include geophysical investigations, bench and pilot treatability studies, or groundwater slug and pump tests.
- 3 Contaminants of concern are assumed to be VOCs, SVOCs, and metals.
- 4 Does not include treatment or disposal of drill cuttings, personal protective equipment, well development water, etc.
- 5 Costs are based on safety level D.
- 6 QA/QC sampling is included.
- 7 Costs include markups that decrease with increasing scale of study.
- 8 The following table presents the quantity of samples assumed for the four investigation sizes.

Description	Small	Moderate	Large	Very Large
Groundwater Monitoring Wells Aquifer 1: 30 ft	5	10	20	50
Groundwater Monitoring Wells Aquifer 2: 75 ft	2	5	5	20
Groundwater Sampling Rounds	1	1	2	4
Surface Water Samples	3	10	20	50
Surface Soil Samples	50	100	150	300
Subsurface Soil Samples Depth: 10 ft	25	50	75	150
Sediment Samples	3	10	20	50
Air Samples	0	0	10	20
Soil Gas Samples Depth: 10 ft	0	0	5	10
Bioassay Samples	0	0	10	20

Costs - 1999\$

Small:	\$298,000
Moderate:	\$542,000
Large:	\$954,000
Very Large:	\$1,955,000

Appendix K-2

Investigation: Corrective Measures Study

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

Costs were developed for four complexity levels: limited, moderate, complex, and very complex. Costs are a function of the number of areas requiring corrective measures and the extensiveness of the contamination.

Assumptions and Limitations

- 1 Includes preparation of a CMS work plan, initial evaluation of corrective measure technologies, and preparation of a community relations plan. Does not include review of the RFI (i.e., assumes CMS is prepared by the same contractor as the RFI).
- 2 Development/screening of alternatives includes statement of purpose, screening of technologies, identification of alternatives, and screening of alternatives.
- 3 Analysis of corrective measures includes evaluation of the alternatives by nine criteria (i.e., overall protection of human health and environment; attain media cleanup standards; control the source of release; comply with standards for management of waste; long-term reliability and effectiveness; reduction of mobility, toxicity, or volume of waste; short-term effectiveness; implementability; and cost), composition of the draft report, and implementation of community relations.
- 4 Corrective measures selection includes composition of the final report, update of the administrative record, and response to public comments.
- 5 Does not account for extensive agency or public comments to the selected corrective measures, which may necessitate additional RFI work and consideration of additional alternatives.
- 6 Costs include markups that decrease with increasing scale of study.
- 7 A moderate level of study is assumed for the limited and moderate complexity site costs, including evaluation of 6 to 10 alternatives. A broad level of study is assumed for the complex site cost, including evaluation of 10 to 12 alternatives. A comprehensive level of study is assumed for the very complex site cost, including evaluation of more than 15 alternatives, a literature search for known and emerging technologies, and detailed conceptual remedial designs.
- 8 A limited site is characterized by: one or two storage tanks, landfill less than 5 acres, single spill area less than ¼ acre, disposal pit less than ¼ acre, contaminated ditch less than 50 feet, good access, no endangered or threatened species, and/or low levels of contamination.
 A moderate site is characterized by: less than 10 storage tanks, landfill of 5 to 10 acres, single spill area ¼ to 1 acre, disposal pit ¼ to 1 acre, contaminated ditch to 250 feet, reasonable access, and/or moderate levels of contamination.
 A complex site is characterized by: more than 20 storage tanks, landfill greater than 20 acres with hazardous waste, single spill area greater than 1 acre, disposal pit greater than 1 acre with buried drums, contaminated ditch greater than 250 feet, poor access, endangered or threatened species present, drinking aquifer contaminated, extensive contamination, and/or complex contaminants such as PCBs, pesticides, mercury, or chlorinated solvents.
 A very complex site is similar to a complex site, but is more extensive in terms of affected area and quantity of units requiring corrective measures.

Costs - 1999\$

Limited:	\$94,000
Moderate:	\$132,000
Complex:	\$390,000
Very Complex:	\$691,000

*Investigation: Hydrogeologic Study*Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

Costs were developed for four investigation sizes: small, moderate, large, and very large. Costs are a function of the quantity of samples necessary to complete the investigation

Assumptions and Limitations

- 1 Includes preparation of a work plan, a data management plan, a health and safety plan, and a quality assurance project plan. Does not include preliminary evaluation of alternatives or community relations activities
- 2 Site characterization includes fieldwork support; evaluation of site geology/hydrogeology, nature and extent of contamination, and contaminant fate and transport; hydraulic pump tests; and preparation of a baseline risk assessment and the report. Does not include bench and pilot treatability studies
- 3 Contaminants of concern are assumed to be VOCs, SVOCs, and metals
- 4 Does not include treatment or disposal of drill cuttings, personal protective equipment, well development water, etc
- 5 Costs are based on safety level D
- 6 QA/QC sampling is included
- 7 Costs include markups that decrease with increasing scale of study
- 8 The following table presents the quantity of samples assumed for the four investigation sizes

Description	Small	Moderate	Large	Very Large
Groundwater Monitoring Wells Aquifer 1: 30 ft	5	10	20	50
Groundwater Monitoring Wells Aquifer 2: 75 ft	2	5	5	20
Groundwater Sampling Rounds	1	1	2	4
Hydraulic Pump Tests	1	2	3	5

Costs - 1999\$

Small: \$134,000
 Moderate: \$242,000
 Large: \$462,000
 Very Large: \$1,032,000

*Investigation: Groundwater Monitoring Well Installation*Source

RACER 1999 cost estimating software

Application (range)

Applicable for well depths from 5 to 300 feet Screen length does not have a large impact on cost Therefore, the equation does not consider screen length

Assumptions and Limitations

- 1 Assumed one aquifer present
- 2 Assumed a two or four inch diameter PVC well would be installed in an unconsolidated aquifer Well diameter is dependent on depth of well
- 3 Included costs for four guard posts per well Posts are 5-foot tall concrete filled steel posts
- 4 Assumed that the soil cuttings from the drill bit (drill cuttings) would be drummed until analytical results and disposal options have been evaluated Disposal costs are not included
- 5 Included costs for split spoon sampling but no analytical Costs assume that split spoon samples will be collected at five foot intervals during borehole advancement Samples are assumed to be screened with an organic vapor analyzer (OVA) for volatile organics
- 6 Costs assume installation in an unpaved area
- 7 Costs were created on the assumption that five wells would be installed Costs presented below are a per well cost
- 8 Capital costs include well components, drilling equipment, slug testing, soil sampling, and well development
- 9 No operation and maintenance costs are provided
- 10 Sampling and analysis costs for groundwater are not included, see groundwater monitoring and analytical
- 11 Costs include markups that decrease with the increasing scale of the project

Costs - 1999\$

Groundwater Monitoring Well Installation		
Depth to Groundwater (feet)	Total Well Depth (feet)	Cost Per Well - 1999\$
5	15	\$3,636
20	30	\$4,658
50	70	\$7,419
100	150	\$19,961
200	300	\$36,274
Cost Equation		$118D + 1,040$

D = Total depth of well in feet

*Investigation: Groundwater Monitoring*Source

RACER 1999 cost estimating software

Application (range)

Groundwater well sampling costs vary by constituent type. Depth to sample does not have a large impact on cost. The only cost variable that is effected by sample depth is the field technician labor. However, costs for two different sampling depths are provided. Because of the limiting effect of sample depth on cost a linear cost equation was developed based on only two points.

Assumptions and Limitations

- 1 Assumed distance to site is 30 miles each way
- 2 Two technicians were assumed to take 10 groundwater samples at the time. Costs presented below are for 10 samples and then a per sample cost. The per sample cost is the entire cost, including the report preparation, divided by ten.
- 3 An abbreviated monitoring report was assumed to be prepared following the sampling.
- 4 Costs include sampling equipment, labor, water quality parameter testing, analytical testing, and report preparation.
- 5 Analytical costs were included. VOC sampling consists of analysis for purgeable aromatics and purgeable halocarbons. SVOC sampling consists of analysis for base neutral & acid extractable organics. Fuel sampling consists of analysis for total dissolved solids, total suspended solids, total petroleum hydrocarbons, BTEX/MTBE/TPH, ethylene dibromide and polynuclear aromatic hydrocarbons. Metals sampling consists of analysis for TAL metals, TSS, and TDS.
- 6 Sampling only costs do not include analytical or reporting. These costs could be combined with the analytical costs found in Section N to obtain a monitoring cost.
- 7 Costs include markups that decrease with the increasing scale of the project.

Costs - 1999\$

Groundwater Monitoring			
Average Depth of Sample (feet)	Contaminant Type	Cost - 1999\$ for 10 samples	Cost -1999\$ per sample
25	VOCs	\$8,674	\$867
	SVOCs	\$11,713	\$1,171
	Fuels	\$12,114	\$1,211
	Metals	\$10,039	\$1,004
	Sampling Only	\$2,962	\$296
250	VOCs	\$11,285	\$1,129
	SVOCs	\$14,596	\$1,460
	Fuels	\$14,991	\$1,499
	Metals	\$12,781	\$1,278
	Sampling Only	\$6,218	\$622

Cost Equations

For VOCs:	Cost = 1 2D + 838
For SVOCs:	Cost = 1 3D + 1,140
For Fuels:	Cost = 1 3D + 1,180
For Metals:	Cost = 1 2D + 973
Sampling Only:	Cost = 1 4D + 260

D = Depth of sample in feet

*Investigation: Surface Water Monitoring*Source

RACER 1999 cost estimating software

Application (range)

Applicable to surface water sampling from near shore or in shallow water Sampling is assumed to be conducted in hip waders Boat rental is not included

Assumptions and Limitations

- 1 Assumed distance to site is 30 miles each way
- 2 Two technicians were assumed to take 10 surface water samples at the time Costs presented below are for 10 samples and then a per sample cost The per sample cost is the entire cost, including the report preparation, divided by ten
- 3 An abbreviated monitoring report was assumed to be prepared following the sampling
- 4 Costs include sampling equipment, labor, water quality parameter testing, analytical testing, and report preparation
- 5 Analytical costs were included VOC sampling consists of analysis for purgeable aromatics and purgeable halocarbons SVOC sampling consists of analysis for base neutral & acid extractable organics Fuel sampling consists of analysis for total dissolved solids, total suspended solids, total petroleum hydrocarbons, BTEX/MTBE/TPH, ethylene dibromide and polynuclear aromatic hydrocarbons Metals sampling consists of analysis for TAL metals, TSS, and TDS
- 6 Sampling only costs do not include analytical or reporting These costs could be combined with the analytical costs found in Section N to obtain a monitoring cost
- 7 Costs include markups that decrease with the increasing scale of the project

Costs - 1999\$

Surface Water Monitoring		
Contaminant Type	Cost - 1999\$ for 10 Samples	Cost - 1999\$ Per Sample
VOCs	\$6,708	\$671
SVOCs	\$10,215	\$1,022
Fuels	\$10,221	\$1,022
Metals	\$8,146	\$815
Sampling Only	\$995	\$100

Appendix L-1. 1

Corrective Action: Cap - Soil and Vegetative Cap

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equation was developed using incremental cap areas ranging from 0.5 acres to 50 acres. Cap areas beyond the range of 0.5 to 50 acres will depart from the known costs and are not verifiable. However, the cost equation trend line is linear with little to no deviation from the estimated costs. Therefore, the cost equation is assumed to be applicable to any size cap area.

Three cost equations were developed, capital costs, general O&M (e.g., mowing, reseeding, fertilizing), and miscellaneous O&M. Miscellaneous O&M is comprised of repairs to the cap due to erosion, settling, or other unforeseen circumstances.

Assumptions and Limitations

- 1 The soil and vegetation cap consists of 36 inches of off-site soil and a geotextile fabric. The top 6 inches of on-site fill will be graded and leveled prior to the cap installation. The geotextile fabric is laid on the on-site fill and covered with 30 inches of off-site fill, compacted in 6-inch lifts. A vegetation layer composed of 6 inches of topsoil placed on the top.
- 2 General O&M includes cap inspection, mowing 6 times a year, fertilizing, and seeding of 33.3% of the cap area.
- 3 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub-contractor markup and profit.

Cost Equations - 1999\$

Capital:	$119,843 * (\text{area in acres}) + 17,196$
General O&M:	$1,492 * (\text{area in acres}) + 1,167$
Miscellaneous O&M	$2,615 * (\text{area in acres}) + 390$

Appendix L-1.2

Corrective Action: Cap - Composite Cap for Non-Hazardous Waste (Subtitle D)

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions cost database. 1998 CFR 40 Sections 258.40, 258.60, 264.301 and 264.310 were used to determine the requirements for capping of non-hazardous waste materials.

Application (range)

The cost equation was developed using incremental cap areas ranging from 0.5 acres to 50 acres. Cap areas beyond the range of 0.5 to 50 acres will depart from the known costs and are not verifiable. However, the cost equation trend line is linear with little to no deviation from the estimated costs. Therefore, the cost equation is assumed to be applicable to any size cap area.

Three cost equations were developed, capital costs, general O&M (e.g., mowing, reseeding, fertilizing), and miscellaneous O&M. Miscellaneous O&M is comprised of repairs to the cap due to erosion, settling, or other unforeseen circumstances.

Assumptions and Limitations

- 1 The Subtitle D composite cap consists of 24 inches of off-site clay, a geotextile fabric, a 40 mil HDPE liner, 18 inches of off-site fill and 6 inches of topsoil. The top 6 inches of on-site fill will be graded and leveled prior to the cap installation. Two feet of compacted clay is placed on the graded fill, followed by the 40 mil HDPE liner, and then the geotextile fabric. The geotextile fabric is covered with 18 inches of off-site fill, compacted in 6-inch lifts, and the vegetation layer composed of 6 inches of topsoil is the last layer.
- 2 General O&M includes cap inspection, mowing 6 times a year, fertilizing, and seeding of 33.3% of the cap area.
- 3 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub-contractor markup and profit.

Cost Equations - 1999\$

Capital:	$314,707 * (\text{area in acres}) + 11,621$
General O&M:	$1,089 * (\text{area in acres}) + 2360$
Miscellaneous O&M	$6,583 * (\text{area in acres}) + 764$

Appendix L-1.3

Corrective Action: Cap - Composite Cap for Hazardous Waste (Subtitle C)

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions cost database. 1998 CFR 40 Sections 258.40, 258.60, 264.301 and 264.310 were used to determine the requirements for capping of hazardous waste materials.

Application (range)

The cost equation was developed using incremental cap areas ranging from 0.5 acres to 50 acres. Cap areas beyond the range of 0.5 to 50 acres will depart from the known costs and are not verifiable. However, the cost equation trend line is linear with little to no deviation from the estimated costs. Therefore, the cost equation is assumed to be applicable to any size cap area.

Three cost equations were developed, capital costs, general O&M (e.g., mowing, reseeding, fertilizing), and miscellaneous O&M. Miscellaneous O&M is comprised of repairs to the cap due to erosion, settling, or other unforeseen circumstances.

Assumptions and Limitations

- 1 The Subtitle C composite cap consists of 36 inches of off-site clay, a geotextile fabric, a 40 mil HPDE liner, 18 inches of off-site fill and 6 inches of topsoil. The top 6 inches of on-site fill will be graded and leveled prior to the cap installation. Three feet of compacted clay is placed on the graded fill, followed by the 40 mil HDPE liner, and then the geotextile fabric. The geotextile fabric is covered with 18 inches of off-site fill, compacted in 6 inch lifts, and the vegetation layer composed of 6 inches of topsoil is the last layer.
- 2 General O&M includes cap inspection, mowing 6 times a year, fertilizing, and seeding of 33.3% of the cap area.
- 3 RACER includes markup factors to include general conditions costs (e.g., supervision of labor, temporary facilities including job and storage trailers and portable toilets, temporary plants, personal protective equipment (PPE), travel and per diem, permits, sales and labor taxes, insurance, and bonds), overhead, prime and sub-contractor markup and profit.

Cost Equations - 1999\$

Capital:	$373,251 * (\text{area in acres}) + 10,844$
General O&M:	$1,498 * (\text{area in acres}) + 844$
Miscellaneous O&M	$7,793 * (\text{area in acres}) + 870$

Appendix L-2.1

Corrective Action: Soil/Waste Removal: Excavation

Source

Memorandum from ICF Consulting Group to EPA, regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes, January 28, 1998.

Application (range)

There was no specified waste quantity range. The average unit cost is \$15 per ton for both hazardous and non-hazardous waste.

Assumptions and Limitations

No assumptions or limitations were stated.

Costs

The unit cost is \$15 per ton.

Appendix L-2.2

Corrective Action: Soil/Waste Removal: Backfill

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

There was no specified range

Assumptions and Limitations

The unit cost is for unclassified fill from an off-site source, placed in six inch lifts, and includes the cost for delivery, spreading, and compaction

Costs - 1999\$

The unit cost is \$9 71 per cubic yard

Appendix L-3.1

Corrective Action: In-Situ Stabilization

Source

Memorandum to Paul Borst, EPA/OSW from Kevin Guiney, ICF Incorporated, dated January 28, 1998, regarding Costs of the Phase IV Land Disposal Restrictions on Manufactured Gas Plant Wastes The reference for the in-situ stabilization cost presented in this memorandum is the EPA/OSW document entitled *Application of the Phase IV Land Disposal Restrictions to Contaminated Media: Costs, Cost Savings, and Economic Impacts*, dated January 28, 1998

Application (range)

The applicable volume range for the unit cost is not provided

Assumptions and Limitations

No assumptions or limitations are presented

Costs

Unit Cost: \$54/ton

Corrective Action: Soil Vapor Extraction

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The costs are based on areas of 5,000 to 500,000 square feet (sf) and depths of 10 to 30 feet below ground surface. Four sets of costs were developed for soil types of gravel/gravel-sand, sand/gravelly sand, sand-silt/sand-clay, and silt/silty-clay.

Soil vapor extraction is an in-situ process for removal of volatile organic compounds (VOCs) from unsaturated soil. This process will not remove heavy oils, metals, PCBs, or dioxins.

Assumptions and Limitations

- 1 Costs are based on vertical wells.
- 2 Soil vapor extraction is generally not applicable for soil with high clay or moisture content.
- 3 Costs include vertical vapor extraction wells, air blowers, above-ground piping, two disposable GAC units in series for off-gas treatment, electricity, carbon disposal and replacement, labor, system maintenance, air sampling and analysis for tentative ID compounds (EPA 30/5040/8260), design, project management, and permitting. Costs include markups that decrease with the increasing scale of the project. Costs do not include utility distribution, fencing, monitoring wells, treatment or disposal of drill cuttings, or a building to house the system. Additional permitting costs may be required in some locations.
- 4 Costs include off-gas treatment. In some locations, direct discharge of off-gas with low vapor concentrations may be allowed.
- 5 Costs are based on above-ground piping. If below-ground piping is necessary due to site use, significant additional capital costs may be incurred.
- 6 Costs are based on contaminated soil depths up to 30 feet, which is assumed to be a typical maximum depth of unsaturated soil. Capital costs will increase if contamination extends to greater depths. O&M costs do not change appreciably with depth. Note that soil vapor extraction is not appropriate in saturated soils below the water table. The soil formation is assumed to be unconsolidated.
- 7 Well spacing is assumed to be 100 feet for gravel/gravel-sand, 50 feet for sand/gravelly sand, 35 feet for sand-silt/sand-clay, and 22 feet for silt/silty-clay.
- 8 Vapor flow rates per well are assumed to be 150 cubic feet per minute (cfm) for gravel/gravel-sand, 35 cfm for sand/gravelly sand, 15 cfm for sand-silt/sand-clay, and 6 cfm for silt/silty-clay.
- 9 Regression equations were developed for capital and O&M costs as a function of area and depth. However, the resulting cost equations were not accurate. Therefore, specific costs for various areas and depths are presented.

Area (ft ²)	Depth (ft)	Gravel/ Gravel-Sand	Sand/ Gravelly-Sand	Sand-Silt/ Sand-Clay	Silt/Silty-Clay
Capital Costs Year 1999\$					
5,000	10	\$19,100	\$23,400	\$27,400	\$46,400
6,000	20	\$19,800	\$30,100	\$37,700	\$62,000
7,000	30	\$20,400	\$32,900	\$46,200	\$86,600
50,000	10	\$135,800	\$134,400	\$193,000	\$366,500
60,000	20	\$144,200	\$214,700	\$261,100	\$528,200
70,000	30	\$153,600	\$253,500	\$385,200	\$768,800
500,000	10	\$829,200	\$1,210,700	\$1,772,100	\$3,485,200
600,000	20	\$1,045,800	\$1,692,800	\$2,487,500	\$5,151,000
700,000	30	\$1,258,200	\$2,143,700	\$3,356,700	\$7,167,700
O&M Costs Year 1999\$					
5,000	10	\$46,700	\$45,600	\$44,300	\$50,000
6,000	20	\$46,700	\$50,200	\$47,200	\$52,800
7,000	30	\$46,700	\$50,200	\$48,600	\$57,000
50,000	10	\$92,900	\$96,700	\$101,400	\$106,600
60,000	20	\$98,700	\$96,700	\$112,100	\$116,900
70,000	30	\$104,100	\$103,500	\$114,700	\$122,000
500,000	10	\$388,700	\$368,600	\$357,500	\$443,500
600,000	20	\$437,300	\$448,000	\$426,100	\$575,100
700,000	30	\$503,300	\$515,200	\$490,000	\$675,400

Area (ft ²)	Depth (ft)	Gravel/ Gravel-Sand	Sand/ Gravelly-Sand	Sand-Silt/ Sand-Clay	Silt/Silty-Clay
Capital Costs Year 2000\$					
5,000	10	\$19,600	\$24,000	\$28,100	\$47,600
6,000	20	\$20,300	\$30,900	\$38,600	\$63,600
7,000	30	\$20,900	\$33,700	\$47,400	\$88,800
50,000	10	\$139,200	\$137,800	\$197,800	\$375,700
60,000	20	\$147,800	\$220,100	\$267,600	\$541,400
70,000	30	\$157,400	\$259,800	\$394,800	\$788,000
500,000	10	\$849,900	\$1,241,000	\$1,816,400	\$3,572,300
600,000	20	\$1,045,800	\$1,735,100	\$2,549,700	\$5,279,800
700,000	30	\$1,289,700	\$2,197,300	\$3,440,600	\$7,346,900
O&M Costs Year 2000\$					
5,000	10	\$47,900	\$46,700	\$45,400	\$51,300
6,000	20	\$47,900	\$51,500	\$48,400	\$54,100
7,000	30	\$47,900	\$51,500	\$49,800	\$58,400
50,000	10	\$95,200	\$99,100	\$103,900	\$109,300
60,000	20	\$101,200	\$99,100	\$114,900	\$119,800
70,000	30	\$106,700	\$106,100	\$117,600	\$125,100
500,000	10	\$398,400	\$377,800	\$366,400	\$454,600
600,000	20	\$448,200	\$459,200	\$436,800	\$589,500
700,000	30	\$515,900	\$528,100	\$502,200	\$692,300

Appendix L-3.5

Corrective Action: Soil Washing

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

The cost equations are based on a waste quantity range of 5,000 to 100,000 loose cubic yards (cy) of soil. Three cost equations were developed for soil washing plants with capacities of 25, 50, and 100 tons per hour. Choice of plant capacity depends on the quantity of waste produced per hour. The 100 ton per hour plant is least expensive per ton of soil for large soil quantities.

Soil washing is applicable for media contaminated with volatile organic compounds (VOCs), such as TCE, benzene, toluene, and some fuels. Approximately 90 to 99 percent of VOCs can be removed from contaminated soils by soil washing. Semi-volatile organic compounds (SVOCs) may be removed, but with 40 to 90 percent efficiency. Addition of acids or chelating agents may be required for removal of metals and pesticides, which are more insoluble in water.

Assumptions and Limitations

- 1 Costs include site preparation, mobilization, startup, loading of soils from stockpile, system operation, maintenance, process water, off-site transportation and treatment of process water, surfactant, flocculant, electricity, design, and project management. Costs do not include excessive clearing, utility distribution, analytical sampling, or treatment or disposal of contaminated fines remaining after soil washing.
- 2 Soil washing plants are assumed to include: vibrating grizzly/screen, rotary feeder module, feed conveyor assembly, trommel washer/deagglomeration unit, cyclone(s), attrition scrubber unit, dense media separation column, dewatering unit, clarifier, filter press, product discharge conveyor, and plant air compressor. All modules are skid-mounted, pre-piped, and pre-wired.
- 3 Soil volumes are based on loose cubic yards (e.g., from a stockpile), not in-situ cubic yards. Soil density is assumed to be 1.3 tons per loose cubic yard.
- 4 Soil washing may not be appropriate for soils with greater than 50 percent clay and silt content because of difficulties in removing contaminants from fine particles. Note that soil washing does not eliminate contaminants – it reduces the volume of contamination into finer fractions for collection and treatment.
- 5 The soil washing plant one-way mobilization distance is assumed to be 200 miles.
- 6 The soil washing plant is assumed to operate 42 weeks per year (80% availability), 5 days per week, 6 hours per day, with 2 hours per day of downtime.
- 7 The washing agent depends on the type, concentration, and partitioning coefficient of the contaminant. Four pounds of surfactant per ton of feed material is assumed.
- 8 Feed soils containing more than 35 percent fines by weight are generally poor candidates for soil washing. Typical percent fines for sand and gravel is 4, for sand is 10, and for mixed sandy, silty, clayey soil is 13. Costs are based on mixed sandy, silty, clayey soil.
- 9 Water entering the soil washing plant and process water should be at least 55°F. Costs are based on water temperatures of 55°F. Heating would be necessary for water at a lower temperature.
- 10 Soil washing generally requires 1,000 to 2,000 gallons of water per ton of soil treated. Most of the water can be treated and recycled, leaving the quantity of fresh water needed at 50 to 100 gallons per ton of soil.
- 11 Soil washing is not appropriate for soils with high explosive potential.
- 12 Mixtures of contaminants may be difficult to remove by soil washing.

Costs Equations - 1999\$

Cost (25 tons/hour) = 78 (LCY) + 541,296
Cost (50 tons/hour) = 55 (LCY) + 598,863
Cost (100 tons/hour) = 41 (LCY) + 693,330
LCY = Loose cubic yards

Appendix L-4.1

Corrective Action: Groundwater Extraction Wells

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

Costs for groundwater extraction well installation were obtained for four different extraction rates (10, 50, 100, and 200 gallons per minute) and two different depths to groundwater (20 and 100 feet). Costs for extraction wells of 10 gpm or less remain relatively constant, therefore, the 10 gpm costs can be used for lower extraction rates.

Assumptions and Limitations

- 1 Assumed that wells were installed in an unconsolidated formation into an unconfined aquifer
- 2 Assumed that existing ground cover is soil or gravel and not pavement
- 3 The thickness of the aquifer is assumed to be 30 feet (i.e., 30 feet from the top of the static groundwater table to the base of the aquifer)
- 4 No free product was assumed to be present in the aquifer
- 5 Costs include well protection. Well protection consists of 4 concrete posts and an explosion proof receptacle
- 6 Costs do not include a collection tank
- 7 Costs do not include sampling or analytical costs. See Appendix N for these costs
- 8 Costs are not included for management of possible biofouling or inorganic fouling
- 9 Costs assume that two wells are installed. Costs in the following table are per well

Costs - 1999\$

Flow Rate (gpm)	Depth to Groundwater (feet)	Capital - 1999\$	O&M - 1999\$
10	20	\$12,113	\$3,907
50	20	\$13,567	\$4,489
100	20	\$15,062	\$4,944
200	20	\$20,379	\$6,215
10	100	\$21,855	\$4,311
50	100	\$22,909	\$5,421
100	100	\$32,465	\$7,029
200	100	\$36,113	\$9,921

Costs Equations

Depth to Groundwater 20 feet

$$\begin{aligned} \text{Capital Cost (per well)} &= 0.10 Q^2 + 23Q + 11,970 \\ \text{O\&M (per well)} &= 12Q + 3,815 \end{aligned}$$

Depth to Groundwater 100 feet

$$\begin{aligned} \text{Capital Cost (per well)} &= 81Q + 21,063 \\ \text{O\&M (per well)} &= 30Q + 3,998 \end{aligned}$$

Q = gallons per minute

Corrective Action: French Drain

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

French drains can be used to remove or contain non-aqueous phase liquid (NAPL) or free-phase product that has accumulated on or below the water table. French drains are most appropriate when relatively continuous large pools of NAPL (generally greater than one foot thick) are present. Using a french drain recovery system for LNAPL removal is much more common and effective than for DNAPL removal.

Obtained costs for a french drain designed to remove a 5 foot layer of LNAPL from the groundwater table. Assumed depths to groundwater of 10 and 20 feet. Assumed trench lengths of 100, 500, and 1,000 feet. Costs did not vary significantly depending on depth to groundwater. Therefore, an equation was developed based on a 20 foot depth to groundwater.

Assumptions and Limitations

- 1 Assumed that the soil is silty sand with a permeability of approximately 0.0142 inches per hour
- 2 Assumes existing and replacement cover is soil or gravel
- 3 Costs for product and groundwater treatment and disposal are not included. Costs vary depending on contaminant type, volume, and available disposal options. See Appendix G for Aqueous Waste Treatment costs. Approximately 350 gallons of product and groundwater will be recovered per 100 feet of trench based on a soil permeability of 0.0142 inches per hour for silty-sand and an average soil porosity of 0.3
- 4 No sampling or analytical costs are included. See Appendix N for costs

Costs Equations - 1999\$

Capital Cost = $111 L + 56,947$

O&M Cost = $6 L + 2,671$

L = Length of Drain in Feet

Corrective Action: Slurry Wall

Source

Costs were developed from the Remedial Action Cost Engineering and Requirements (RACER) cost estimating software; costs in this software are based on the 1999 Environmental Cost Handling Options and Solutions (ECHOS) cost database

Application (range)

A slurry wall is a vertical subsurface barrier used to contain, capture, or redirect groundwater flow in the vicinity of a contaminated site. The cost equations were developed based on slurry wall lengths of 100, 500, and 1,000 feet. Costs were developed for three different depths of 20, 50, and 80 feet. Each depth has a different cost equation due to different excavation methods required.

Slurry walls are applicable to contain contaminated groundwater, divert contaminated groundwater from drinking water sources, divert uncontaminated groundwater, and/or provide a barrier for a groundwater treatment system. Slurry walls are typically placed at depths from 20 to 80 feet and are generally 2 to 4 feet in thickness.

Assumptions and Limitations

- 1 Slurry wall is assumed to be a 3 foot thick soil-bentonite wall
- 2 The soil being excavated was silt/silty-clay mixture, sand/gravelly sand mixture, or sand-silt/sand-clay mixture
- 3 The depth of the wall determines the type of equipment used to excavate the trench. For depths to 25 feet, a hydraulic excavator is used. For depths between 25 and 75 feet, a hydraulic excavator with an extension boom is used. For depths between 75 and 120 feet, a dragline is used.
- 4 Slurry wall is keyed 2.5 feet into bedrock
- 5 Assumed that a working area is needed equivalent to the length of the wall plus a 75 foot width for slurry and backfill mixing and storage. The working area will need to be graded and compacted prior to use.
- 6 Assumed that 35% of the excavated material will have insufficient fines content (i.e., < 30%) and will be replaced by borrow material.
- 7 Assumed that the slurry wall construction will occur outside of the contaminated zone, if present. Therefore, excavated material is not contaminated.
- 8 Upon completion of the backfilling operation, the slurry wall is assumed to be covered with a vegetative cap using on-site top soil. The soil cap is assumed to be 6 inches thick 13 feet wide (i.e., cover the 3 feet of the wall and 5 feet on either side). This soil cap will prevent the slurry wall from drying and cracking.
- 9 O&M costs include labor to visually inspect along the top of the slurry wall and remove any growth (i.e., trees or shrubs) that could damage the wall's integrity.
- 10 Slurry walls are often used in conjunction with extraction wells and/or capping. See Appendix L-4.1 for extraction well costs and Appendix L-1 for capping costs.

Costs Equations - 1999\$

Capital for 20 feet deep wall = $147L + 11,451$
 Capital for 50 feet deep wall = $316L + 30,493$
 Capital for 80 feet deep wall = $587L + 30,011$
 O&M = $1,500 (L/100)$

L = Length of Wall in Feet

Appendix M-1

Labor: Unskilled

Source

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The unskilled labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of construction laborers
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier The multiplier includes costs such as benefits (e g , health insurance) and support staff and is based on a 30 United States city average However, the labor multiplier of 1 77 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Unskilled Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$37 98	\$21 50
Bureau of Labor Statistics, 1997	\$19 97*	\$11 28

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Appendix M-2

Labor: Operator

Source

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The operator labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of operating engineers
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier of 1 77 The multiplier includes costs such as benefits (e g , health insurance) and support staff However, the labor multiplier of 1 77 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Operator Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$38 15	\$21 60
Bureau of Labor Statistics, 1997	\$27 78*	\$15 70

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

*Labor: Technician*Source

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The technician labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of engineering technicians
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier of 3 2 The multiplier includes costs such as benefits (e g , health insurance) and support staff However, the labor multiplier of 3 2 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Technician Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$46 85	\$14 43
Bureau of Labor Statistics, 1997	\$60 89*	\$19 03

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Appendix M-4

Labor: Professional (e.g., Engineer or Hydrogeologist)

Source

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The professional labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of civil engineers
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier of 3 2 The multiplier includes costs such as benefits (e g , health insurance) and support staff However, the labor multiplier of 3 2 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Professional Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$105 03	\$32 35
Bureau of Labor Statistics, 1997	\$88 05*	\$27 52

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Labor: Manager**Source**

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The manager labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of managers and administrators
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier of 3 2 The multiplier includes costs such as benefits (e g , health insurance) and support staff However, the labor multiplier of 3 2 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Managerial Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$79 18	\$24 38
Bureau of Labor Statistics, 1997	\$110 95*	\$34 67

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Labor: ClericalSource

Two sources were consulted in developing hourly labor rates for the selected professions, RACER Cost Estimating Software and the U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997 "

Application (range)

The cost is based on a full time employee working 40 hours a week The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997 RACER labor costs are based on end of year 1998 data The Bureau of Labor costs are inflated 2 years (1 05 inflation factor) to 1999 dollars RACER costs are considered 1999 dollars
- 3 The clerical labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of secretaries
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted The level of urbanization and the section of the country are not reflected in the labor rates provided The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The RACER hourly labor rates are shown with and without a labor multiplier of 3 2 The multiplier includes costs such as benefits (e g , health insurance) and support staff However, the labor multiplier of 3 2 is based on RACER Cost Estimating software, which uses private industry costs as a basis The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier The labor multiplier for government consulting is typically less than 3 0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Clerical Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	\$40 40	\$12 45
Bureau of Labor Statistics, 1997	\$43 44*	\$13 57

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Labor: AttorneySource

The U S Department of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" was consulted in developing the hourly labor wage rate

Application (range)

The cost is based on a full time employee working 40 hours a week. The hourly wage is not applicable to part-time or over-time employment

Assumptions and Limitations

- 1 The hourly labor rate is based on a full-time employee 40-hour work week
- 2 The Bureau of Labor Statistics "National Compensation Survey: Occupational Wages in the United States, 1997" is based on data collected in early 1997. The Bureau of Labor costs are inflated 2 years (1.05 inflation factor) to 1999 dollars
- 3 The attorney labor cost from the Bureau of Labor Statistics is based on the full time, hourly earnings of lawyers
- 4 The actual cost of labor is heavily influenced by the geographic area in which the remedial activities are conducted. The level of urbanization and the section of the country are not reflected in the labor rates provided. The hourly rates indicate a national average, and are not adjusted by a "cost of living" index or reflect labor market conditions
- 5 The hourly labor rates are shown with and without a labor multiplier of 3.2. The multiplier includes costs such as benefits (e.g., health insurance) and support staff. However, the labor multiplier of 3.2 is based on RACER Cost Estimating software, which uses private industry costs as a basis. The U S Department of Labor Statistics reports labor rates as straight hourly pay and does not include information to determine a labor multiplier. The labor multiplier for government consulting is typically less than 3.0, though an actual source for a government contract labor multiplier is unavailable

Costs - 1999\$

<i>Attorney Labor Cost</i>	With Labor Multiplier	Without Labor Multiplier
RACER Cost Estimate	N/A	N/A
Bureau of Labor Statistics, 1997	\$116.53*	\$36.41

* Note: The labor multiplier applied to the *National Compensation Survey: Occupational Wages in the United States, 1997* hourly wage is based on RACER methods. No markups or multipliers were provided in the *National Compensation Survey: Occupational Wages in the United States, 1997* report

Appendix N

Analytical

Source

RACER 1999 cost estimating software

2000 Fee Schedule, EnChem, Inc , Minneapolis, MN, January 2000

Annual Laboratory Services Bid, Great Lakes Analytical, Buffalo Grove, IL, January 2000

Annual Laboratory Services Bid, US Filter/Enviroscan, Rothschild, WI, January 2000

Annual Laboratory Services Bid, Test America, Inc , Watertown, WI, January 2000

Annual Laboratory Services Bid, Spectrum Labs, Inc , St Paul, MN, January 2000

Annual Laboratory Services Bid, Pace Analytical Services, Inc , Minneapolis, MN, January 2000

Economic Assessment of the USEPA's 1999 Proposed Hazardous Waste Identification Rule (HWIR), Economics, Methods, and Risk Assessment Division, Office of Solid Waste, USEPA October 29, 1999

DPRA Environmental, St Paul, MN Labor cost estimates and professional opinion on time requirements

Application (range)

Costs are provided for sampling and analysis separately To obtain the cost for a sample add the sampling cost to the specific analytical cost desired

Assumptions and Limitations

The following data and assumptions were used to develop the cost for sampling

- 1 Assumed that waste was a sludge, wastewater or solid Most of the analytical costs can be applied to any of the waste streams Some tests are only applicable to only certain media type (e g , TCLP is not applicable to liquids) The table footnotes when costs are applicable to only one or two waste streams
- 2 Assumed that a grab sample was taken of the waste, that is, no special sampling equipment was assumed to be required nor was any protective clothing included
- 3 Assumed that 10 samples would be taken in an eight hour day Eight hours includes travel time to and from site, acquiring samples, labeling jars, and preparing samples for transport to lab
- 4 Assumed labor rate of \$50 per hour
- 5 Assumed vehicle charge and mileage of \$50 for the day
- 6 Analytical costs include jars with preservatives, packaging and shipping/transportation of jars and samples, analysis, sample disposal, and field blanks
- 7 Assumes a two-week turnaround for analytical results A surcharge may apply to rush orders
- 8 Analytical costs do not include markup Markup will be required if an off-site contractor conducts the sampling and orders the analytical Average markup for analytical costs is approximately 10 to 20% Sampling costs include markups

Costs - 1999\$

Sampling \$45/sample (DPRA); \$36/sample (RACER); \$41/sample (average cost) Markups included

Analytical See attached table Add between 10 and 20% for markups

Analytical Costs (excluding markups)						
Constituent(s)	Sampling Method	Low Cost	High Cost	Median Cost	Average Cost	Number of Data Points
Priority 17 Metals (App IX metals) ^{1 2}		\$146 25	\$195 00	\$170 63	\$170 63	2
RCRA Metals	6010	\$76 30	\$100 00	\$85 00	\$89 00	4
EP Toxicity Metals ³	1310	n/a	n/a	\$194 00	\$194 00	1
Pesticides/PCBs	608/8080/8081/8082	\$142 50	\$206 67	\$180 00	\$175 90	8
Volatile Organics GC/MS	8260/8021	\$60 00	\$137 50	\$90 00	\$97 50	9
BTEX/MTBE	8021/8020	\$30 00	\$80 00	\$64 17	\$59 58	4
BTEX/MTBE (GC/MS) ²	8260	\$60 00	\$68 00	\$64 00	\$64 00	2
Chlorinated Hydrocarbons ³	8121	n/a	n/a	\$198 33	\$198 33	1
Non-Halogenated Volatile Organics ^{3 5}	8015	n/a	n/a	\$110 00	\$110 00	1
PAHs	8100/8310	\$60 00	\$188 33	\$95 00	\$105 30	11
Base Neutral & Acid Extractable Organics	625/8270	\$223 33	\$455 00	\$283 13	\$317 10	6
TCLP Extraction Only	1311	\$40 00	\$85 00	\$72 50	\$68 96	6
TCLP Full	6010/7470/8080/ 8081/8151/8260/8270	\$706 30	\$1,000 00	\$740 00	\$791 26	5
TCLP Full (less pesticides/herbicides)	8081/8151	\$454 30	\$750 00	\$532 50	\$555 98	6
Permeability Test	9100	\$50 00	\$236 67	\$181 92	\$145 69	8
Cyanide Total	9010	\$22 50	\$44 00	\$30 00	\$32 17	3

note: Analytical costs do not include markups n/a: not applicable GC/MS: gas chromatography mass spectroscopy

¹ Sb,As,Ba,Be,Cd,Cr,CO,Cu,Pb,Hg,Ni,Se,Ag,Tl,Sn,V,Zn

² Costs available from only one source The two costs are the preferred (i.e., discounted rate) and standard rates from one lab

³ Costs available from only one source

⁴ Applicable for soil analysis only

⁵ Applicable for water analysis only

ANALYTICAL COSTS									
Constituent(s)	EnChem (standard)	EnChem (discounted)	Great Lakes Analytical	US Filter	Test America	Spectrum Labs Inc	Pace Analytical	RACER Soil	RACER water
Priority 17 Metals (appendix IX metals)	\$195 00	\$146 25							
RCRA Metals			\$85 00	\$95 00	\$76 30		\$100 00		
EP Toxicity Metals								\$194 00	
Pesticides/PCBs	\$190 00	\$142 50	\$145 00	\$170 00	\$203 00		\$200 00	\$150 00	\$206 67
Volatile Organics GC/MS	\$135 00	\$90 00	\$120 00	\$60 00	\$65 00	\$80 00/ \$90 00	\$100 00	\$137 50	\$137 50
BTEX/MTBE	\$60 00	\$30 00						\$68 33	\$80 00
BTEX/MTBE (GCMS)	\$68 00	\$60 00							
Chlorinated Hydrocarbons								\$198 33	\$198 33
Non-Halogenated Volatile Organics									\$110 00
PAHs	\$168 00	\$125 00	\$62 00	\$60 00	\$65 00	\$90 00/ \$95 00	\$95 00	\$105 00	\$105 00 - \$188 33
Base Neutral & Acid Extractable Organics	\$455 00	\$341 25					\$225 00	\$223 33	\$223 33 - \$434 67
TCLP Extraction Only	\$85 00	\$63 75	\$40 00	\$75 00	\$70 00			\$80 00	n/a
TCLP Full	\$1,000 00	\$725 00		\$740 00	\$706 30		\$785 00		n/a
TCLP Full (less pesticides/herbicides)	\$750 00	\$530 00		\$530 00	\$454 30		\$535 00	\$536 56	n/a
Permeability Test		\$185 00	\$185 00	\$55 00	\$50 00	\$215 00	\$60 00	\$178 33 - \$236 67	n/a
Cyanide Total	\$30 00	\$22 50						\$44 00	\$44 00
Free Cyanide (SM4500)	\$32 00	\$24 00		\$35 00					

¹ Sb,As,Ba,Be,Cd,Cr,CO,Cu,Pb,Hg,Ni,Se,Ag,Tl,Sn,V,Zn

O. Inflation Rates

Inflation rates were developed based on Department of Energy (DOE) Departmental Price Change Index updates for Anticipated Economic Escalation Rates. DOE estimates escalation rates annually for environmental restoration costs, as well as other cost categories. Escalation rates are estimated for the current year plus the next six years. The current year estimates are assumed to be relatively accurate, as opposed to the future year predictions. The table below presents the current year DOE escalation rates for environmental restoration costs.

Year	Annual Escalation Index	Annual Escalation Percentage	Cumulative Escalation Percentage to 2000
1999	0.976	2.5%	2.5%
1998	0.976	2.5%	5.0%
1997	0.976	2.5%	7.6%
1996	0.973	2.8%	10.5%
1995	0.971	3.0%	13.8%
1994	0.969	3.2%	17.5%
1993	0.966	3.5%	21.6%

The escalation indices were obtained from the following DOE documents:

Departmental Price Change Index, January 1999 Update, FY 2001 Guidance

<http://www.cfo.doe.gov/budget/guidance/fy2001/omb/01attchd.pdf>

Department of Energy FY 2000 OMB Budget Submission

<http://www.cfo.doe.gov/budget/guidance/fy2000/omb/00attchd.pdf>

Departmental Price Change Index, January 1997 Update, FY 1999 Guidance

<http://www.cfo.doe.gov/budget/guidance/fy1999/omb/call.pdf>

Departmental Price Change Index, January 1996 Update, FY 1998 Guidance
(hard copy obtained from DOE)

Departmental Price Change Index, January 1995 Update, FY 1997 Guidance
(hard copy obtained from DOE)

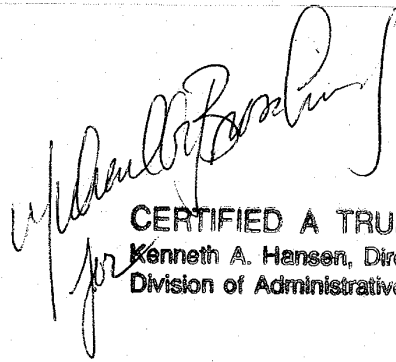
Departmental Price Change Index, FY 1996 Guidance
(hard copy obtained from DOE)

Current-year escalation rates were not estimated for 1995. The 1995 rates in the above table are the averages of the 1994 and 1996 estimates.

The estimated escalation rate for 2000 is 2.7%, as estimated in the Departmental Price Change Index, January 2000 Update, FY 2002 Guidance.

<http://www.cfo.doe.gov/budget/guidance/fy2002/field/constructioninflation.doc>

This rate, as well as escalation rates developed by DOE in the future, can be used to further inflate environmental restoration cost estimates from the base year of 2000.



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**Kenneth A. Hansen, Director
Division of Administrative Rules**

**Utah State Department of Environmental Quality
Division of Solid and Hazardous Waste
Rules R315-1 through 9, 12 through 14, 50, 101, and 102
as in effect September 15, 2003**

R315. Environmental Quality, Solid and Hazardous Waste.

R315-1. Utah Hazardous Waste Definitions and References.

R315-1-1. Definitions.

(a) Terms used in R315-1 through R315-101 are defined in Sections 19-1-103 and 19-6-102.

(b) For R315-1 through R315-101, the terms defined in 40 CFR 260.10 and 279.1, 2000 ed., as amended by 67 FR 2962, January 22, 2002, are adopted and incorporated by reference with the following revisions:

(1) Substitute "Executive Secretary" for "Regional Administrator" or "Administrator," except in the following cases:

(i) In the actual definitions of "Administrator" and "Regional Administrator;" and

(ii) In the definitions of "hazardous waste constituent" and "industrial furnace" where "Board" shall be substituted.

(2) Insert in the definition of "existing tank system" or "existing component" the following additional phrase after "July 14, 1986," "or December 16, 1988 for purposes of implementing the non-HSWA requirements of the tank regulations as promulgated by EPA on July 14, 1986, 51 FR 25470, as they have been incorporated into the corresponding rules of R315. A non-HSWA existing tank system or non-HSWA tank component is one which does not implement any of the requirements of the federal Hazardous and Solid Waste Amendments of 1984 (HSWA) as identified in Table 1 of 40 CFR 271.1."

(3) Insert in the definition of "new tank system" or "new tank component" the following additional phrase after "July 14, 1986," "or December 16, 1988 for purposes of implementing the non-HSWA requirements of the tank regulations as promulgated by EPA on July 14, 1986, 51 FR 25470, as they have been incorporated into the corresponding rules of R315; except, however, for purposes of 40 CFR 265.193(g)(2) and 40 CFR 264.193(g)(2), a new tank system is one which construction commences after July 14, 1986. A non-HSWA new tank system or non-HSWA new tank component is one which does not implement any of the requirements of the federal Hazardous and Solid Waste Amendments of 1984 (HSWA) as identified in Table 1 of 40 CFR 271.1."

(c) The terms defined in 40 CFR 261.1(c), 1997 ed., are adopted and incorporated by reference.

(d) For purposes of R315-3 regarding application and permit procedures for hazardous waste facilities, the terms defined in 40 CFR 270.2, 1999 ed., are adopted and incorporated by reference with the following revisions:

(1) "Permit" means the plan approval as required by subsection 19-6-108(3)(a), or equivalent control document issued by the Executive Secretary to implement the requirements of the Utah Solid and Hazardous Waste Act;

(2) "Director" or "State Director" means "Executive Secretary;" and

(3) Replace existing definition of "corrective action management unit" with the definition as found in 40 CFR 260.10, 2000 ed.

(e) The definitions of "Polychlorinated biphenyl, PCB," and "Polychlorinated item" as found in 761.3, 40 CFR, 1990 ed., are adopted and incorporated by reference.

(f) In addition, the following terms are defined as follows:

(1) "Approved hazardous waste management facility" or "approved facility" means a hazardous waste treatment, storage, or disposal facility which has received an EPA permit in

accordance with federal requirements, has been approved under 19-6-108 and R315-3, or has been permitted or approved under any other EPA authorized hazardous waste state program.

(2) "Division" means the Division of Solid and Hazardous Waste.

(3) "Hazard class" means:

(i) The DOT hazard class identified in 49 CFR 172; and

(ii) If the DOT hazard class is "OTHER REGULATED MATERIAL," ORM, the EPA hazardous waste characteristic exhibited by the waste and identified in R315-2-9.

(4) "Monitoring" means all procedures used to systematically inspect and collect data on operational parameters of the facility or on the quality of the air, ground water, surface water, or soils.

(5) "POHC's" means principle organic hazardous constituents.

(6) "Permittee" means any person who has received an approval of a hazardous waste operation plan under 19-6-108 and R315-3 or a Federal RCRA permit for a treatment, storage, or disposal facility.

(7) "Precipitation run-off" means water generated from naturally occurring storm events. If the precipitation run-off has been in contact with a waste defined in R315-2-9, it qualifies as "precipitation run-off" if the water does not exhibit any of the characteristics identified in R315-2-9. If the precipitation run-off has been in contact with a waste listed in R315-2-10 or R315-2-11, then it qualifies as "precipitation run-off" when the water has been excluded under R315-2-16. Water containing any leachate does not qualify as "precipitation run-off".

(8) "Spill" means the accidental discharging, spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous wastes or materials which, when spilled, become hazardous wastes, into or on any land or water.

(9) "Waste management area" means the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit. The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit. If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

(g) Terms used in R315-15 are defined in sections 19-6-703 and 19-6-706(2)(b)(ii).

(h) For purposes of R315-101 regarding cleanup action and risk-based closure standards, the following terms are defined as follows:

(1) "The concentration term, C" is calculated as the 95% upper confidence limit, UCL, on the arithmetic average for normally distributed data, or as the 95% upper confidence limit on the arithmetic average for lognormally distributed data. For normally distributed data, $C = \text{Mean} + t \times \text{Standard Deviation}/n^{1/2}$, where n is the number of observations, and t is Student's t distribution (at the 95% one-sided confidence level and n-1 degrees of freedom), tables of which are printed in most introductory statistics textbooks. For lognormally distributed data, $C = \exp(\text{Mean of lognormal-transformed data} + 0.5 \times \text{Variance of lognormal-transformed data} + \text{Standard Deviation of lognormal-transformed data} \times H/(n - 1)^{1/2})$, where n is the number of observations, and H is Land's H statistic (at the 95% one-sided confidence level), tables of which are printed in advanced statistics books. For data which are not normally nor

lognormally distributed, appropriate statistics, such as nonparametric confidence limits, shall be applied.

(2) "Area of contamination" means a hazardous waste management unit or an area where a release has occurred. The boundary is defined as the furthest extent where contamination from a defined source has migrated in any medium at the time the release is first identified.

(3) "Contaminate" means to render a medium polluted through the introduction of hazardous waste or hazardous constituents as identified in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII.

(4) "Hazard index" means the sum of more than one hazard quotient for multiple substances, multiple exposure pathways, or both. The Hazard Index is calculated separately for chronic, subchronic, and shorter duration exposures.

(5) "Hazard quotient" means the ratio of a single substance exposure level over a specified time period, e.g. subchronic, to a reference dose for that substance derived from a similar exposure period.

(6) "Risk-based closure" means closure of a site where hazardous waste was managed or any medium has been contaminated by a release of hazardous waste or hazardous constituents, and where hazardous waste or hazardous constituents remain at the site in any medium at concentrations determined, under this rule, to cause minimal levels of risk to human health and the environment so as to require no further action or monitoring on the part of the responsible party nor any notice of hazardous waste management on the deed to the property.

(7) "Reasonable maximum exposure (RME)" means the highest exposure that is reasonably expected to occur at a site. The goal of RME is to combine upper-bound and mid-range exposure factors so that the result represents an exposure scenario that is both protective and reasonable; not the worst possible case.

(8) "Release" means spill or discharge of hazardous waste, hazardous constituents, or material that becomes hazardous waste when released to the environment.

(9) "Responsible party" means the owner or operator of a facility, or any other person responsible for the release of hazardous waste or hazardous constituents.

(10) "Site" means the area of contamination and any other area that could be impacted by the released contaminants, or could influence the migration of those contaminants, regardless of whether the site is owned by the responsible party.

R315-1-2. References.

(a) For purposes of R315-1 through R315-101, the publication references of 40 CFR 260.11, 2001 ed., are adopted and incorporated by reference.

(b) R315-1 through R315-101 incorporate by reference a number of provisions from 40 CFR. The incorporated provisions sometimes include cross-references to other sections of 40 CFR. Wherever there are sections in R315-1 through R315-101 that correspond to those cross-references, the cross-references of 40 CFR are not incorporated into R315-1 through R315-101. Instead, the corresponding sections in R315-1 through R315-101 shall apply.

KEY: hazardous waste

September 15, 2003

Notice of Continuation October 18, 2001

19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.
R315-2. General Requirements - Identification and Listing of Hazardous Waste.

R315-2-1. Purpose and Scope.

(a) This rule identifies those solid wastes which are subject to regulation as hazardous wastes under R315-3 through R315-9 and R315-13 of these rules and which are subject to the notification requirements of these rules.

(b)(1) The definition of solid waste contained in this rule applies only to wastes that also are hazardous for purposes of the rules implementing Chapter 6, Title 19. For example, it does not apply to materials such as non-hazardous scrap, paper, textiles, or rubber that are not otherwise hazardous wastes and that are recycled.

(2) This rule identifies only some of the materials which are solid wastes and hazardous wastes under the Utah Solid and Hazardous Waste Act. A material which is not defined as a solid waste in this rule, or is not a hazardous waste identified or listed in this rule, is still a solid waste and a hazardous waste for purposes of these sections if:

(i) In the case of section 19-6-109, the Board has reason to believe that the material may be a solid waste within the meaning of subsection 19-6-102(13) and a hazardous waste within the meaning of subsection 19-6-102(7) or

(ii) In the case of section 19-6-115, the material is presenting an imminent and substantial danger to human health or the environment.

R315-2-2. Definition of Solid Waste.

(a)(1) A solid waste is any discarded material that is not excluded by subsection R315-2-4(a) or that is not excluded by variance granted under R315-2-18 and R315-2-19.

(2) A discarded material is any material which is:

(i) Abandoned, as explained in paragraph (b) of this section; or

(ii) Recycled, as explained in paragraph (c) of this section; or

(iii) Considered inherently waste-like, as explained in paragraph (d) of this section.

(b) Materials are solid waste if they are abandoned by being;

(1) Disposed of; or

(2) Burned or incinerated; or

(3) Accumulated, stored, or treated, but not recycled, before or in lieu of being abandoned by being disposed of, burned, or incinerated.

(c) Materials are solid wastes if they are recycled - or accumulated, stored, or treated before recycling - as specified in paragraphs (c)(1) through (c)(4) of this section. Table 1 of 40 CFR 261.2, 1998 ed., is adopted and incorporated by reference, except that the heading for column 3 shall read "reclamation (Section 261.2(c)(3)) (except as provided in 261.4(a)(17) for mineral processing secondary materials)."

(1) Used in a manner constituting disposal

(i) Materials noted with "*" in column 1 of Table 1 of 40 CFR 261.2, are solid wastes when they are:

(A) Applied to or placed on the land in a manner that constitutes disposal; or

(B) Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land, in which cases the product itself remains a solid waste.

(ii) However, commercial chemical products listed in R315-2-11 are not solid wastes if they are applied to the land and that is their ordinary manner of use.

(2) Burning for energy recovery.

(i) Materials noted with a "*" in column 2 of Table 1 of 40 CFR 261.2 are solid wastes when they are:

(A) Burned to recover energy;

(B) Used to produce a fuel or are otherwise contained in fuels, in which cases the fuel itself remains a solid waste.

(ii) However, commercial chemical products listed in R315-2-11 are not solid wastes if they are themselves fuels.

(3) Reclaimed. Materials noted with a "*" in column 3 of Table 1 of 40 CFR 261.2 are solid wastes when reclaimed, except as provided under R315-2-4(a)(17), which shall be effective on July 1, 1999. Materials noted with a "---" in column 3 of Table 1 are not solid wastes when reclaimed.

(4) Accumulated speculatively. Materials noted with a "*" in column 4 of Table 1 of 40 CFR 261.2 are solid wastes when accumulated speculatively.

(d) Inherently waste-like materials. The following materials are solid wastes when they are recycled in any manner:

(1) Hazardous Waste Nos. F020, F021, unless used as an ingredient to make a product at the site of generation, F022, F023, F026, and F028.

(2) Secondary materials fed to a halogen acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste as defined in R315-2-9 through R315-2-10 and R315-2-24, except for brominated material that meets the following criteria:

(i) The material must contain a bromine concentration of at least 45%; and

(ii) The material must contain less than a total of 1% of toxic organic compounds listed in 40 CFR 261 Appendix VIII; and

(iii) The material is processed continually on-site in the halogen acid furnace via direct conveyance (hard piping).

(3) The Board will use the following criteria to add wastes to that list:

(i)(A) The materials are ordinarily disposed of, burned, or incinerated; or

(B) The materials contain toxic constituents listed in R315-50-10 and these constituents are not ordinarily found in raw materials or products for which the materials substitute, or are found in raw materials or products in smaller concentrations, and are not used or reused during the recycling process; and

(ii) The material may pose a substantial hazard to human health and the environment when recycled.

(e) Materials that are not solid waste when recycled.

(1) Materials are not solid wastes when they can be shown to be recycled by being:

(i) Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed; or

(ii) Used or reused as effective substitutes for commercial products; or

(iii) Returned to the original process from which they are generated, without first being reclaimed or land disposed. The material shall be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a secondary process, the materials must be managed such that there is no placement on the land. After June 30, 1999, in cases where the materials are generated and reclaimed within

the primary mineral processing industry, the conditions of the exclusion found at R315-2-4(a)(16) apply rather than this provision.

(2) The following materials are solid wastes, even if the recycling involves use, reuse, or return to the original process, described in paragraphs (e)(1)(i)-(iii) of this section:

(i) Materials used in a manner constituting disposal, or used to produce products that are applied to the land; or

(ii) Materials burned for energy recovery, used to produce a fuel, or contained in fuels; or

(iii) Materials accumulated speculatively; or

(iv) Materials listed in paragraphs (d)(1) and (d)(2) of this section.

(f) Documentation of claims that materials are not solid wastes or are conditionally exempt from regulation. Respondents in actions to enforce rules implementing the Utah Solid and Hazardous Waste Act who raise a claim that a certain material is not a solid waste, or is conditionally exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation, such as contracts showing that a second person uses the material as an ingredient in a production process, to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they actually are recycling materials must show that they have the necessary equipment to do so.

R315-2-3. Definition of Hazardous Waste.

(a) A solid waste as defined in section R315-2-2 is a hazardous waste if:

(1) It is not excluded from regulation as a hazardous waste under subsection R315-2-4(b); and

(2) It meets any of the following criteria:

(i) It is listed in sections R315-2-10 or R315-2-11 and has not been excluded from this section under sections R315-2-16 or R315-2-17.

(ii) It exhibits any of the characteristics of hazardous waste identified in R315-2-9. However, any mixture of a waste from the extraction, beneficiation, and processing of ores and minerals excluded under R315-2-4(b)(7) and any other solid waste exhibiting a characteristic of hazardous waste under R315-2-9 is a hazardous waste only if it exhibits a characteristic that would not have been exhibited by the excluded waste alone if such mixture had not occurred, or if it continues to exhibit any of the characteristics exhibited by the non-excluded wastes prior to mixture. Further, for the purposes of applying the Toxicity Characteristic to such mixtures, the mixture is also a hazardous waste if it exceeds the maximum concentration for any contaminant listed in table I, 40 CFR 261.24, which R315-2-9(g)(2) incorporates by reference, that would not have been exceeded by the excluded waste alone if the mixture had not occurred or if it continues to exceed the maximum concentration for any contaminant exceeded by the nonexempt waste prior to mixture.

(iii) RESERVED.

(iv) It is a mixture of solid waste and one or more hazardous wastes listed in R315-2-10 or R315-2-11 and has not been excluded from paragraph (a)(2) of this section under R315-2-16 and R315-2-17, or paragraph (f) of this section; however, the following mixtures of solid wastes and hazardous wastes listed in R315-2-10 or R315-2-11 are not hazardous wastes,

except by application of paragraph (a)(2)(i) or (ii) of this section, if the generator can demonstrate that the mixture consists of wastewater the discharge of which is subject to regulation under either Section 402 or Section 307(b) of the Clean Water Act, 33 U.S.C. 1251 et seq., including wastewater at facilities which have eliminated the discharge of wastewater, and;

(A) One or more of the following spent solvents listed in R315-2-10(e), which incorporates by reference 40 CFR 261.31 - carbon tetrachloride, tetrachloroethylene, trichloroethylene - provided that the maximum total weekly usage of these solvents, other than the amounts that can be demonstrated not to be discharged to wastewater, divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pre-treatment system does not exceed 1 part per million; or

(B) One or more of the following spent solvents listed in R315-2-10(e), which incorporates by reference 40 CFR 261.31 - methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents - provided that the maximum total weekly usage of these solvents, other than the amounts that can be demonstrated not to be discharged to wastewater, divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pre-treatment system does not exceed 25 parts per million; or

(C) One of the following wastes listed in R315-2-10(f), which incorporates by reference 40 CFR 261.32, provided that the wastes are discharged to the refinery oil recovery sewer before primary oil/water/solids separation - heat exchanger bundle cleaning sludge from the petroleum refining industry, EPA Hazardous Waste No. K050, crude oil storage tank sediment from petroleum refining operations, EPA Hazardous Waste No. K169, clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations, EPA Hazardous Waste No. K170, spent hydrotreating catalyst, EPA Hazardous Waste No. K171, and spent hydrorefining catalyst, EPA Hazardous Waste No. K172; or

(D) A discarded commercial chemical product, or chemical intermediate listed in R315-2-11, arising from "de minimis" losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purposes of this subparagraph, "de minimis" losses include those from normal material handling operations, for example, spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials; minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

(E) Wastewater resulting from laboratory operations containing toxic (T) wastes listed in Sections R315-2-10 or R315-2-11, which incorporates by reference 40 CFR 261 subpart D, provided that the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pre-treatment system, or provided the wastes, combined annualized average concentration does not exceed one part per million in the headworks of the facility's wastewater

treatment or pre-treatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation; or

(F) One or more of the following wastes listed in R315-2-10(f), which incorporates by reference 40 CFR 261.32 - wastewaters from the production of carbamates and carbamoyl oximes, EPA Hazardous Waste No. K157 - Provided that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine, including all amounts that can not be demonstrated to be reacted in the process, destroyed through treatment, or is recovered, i.e., what is discharged or volatilized, divided by the average weekly flow of process wastewater prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 parts per million by weight; or

(G) Wastewaters derived from the treatment of one or more of the following wastes listed in R315-2-10(f), which incorporates by reference 40 CFR 261.32 - organic waste, including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates, from the production of carbamates and carbamoyl oximes, EPA Hazardous Waste No. K156 - Provided, that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 milligrams per liter.

(v) Rebuttable presumption for used oil. Used oil containing more than 1000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in R315-2-10(e) and (f), which incorporates by reference 40 CFR 261 Subpart D. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste, for example, by using an analytical method from SW-846, Third Edition, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII.

(A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling agreement, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

(b) A solid waste which is not excluded from regulation under paragraph (a)(1) of this section becomes a hazardous waste when any of the following events occur:

(1) In the case of a waste listed in sections R315-2-10 or R315-2-11, when the waste first meets the listing description set forth in sections R315-2-10 or R315-2-11.

(2) In the case of the mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in sections R315-2-10 or R315-2-11 is first added to the solid waste.

(3) In the case of any other waste, including a waste mixture, when the waste exhibits any of the characteristics identified in section R315-2-9.

(c) Unless and until it meets the criteria of paragraph (d) of this section:

(1) A hazardous waste will remain a hazardous waste.

(2)(i) Except as otherwise provided in paragraph (c)(2)(ii) or (f) of this section, any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate, but not including precipitation run-off, is a hazardous waste. However, materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence are not hazardous wastes under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal.

(ii) The following solid wastes are not hazardous even though they are generated from the treatment, storage, or disposal of a hazardous waste, unless they exhibit one or more of the characteristics of hazardous waste:

(A) Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry, SIC Codes 331 and 332.

(B) Wastes from burning any of the materials exempted from regulations by 40 CFR 261.6(a)(3)(iii) and (v). R315-2-6 incorporates by reference the requirements of 40 CFR 261.6 concerning recyclable materials.

(C)(1) Nonwastewater residues, such as slag, resulting from high temperature metals recovery (HTMR) processing of K061, K062, or F006 waste, in units identified as rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, rotary hearth furnace/electric furnace combinations or industrial furnaces (as defined in 40 CFR 260.10 (6), (7), and (13) of the definition for "Industrial Furnace" which R315-1-1(b) incorporates by reference), that are disposed in solid waste landfills regulated under R315-301 through R315-320, provided that these residues meet the generic exclusion levels identified below for all constituents, and exhibit no characteristics of hazardous waste. Testing requirements shall be incorporated in a facility's waste analysis plan or a generator's self-implementing waste analysis plan; at a minimum, composite samples of residues shall be collected and analyzed quarterly and/or when the process or operation generating the waste changes. Persons claiming this exclusion in an enforcement action will have the burden of proving by clear and convincing evidence that the material meets all of the exclusion requirements.

TABLE

Constituent Maximum for any single composite sample - TCLP (mg/l)

Generic exclusion levels for K061 and K062 nonwastewater HTMR residues

Antimony	0.10
Arsenic	0.50
Barium	7.6
Beryllium	0.010
Cadmium	0.050
Chromium (total)	0.33
Lead	0.15
Mercury	0.009
Nickel	1.0
Selenium	0.16
Silver	0.30
Thallium	0.020
Zinc	70

Generic exclusion levels for F006 nonwastewater HTMR residues

Antimony	0.10
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Arsenic	0.50
Barium	7.6
Beryllium	0.010
Cadmium	0.050
Chromium (total)	0.33
Cyanide (total)(mg/kg)	1.8
Lead	0.15
Mercury	0.009
Nickel	1.0
Selenium	0.16
Silver	0.30
Thallium	0.020
Zinc	70

(2) A one-time notification and certification shall be placed in the facility's files and sent to the Executive Secretary for K061, K062 or F006 HTMR residues that meet the generic exclusion levels for all constituents and do not exhibit any characteristics that are sent to solid waste landfills regulated under R315-301 through R315-320. The notification and certification that is placed in the generators or treaters files shall be updated if the process or operation generating the waste changes and/or if the solid waste landfill regulated under R315-301 through R315-320 receiving the waste changes. However, the generator or treater need only notify the Executive Secretary on an annual basis if such changes occur. Such notification and certification should be sent to the Executive Secretary by the end of the calendar year, but no later than December 31. The notification shall include the following information: The name and address of the solid waste landfill regulated under R315-301 through R315-320 receiving the waste shipments; the EPA Hazardous Waste Number(s) and treatability group(s) at the initial point of generation; and, the treatment standards applicable to the waste at the initial point of generation. The certification shall be signed by an authorized representative and shall state as follows: "I certify under penalty of law that the generic exclusion levels for all constituents have been met without impermissible dilution and that no characteristic of hazardous waste is exhibited. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

(D) Biological treatment sludge from the treatment of one of the following wastes listed in R315-2-10(f), which incorporates by reference 40 CFR 261.32 - organic waste, including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates, from the production of carbamates and carbamoyl oximes, EPA Hazardous Waste No. K156, and wastewaters from the production of carbamates and carbamoyl oximes, EPA Hazardous Waste No. K157.

(E) Catalyst inert support media separated from one of the following wastes listed in R315-2-10(f), which incorporates by reference 40 CFR 261.32, - Spent hydrotreating catalyst, EPA Hazardous Waste No. K171, and Spent hydrotreating catalyst, EPA Hazardous Waste No. K172.

(d) Any solid waste described in paragraph (c) of this section is not a hazardous waste if it meets the following criteria:

(1) In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in section R315-2-9. However, wastes that exhibit a characteristic at the point of generation may still be subject to the requirements of R315-13 which incorporates by reference 40 CFR 268, even if they no longer exhibit a characteristic at the point of land disposal.

(2) In the case of a waste which is a listed waste under sections R315-2-10 or R315-2-11, contains a waste listed under sections R315-2-10 or R315-2-11, or is derived from a waste

listed in sections R315-2-10 or R315-2-11, it also has been excluded from paragraph (c) of this section under R315-2-16 and R315-2-17.

(e) Notwithstanding R315-2-3(a) through (d) and provided the debris as defined in R315-13, which incorporates by reference 40 CFR 268, does not exhibit a characteristic identified in R315-2-9, the following materials are not subject to regulation under R315-1, R315-2 to R315-8, R315-13, and R315-14:

(1) Hazardous debris as defined in R315-13, which incorporates by reference 40 CFR 268, that has been treated using one of the required extraction or destruction technologies specified in R315-13, which incorporates by reference 40 CFR 268.45 Table 1; persons claiming this exclusion in an enforcement action will have the burden of proving by clear and convincing evidence that the material meets all of the exclusion requirements; or

(2) Debris as defined in R315-13, which incorporates by reference 40 CFR 268, that the Board, considering the extent of contamination, has determined is no longer contaminated with hazardous waste.

(f)(1) A hazardous waste that is listed in R315-2-10 or R315-2-11 solely because it exhibits one or more characteristics of ignitability as defined under R315-2-9(d), corrosivity as defined under R315-2-9(e), or reactivity as defined under R315-2-9(f) is not hazardous waste, if the waste no longer exhibits any characteristic of hazardous waste identified in R315-2-9(a), (d), (e), (f), or (g).

(2) The exclusion described in paragraph (f)(1) of this section also pertains to

(i) Any mixture of a solid waste and a hazardous waste listed in R315-2-10 and R315-2-11 solely because it exhibits the characteristics of ignitability, corrosivity, or reactivity as regulated under R315-2-3(a)(2)(iv); and,

(ii) Any solid waste generated from treating, storing, or disposing of a hazardous waste listed in R315-2-10 and R315-2-11 solely because it exhibits the characteristics of ignitability, corrosivity, or reactivity as regulated under R315-2-3(c)(2)(i).

(3) Wastes excluded from R315-2-3 are subject to R315-13-1, which incorporates by reference 40 CFR 268, (as applicable), even if they no longer exhibit a characteristic at the point of land disposal.

(4) Any mixture of a solid waste excluded from regulation under R315-2-4(b)(7) and a hazardous waste listed in R315-2-10 and R315-2-11, which incorporates by reference 40 CFR 261 subpart D, solely because it exhibits one or more of the characteristics of ignitability, corrosivity, or reactivity as regulated under paragraph (a)(2)(iv) of this section is not a hazardous waste, if the mixture no longer exhibits any characteristic of hazardous waste identified in R315-2-9(a), (d) - (g) for which the hazardous waste listed in R315-2-10 and R315-2-11, which incorporates by reference 40 CFR 261 subpart D, was listed.

R315-2-4. Exclusions.

(a) MATERIALS WHICH ARE NOT SOLID WASTES.

The following materials are not solid wastes for the purpose of this rule:

(1) Domestic sewage or any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. "Domestic

sewage" means untreated sanitary wastes that pass through a sewer system.

(2) Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act, as amended. This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored, or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.

(3) Irrigation return flows.

(4) Source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. Section 2011 et seq.

(5) Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

(6) Pulping liquors, black liquor that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process, unless it is accumulated speculatively as defined in subsection R315-1-1(c), which incorporates by reference 261.1(c), 40 CFR.

(7) Spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively as defined in subsection R315-1-1(c), which incorporates by reference 261.1(c), 40 CFR.

(8) Secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided:

(i) Only tank storage is involved, and the entire process through completion of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance;

(ii) Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);

(iii) The secondary materials are never accumulated in such tanks for over twelve months without being reclaimed; and

(iv) The reclaimed material is not used to produce a fuel, or used to produce products that are used in a manner constituting disposal.

(9)(i) Spent wood preserving solutions that have been reclaimed and are reused for their original intended purpose; and

(ii) wastewaters from the wood preserving process that have been reclaimed and are reused to treat wood.

(iii) Prior to reuse, the wood preserving wastewaters and spent wood preserving solutions described in R315-2-4(a)(9)(i) and (ii), so long as they meet all of the following conditions:

(A) The wood preserving wastewaters and spent wood preserving solutions are reused onsite at water borne plants in the production process for their original intended purpose;

(B) Prior to reuse, the wastewaters and spent wood preserving solutions are managed to prevent release to either land or groundwater or both;

(C) Any unit used to manage wastewaters and/or spent wood preserving solutions prior to reuse can be visually or otherwise determined to prevent such releases;

(D) Any drip pad used to manage the wastewaters and/or spent wood preserving solutions prior to reuse complies with the standards in R315-7-28, which incorporates by reference 40 CFR 265.440 - 445, regardless of whether the plant generates a total of less than 100 kg/month of hazardous waste; and

(E) Prior to operating pursuant to this exclusion, the plant owner or operator submits to the Executive Secretary a one-time

notification stating that the plant intends to claim the exclusion, giving the date on which the plant intends to begin operating under the exclusion, and containing the following language: "I have read the applicable regulation establishing an exclusion for wood preserving wastewaters and spent wood preserving solutions and understand it requires me to comply at all times with the conditions set out in the regulation." The plant must maintain a copy of that document in its on-site records for a period of no less than 3 years from the date specified in the notice. The exclusion applies only so long as the plant meets all of the conditions. If the plant goes out of compliance with any condition, it may apply to the Executive Secretary for reinstatement. The Executive Secretary may reinstate the exclusion upon finding that the plant has returned to compliance with all conditions and that violations are not likely to recur.

(10) EPA Hazardous Waste Nos. K060, K087, K141, K142, K143, K144, K145, K147, and K148, and any wastes from the coke by-products processes that are hazardous only because they exhibit the Toxicity Characteristic (TC) specified in R315-2-9(g) when, subsequent to generation, these materials are recycled to coke ovens, to the tar recovery process as a feedstock to produce coal tar or are mixed with coal tar prior to the tar's sale or refining. This exclusion is conditioned on there being no land disposal of the wastes from the point they are generated to the point they are recycled to coke ovens or the tar recovery or refining processes, or mixed with coal tar.

(11) Nonwastewater splash condenser dross residue from the treatment of K061 in high temperature metals recovery units, provided it is shipped in drums (if shipped) and not land disposed before recovery.

(12)(i) Oil-bearing hazardous secondary materials, i.e., sludges, byproducts, or spent materials, that are generated at a petroleum refinery, SIC code 2911, and are inserted into the petroleum refining process, SIC code 2911 - including distillation, catalytic cracking, fractionation, or thermal cracking units, i.e., cokers, unless the material is placed on the land, or speculatively accumulated before being so recycled. Materials inserted into thermal cracking units are excluded under this paragraph, provided that the coke product also does not exhibit a characteristic of hazardous waste. Oil-bearing hazardous secondary materials may be inserted into the same petroleum refinery where they are generated, or sent directly to another petroleum refinery, and still be excluded under this provision. Except as provided in R315-2-4(a)(12)(ii), oil-bearing hazardous secondary materials generated elsewhere in the petroleum industry, i.e., from sources other than petroleum refineries, are not excluded under R315-2-4. Residuals generated from processing or recycling materials excluded under this paragraph, where such materials as generated would have otherwise met a listing under R315-2-10, R315-2-11, R315-2-24, and R315-2-26, are designated as F037 listed wastes when disposed of or intended for disposal.

(ii) Recovered oil that is recycled in the same manner and with the same conditions as described in R315-2-4(a)(12)(i). Recovered oil is oil that has been reclaimed from secondary materials, including wastewater, generated from normal petroleum industry practices, including refining, exploration and production, bulk storage, and transportation incident thereto (SIC codes 1311, 1321, 1381, 1382, 1389, 2911, 4612, 4613, 4922, 4923, 4789, 5171, and 5152.) Recovered oil does not include oil-bearing hazardous wastes listed in R315-2-10, R315-2-11, R315-2-24, and R315-2-26; however, oil recovered from

such wastes may be considered recovered oil. Recovered oil does not include used oil as defined in 19-6-703(19).

(13) Excluded scrap metal, processed scrap metal, unprocessed home scrap metal, and unprocessed prompt scrap metal, being recycled.

(14) Shredded circuit boards being recycled provided that they are:

(i) Stored in containers sufficient to prevent a release to the environment prior to recovery; and

(ii) Free of mercury switches, mercury relays, and nickel-cadmium batteries and lithium batteries.

(15) Condensates derived from the overhead gases from kraft mill steam strippers that are used to comply with 40 CFR 63.446(e). The exemption applies only to combustion at the mill generating the condensates.

(16) Comparable fuels or comparable syngas fuels, i.e., comparable/syngas fuels, that meet the requirements of R315-2-26, which incorporates by reference 40 CFR 261.38.

(17) Spent materials as defined in R315-1-1(c), which incorporates by reference 40 CFR 261.1, other than hazardous wastes listed in R315-2-10, 2-11, and 2-26 (which incorporate by reference 40 CFR 261 Subpart D), and R315-2-24, generated within the primary mineral processing industry from which minerals, acids, cyanide, water or other values are recovered by mineral processing or by beneficiation, provided that:

(i) The spent material is legitimately recycled to recover minerals, acids, cyanide, water or other values;

(ii) The spent material is not accumulated speculatively;

(iii) Except as provided in R315-2-4(a)(17)(iv), the spent material is stored in tanks, containers, or buildings meeting the following minimum integrity standards: a building must be an engineered structure with a floor, walls, and a roof all of which are made of non-earthen materials providing structural support, except smelter buildings may have partially earthen floors provided the secondary material is stored on the non-earthen portion, and have a roof suitable for diverting rainwater away from the foundation; a tank must be free standing, not be a surface impoundment as defined R315-1-1(b), which incorporates by reference 40 CFR 260.10, and be manufactured of a material suitable for containment of its contents; a container must be free standing and be manufactured of a material suitable for containment of its contents. If tanks or containers contain any particulate which may be subject to wind dispersal, the owner/operator must operate these units in a manner which controls fugitive dust. Tanks, containers, and buildings must be designed, constructed and operated to prevent significant releases to the environment of these materials.

(iv) The Executive Secretary may make a site-specific determination, after public review and comment, that only solid mineral processing spent materials may be placed on pads, rather than in tanks, containers, or buildings. Solid mineral processing spent materials do not contain any free liquid. The Executive Secretary must affirm that pads are designed, constructed and operated to prevent significant releases of the secondary material into the environment. Pads must provide the same degree of containment afforded by the non-RCRA tanks, containers and buildings eligible for exclusion.

(A) The Executive Secretary must also consider if storage on pads poses the potential for significant releases via groundwater, surface water, and air exposure pathways. Factors to be considered for assessing the groundwater, surface water, air exposure pathways are: the volume and physical and

chemical properties of the secondary material, including its potential for migration off the pad; the potential for human or environmental exposure to hazardous constituents migrating from the pad via each exposure pathway, and the possibility and extent of harm to human and environmental receptors via each exposure pathway.

(B) Pads must meet the following minimum standards: be designed of non-earthen material that is compatible with the chemical nature of the mineral processing spent material, capable of withstanding physical stresses associated with placement and removal, have run on/runoff controls, be operated in a manner which controls fugitive dust, and have integrity assurance through inspections and maintenance programs.

(C) Before making a determination under this paragraph, the Executive Secretary must provide notice and the opportunity for comment to all persons potentially interested in the determination. This can be accomplished by placing notice of this action in major local newspapers, or broadcasting notice over local radio stations.

(v) The owner or operator provides notice to the Executive Secretary, providing the following information: the types of materials to be recycled; the type and location of the storage units and recycling processes; and the annual quantities expected to be placed in land-based units. This notification must be updated when there is a change in the type of materials recycled or the location of the recycling process.

(vi) For purposes of R315-2-4(a)(7), mineral processing spent materials must be the result of mineral processing and may not include any listed hazardous wastes. Listed hazardous wastes and characteristic hazardous wastes generated by non-mineral processing industries are not eligible for the conditional exclusion from the definition of solid waste.

(vii) R315-2-4(a)(16) becomes effective July 1, 1999.

(18) Petrochemical recovered oil from an associated organic chemical manufacturing facility, where the oil is to be inserted into the petroleum refining process, SIC code 2911, along with normal petroleum refinery process streams, provided:

(i) The oil is hazardous only because it exhibits the characteristic of ignitability, as defined in R315-2-9(d), and/or toxicity for benzene, R315-2-9(g), waste code D018; and

(ii) The oil generated by the organic chemical manufacturing facility is not placed on the land, or speculatively accumulated before being recycled into the petroleum refining process. An "associated organic chemical manufacturing facility" is a facility where the primary SIC code is 2869, but where operations may also include SIC codes 2821, 2822, and 2865; and is physically co-located with a petroleum refinery; and where the petroleum refinery to which the oil being recycled is returned also provides hydrocarbon feedstocks to the organic chemical manufacturing facility. "Petrochemical recovered oil" is oil that has been reclaimed from secondary materials, i.e., sludges, byproducts, or spent materials, including wastewater, from normal organic chemical manufacturing operations, as well as oil recovered from organic chemical manufacturing processes.

(19) Spent caustic solutions from petroleum refining liquid treating processes used as a feedstock to produce cresylic or naphthenic acid unless the material is placed on the land, or accumulated speculatively as defined in R315-1-1(c), which incorporates by reference 40 CFR 261.1(c).

(b) **SOLID WASTES WHICH ARE NOT HAZARDOUS WASTES.**

The following solid wastes are not hazardous wastes:

(1) Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered, such as refuse-derived fuel or reused. "Household waste" means any material, including garbage, trash and sanitary wastes in septic tanks, derived from households, including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas. A resource recovery facility managing municipal solid waste shall not be deemed to be treating, storing, disposing of or otherwise managing hazardous wastes for the purposes of regulation under this subtitle, if the facility:

(i) Receives and burns only

(A) Household waste, from single and multiple dwellings, hotels, motels, and other residential sources and

(B) Solid waste from commercial of industrial sources that does not contain hazardous waste; and

(ii) The facility does not accept hazardous wastes and the owner or operator of the facility has established contractual requirements or other appropriate notification or inspection procedures to assure that hazardous wastes are not received at or burned in the facility.

(2) Solid wastes generated by any of the following and which are returned to the soil as fertilizers:

(i) The growing and harvesting of agricultural crops.

(ii) The raising of animals, including animal manures.

(3) Mining overburden returned to the mine site.

(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels, except as provided by R315-14-7, which incorporates by reference 40 CFR 266.112, for facilities that burn or process hazardous waste.

(5) Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy.

(6) The following additional solid wastes:

(i) Wastes which fail the test for the Toxicity Characteristic because chromium is present or are listed in sections R315-2-10 or R315-2-11 due to the presence of chromium, which do not fail the test for the Toxicity Characteristic for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

(A) The chromium in the waste is exclusively, or nearly exclusively, trivalent chromium; and

(B) The waste is generated from an industrial process which uses trivalent chromium exclusively, or nearly exclusively, and the process does not generate hexavalent chromium; and

(C) The waste is typically and frequently managed in non-oxidizing environments.

(ii) Specific wastes which meet the standard in paragraphs (b)(6)(i)(A),(B), and (C) of this section, so long as they do not fail the test for the toxicity characteristic for any other constituent, and do not exhibit any other characteristic, are:

(A) Chrome blue trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(B) Chrome blue shavings generated by the following subcategories of the leather tanning and finishing industry: hair

pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(C) Buffing dust generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue.

(D) Sewer screenings generated by the following subcategories of the leather tanning and finishing industry: hair/pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(E) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(F) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue.

(G) Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries.

(H) Wastewater treatment sludges from the production of TiO₂ pigment using chromium-bearing ores by the chloride process.

(7) Solid waste from the extraction, beneficiation, and processing of ores and minerals, including coal, phosphate rock, and overburden from the mining of uranium ore, except as provided by R315-14-7, which incorporates by reference 40 CFR 266.112 for facilities that burn or process hazardous waste.

(i) For purposes of R315-2-4(b)(7) beneficiation of ores and minerals is restricted to the following activities; crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and in situ leaching.

(ii) For the purposes of R315-2-4(b)(7), solid waste from the processing of ores and minerals includes only the following wastes as generated:

(A) Slag from primary copper processing;

(B) Slag from primary lead processing;

(C) Red and brown muds from bauxite refining;

(D) Phosphogypsum from phosphoric acid production;

(E) Slag from elemental phosphorus production ;

(F) Gasifier ash from coal gasification;

(G) Process wastewater from coal gasification;

(H) Calcium sulfate wastewater treatment plant sludge from primary copper processing;

(I) Slag tailings from primary copper processing;

(J) Fluorogypsum from hydrofluoric acid production;

(K) Process wastewater from hydrofluoric acid production;

(L) Air pollution control dust/sludge from iron blast furnaces;

- (M) Iron blast furnace slag;
- (N) Treated residue from roasting/leaching of chrome ore;
- (O) Process wastewater from primary magnesium processing by the anhydrous process;
- (P) Process wastewater from phosphoric acid production;
- (Q) Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;
- (R) Basic oxygen furnace and open hearth furnace slag from carbon steel production;
- (S) Chloride process waste solids from titanium tetrachloride production;
- (T) Slag from primary zinc processing.

(iii) A residue derived from co-processing mineral processing secondary materials with normal beneficiation raw materials or with normal mineral processing raw materials remains excluded under R315-2-4(b) if the owner or operator:

(A) Processes at least 50 percent by weight normal beneficiation raw materials or normal mineral processing raw materials; and,

(B) Legitimately reclaims the secondary mineral processing materials.

(8) Cement kiln dust waste, except as provided by R315-14-7, which incorporates by reference 40 CFR 266.112, for facilities that burn or process hazardous waste.

(9) Solid waste which consists of discarded arsenical-treated wood or wood products which fails the test for the Toxicity Characteristic for Hazardous Waste Codes D004 through D017 and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use.

(10) Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic (TC) of R315-2-9(g), Hazardous Waste Codes D018 through D043 only, and are subject to the corrective action requirements under R311-202, which incorporates by reference 40 CFR 280.

(11) Injected groundwater that is hazardous only because it exhibits the Toxicity Characteristic, Hazardous Waste Codes D018 through D043 only, in R315-2-9(e) that is reinjected through an underground injection well pursuant to free phase hydrocarbon recovery operations undertaken at petroleum refineries, petroleum marketing terminals, petroleum bulk plants, petroleum pipelines, and petroleum transportation spill sites until January 25, 1993. This extension applies to recovery operations in existence, or for which contracts have been issued, on or before March 25, 1991. For groundwater returned through infiltration galleries from such operations at petroleum refineries, marketing terminals, and bulk plants, until October 2, 1991. New operations involving injection wells, beginning after March 25, 1991, will qualify for this compliance date extension until January 25, 1993, only if:

(i) Operations are performed pursuant to a written state agreement that includes a provision to assess the groundwater and the need for further remediation once the free phase recovery is completed; and

(ii) A copy of the written agreement has been submitted to: Characteristics Section (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 and the Division of Solid and Hazardous Waste, Dept. of Environmental Quality, State of Utah, Salt Lake City, UT 84114-4880.

(12) Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use.

(13) Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.

(14) Non-terne plated used oil filters that are not mixed with wastes listed in R315-2-10(e) and (f) and R315-2-11, which incorporate by reference 40 CFR 261 Subpart D, if these oil filters have been gravity hot-drained using one of the following methods:

(i) Puncturing the filter anti-drain back valve or the filter dome end and hot draining;

(ii) Hot-draining and crushing;

(iii) Dismantling and hot-draining; or

(iv) Any other equivalent hot-draining method that will remove used oil.

(15) Leachate or gas condensate collected from landfills where certain solid wastes have been disposed, provided that:

(i) The solid wastes disposed would meet one or more of the listing descriptions for Hazardous Waste Codes K169, K170, K171, K172, K174, K175, K176, K177, and K178, if these wastes had been generated after the effective date of the listing;

(ii) The solid wastes described in paragraph R315-2-4(b)(15)(i) were disposed prior to the effective date of the listing;

(iii) The leachate or gas condensate does not exhibit any characteristic of hazardous waste nor are derived from any other listed hazardous waste;

(iv) Discharge of the leachate or gas condensate, including leachate or gas condensate transferred from the landfill to a POTW by truck, rail, or dedicated pipe, is subject to regulation under R317-8 of the Utah Water Quality Rules.

(v) As of February 13, 2001, leachate or gas condensate derived from K169-K172 is no longer exempt if it is stored or managed in a surface impoundment prior to discharge. After November 21, 2003, leachate or gas condensate derived from K176, K177, and K 178 will no longer be exempt if it is stored or managed in a surface impoundment prior to discharge. There is one exception: if the surface impoundment is used to temporarily store leachate or gas condensate in response to an emergency situation, e.g., shutdown of wastewater treatment system, provided the impoundment has a double liner, and provided the leachate or gas condensate is removed from the impoundment and continues to be managed in compliance with the conditions of this paragraph after the emergency ends.

(16) The requirements as found in 40 CFR 261.4(b)(18), 2001 ed., are adopted and incorporated by reference with the following exceptions:

(i) Substitute "EPA and the Executive Secretary" for all federal regulation references made to "EPA";

(ii) Substitute "Executive Secretary" for all federal regulation references made to "state of Utah."

(c) HAZARDOUS WASTES WHICH ARE EXEMPTED FROM CERTAIN RULES.

A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit is not subject to these regulations

or to the notification requirements of Section 3010 of RCRA until it exits the unit in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of products or raw materials.

(d) SAMPLES

(1) Except as provided in paragraph (d)(2) of this section, a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or compositions, is not subject to any requirements of these rules when:

(i) The sample is being transported to a laboratory for the purpose of testing;

(ii) The sample is being transported back to the sample collector after testing;

(iii) The sample is being stored by the sample collector before transport to a laboratory for testing;

(iv) The sample is being stored in a laboratory before testing;

(v) The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

(vi) The sample is being stored temporarily in the laboratory after testing for a specific purpose, for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary.

(2) In order to qualify for the exemption in paragraphs (d)(1)(i) and (ii) of this section, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector shall:

(i) Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

(ii) Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

(A) Assure that the following information accompanies the sample:

(1) The sample collector's name, mailing address, and telephone number;

(2) The laboratory's name, mailing address, and telephone number;

(3) The quantity of the sample;

(4) The date of shipment; and

(5) A description of the sample.

(B) Package the sample so that it does not leak, spill, or vaporize from its packaging.

(3) This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in paragraph (d)(1) of this section.

(e) TREATABILITY STUDY SAMPLES.

(1) Except as provided in paragraph (e)(2) of this Section, a person who generates or collects samples for the purpose of conducting treatability studies as defined in section R315-1-1, which incorporates by reference the definitions of 40 CFR 260.10, are not subject to any requirement of R315-2, R315-5, and R315-6, or to the notification requirements of Section 3010 of RCRA, nor are these samples included in the quantity determinations of R315-2-5, which incorporates by reference the requirements concerning conditionally exempt small quantity generators of 40 CFR 261.5 and R315-5-3.34, which

incorporates by reference the requirements concerning waste accumulation time for generators of 40 CFR 262.34(d) when:

(i) the sample is being collected and prepared for transportation by the generator or sample collector;

(ii) the sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or

(iii) the sample is being transported to the laboratory or testing facility for the purpose of conducting a treatability study.

(2) The exemption in paragraph (e)(1) of this section is applicable to samples of hazardous waste being collected and shipped for the purpose of conducting treatability studies provided that:

(i) The generator or sample collector uses, in "treatability studies," no more than 10,000 kg of media contaminated with non-acute hazardous waste, 1000 kg of non-acute hazardous waste other than contaminated media, 1 kg of acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste for each process being evaluated for each generated waste stream;

(ii) The mass of each sample shipment does not exceed 10,000 kg; the 10,000 kg quantity may be all media contaminated with non-acute hazardous waste, or may include 2500 kg of media contaminated with acute hazardous waste, 1000 kg of hazardous waste, and 1 kg of acute hazardous waste; and

(iii) the sample shall be packaged so that it will not leak, spill, or vaporize from its packaging during shipment and the requirements of paragraph A or B of this subparagraph are met;

(A) the transportation of each sample shipment complies with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

(B) if the DOT, USPS, or other shipping requirements do not apply to the shipment of the sample, the following information shall accompany the sample:

(1) the name, mailing address, and telephone number of the originator of the sample;

(2) the name, address, and telephone number of the facility that will perform the treatability study;

(3) the quantity of the sample;

(4) the date of shipment; and

(5) a description of the sample, including its EPA Hazardous Waste Number.

(iv) the sample is shipped to a laboratory or testing facility which is exempt under R315-2-4(f) (40 CFR 261.4(f)) or has an appropriate RCRA permit or interim status;

(v) the generator or sample collector maintains the following records for a period ending 3 years after completion of the treatability study:

(A) copies of the shipping documents;

(B) a copy of the contract with the facility conducting the treatability study;

(C) documentation showing:

(1) the amount of waste shipped under this exemption;

(2) the name, address, and EPA identification number of the laboratory or testing facility that received the waste;

(3) the date the shipment was made; and

(4) whether or not unused samples and residues were returned to the generator.

(vi) the generator reports the information required under paragraph (e)(v)(C) of this section in its biennial report.

(3) The Executive Secretary may grant requests on a case-by-case basis for up to an additional two years for treatability studies involving bioremediation. The Executive Secretary may grant requests on a case-by-case basis for quantity limits in excess of those specified in paragraphs (e)(2) (i) and (ii) and (f)(4) of this section, for up to an additional 5000 kg of media contaminated with non-acute hazardous waste, 500 kg of non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste and 1 kg of acute hazardous waste:

(i) In response to requests for authorization to ship, store and conduct treatability studies on additional quantities in advance of commencing treatability studies. Factors to be considered in reviewing such requests include the nature of the technology, the type of process, e.g., batch versus continuous, size of the unit undergoing testing, particularly in relation to scale-up considerations, the time/quantity of material required to reach steady state operating conditions, or test design considerations such as mass balance calculations.

(ii) In response to requests for authorization to ship, store and conduct treatability studies on additional quantities after initiation or completion of initial treatability studies, when: There has been an equipment or mechanical failure during the conduct of a treatability study; there is a need to verify the results of a previously conducted treatability study; there is a need to study and analyze alternative techniques within a previously evaluated treatment process; or there is a need to do further evaluation of an ongoing treatability study to determine final specifications for treatment.

(iii) The additional quantities and time frames allowed in paragraph (e)(3) (i) and (ii) of this section are subject to all the provisions in paragraphs (e) (1) and (e)(2) (iii) through (vi) of this section. The generator or sample collector must apply to the Executive Secretary and provide in writing the following information:

(A) The reason why the generator or sample collector requires additional time or quantity of sample for treatability study evaluation and the additional time or quantity needed;

(B) Documentation accounting for all samples of hazardous waste from the waste stream which have been sent for or undergone treatability studies including the date each previous sample from the waste stream was shipped, the quantity of each previous shipment, the laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped, and the available results on each treatability study;

(C) A description of the technical modifications or change in specifications which will be evaluated and the expected results;

(D) If such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and

(E) Such other information that the Executive Secretary considers necessary.

(f) **SAMPLES UNDERGOING TREATABILITY STUDIES AT LABORATORIES AND TESTING FACILITIES.**

Samples undergoing treatability studies and the laboratory or testing facility that conducts these treatability studies, to the extent these facilities are not otherwise subject to RCRA requirements, are not subject to any requirement of this rule,

R315-3 through R315-8, and R315-13, or to the notification requirements of Section 3010 of RCRA provided that the conditions of paragraphs (f)(1) through (11) of this Section are met. A mobile treatment unit (MTU) may qualify as a testing facility subject to paragraphs (f)(1) through (11) of this section. Where a group of MTUs are located at the same site, the limitations specified in (f)(1) through (11) of this section apply to the entire group of MTUs collectively as if the group were one MTU.

(1) No less than 45 days before conducting treatability studies, the facility notifies the Executive Secretary in writing that it intends to conduct treatability studies under this paragraph.

(2) The laboratory or testing facility conducting the treatability study has an EPA identification number.

(3) No more than a total of 10,000 kg of "as received" media contaminated with non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste or 250 kg of other "as received" hazardous waste is subject to initiation of treatment in all treatability studies in any single day. "As received" waste refers to the waste as received in the shipment from the generator or sample collector.

(4) The quantity of "as received" hazardous waste stored at the facility for the purpose of evaluation in treatability studies does not exceed 10,000 kg, the total of which can include 10,000 kg of media contaminated with non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste, 1000 kg of non-acute hazardous wastes other than contaminated media, and 1 kg of acute hazardous waste. This quantity limitation does not include treatment materials, including nonhazardous solid waste, added to "as received" hazardous waste.

(5) No more than 90 days have elapsed since the treatability study for the sample was completed, or no more than one year, two years for treatability studies involving bioremediation, have elapsed since the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs. Up to 500 kg of treated material from a particular waste stream from treatability studies may be archived for future evaluation up to five years from the date of initial receipt. Quantities of materials archived are counted against the total storage limit for the facility.

(6) The treatability study does not involve the placement of hazardous waste on the land or open burning of hazardous waste.

(7) The facility maintains records for three years following completion of each study that show compliance with the treatment rate limits and the storage time and quantity limits. The following specific information shall be included for each treatability study conducted:

(i) the name, address, and EPA identification number of the generator or sample collector of each waste sample;

(ii) the date the shipment was received;

(iii) the quantity of waste accepted;

(iv) the quantity of "as received" waste in storage each day;

(v) the date the treatment study was initiated and the amount of "as received" waste introduced to treatment each day;

(vi) the date the treatability study was concluded; and

(vii) the date any unused sample or residues generated from the treatability study were returned to the generator or sample collector or, if sent to a designated facility, the name of the facility and the EPA identification number.

(8) The facility keeps, on-site, a copy of the treatability study contract and all shipping papers associated with the transport of treatability study samples to and from the facility for a period ending three years from the completion date of each treatability study.

(9) The facility prepares and submits a report to the Executive Secretary by March 15 of each year that estimates the number of studies and the amount of waste expected to be used in treatability studies during the current year, and includes the following information for the previous calendar year:

(i) the name, address, and EPA identification number of the facility conducting the treatability studies;

(ii) the types, by process, of treatability studies conducted;

(iii) the names and addresses of persons for whom studies have been conducted, including their EPA identification numbers;

(iv) the total quantity of waste in storage each day;

(v) the quantity and types of waste subjected to treatability studies;

(vi) when each treatability study was conducted; and

(vii) the final disposition of residues and unused sample from each treatability study.

(10) The facility determines whether any unused sample or residues generated by the treatability study are hazardous waste under R315-2-3 and, if so, are subject to R315-2 through R315-8, and R315-13, unless the residues and unused samples are returned to the sample originator under the exemption of paragraph (e) of this section.

(11) The facility notifies the Executive Secretary by letter when the facility is no longer planning to conduct any treatability studies at the site.

(g) **DREDGED MATERIAL THAT IS NOT A HAZARDOUS WASTE.**

Dredged material that is subject to the requirements of a permit that has been issued under 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344) or section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413) is not a hazardous waste. For this paragraph (g), the following definitions apply:

(1) The term dredged material has the same meaning as defined in 40 CFR 232.2;

(2) The term permit means:

(i) A permit issued by the U.S. Army Corps of Engineers (Corps) or the Utah State Division of Water Quality;

(ii) A permit issued by the Corps under section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413); or

(iii) In the case of Corps civil works projects, the administrative equivalent of the permits referred to in paragraphs R315-2-4(g)(2)(i) and (ii), as provided for in Corps regulations.

R315-2-5. Special Requirements for Hazardous Waste Generated by Conditionally Exempt Small Quantity Generators.

The requirements of 40 CFR 261.5, 1996 ed., are adopted and incorporated by reference.

R315-2-6. Requirements for Recyclable Materials.

The requirements of 40 CFR 261.6, 1998 ed., as amended by 63 FR 42110, August 6, 1998, are adopted and incorporated by reference within this rule, except for the following changes:

(a) Paragraph 40 CFR 261.6(a)(5) shall be amended to read as follows:

Hazardous waste as identified in 40 CFR 262.80(a) that is exported to or imported from designated member countries of the Organization for Economic Cooperation and Development (OECD) (as defined in Section 262.58(a)(1)) for purpose of recovery is subject to the requirements of 40 CFR part 262, subpart H, if it is subject to either the Federal manifesting requirements of 40 CFR Part 262, to the universal waste management standards of 40 CFR Part 273, or to State requirements analogous to 40 CFR Part 273.

R315-2-7. Residues of Hazardous Waste in Empty Containers.

(a)(1) Any hazardous waste remaining in either

(i) an empty container, or

(ii) an empty inner liner removed from a container, as defined in paragraph (b) of this section, is not subject to regulation under R315-2 through R315-13.

(2) Any hazardous waste in either:

(i) a container that is not empty, or

(ii) an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to regulation under R315-2 through R315-13.

(b)(1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as acute hazardous waste listed in sections R315-2-10 or R315-2-11 is empty if:

(i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating; and

(ii) No more than 2.5 centimeters, one inch, of residue remains on the bottom of the container or inner liner; or

(iii)(A) No more than three percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

(B) No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(3) A container or an inner liner removed from a container that has held an acute hazardous waste listed in sections R315-2-10 or R315-2-11 is empty if:

(i) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(ii) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

R315-2-8. PCB Wastes Regulated under the Toxic Substance Control Act, 42 U.S.C. et seq.

The disposal of PCB-containing dielectric fluid and electric equipment containing such fluid authorized for use and regulated under part 761 40 CFR and that are hazardous only because they

fail the test for the Toxicity Characteristic, hazardous codes D018 through D043 only, are exempt from regulation under R315-2 through R315-50 and the notification requirements of section 3010 of RCRA.

R315-2-9. Characteristics of Hazardous Waste.

(a) GENERAL.

(1) A solid waste, as defined in section R315-2-2, which is not excluded from regulation as a hazardous waste under R315-2-4(b), is a hazardous waste if it exhibits any of the characteristics identified in this section.

(2) A hazardous waste which is identified by a characteristic in this section, is assigned every EPA Hazardous Waste Number that is applicable as set forth in this section. This number shall be used in complying with the notification requirements of section 3010 of RCRA and all applicable recordkeeping and reporting requirements under R315-3 through R315-8, and R315-13.

(3) For purposes of this section, the Executive Secretary will consider a sample obtained using any of the applicable sampling methods specified in R315-50-6, or an equivalent method, to be a representative sample.

(b) CRITERIA FOR IDENTIFYING THE CHARACTERISTICS OF HAZARDOUS WASTE.

(1) The Board shall identify and define a characteristic of hazardous waste in this section only upon determining that:

(i) A solid waste that exhibits the characteristic may:

(A) Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(B) Pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(ii) The characteristic can be:

(A) Measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or

(B) Reasonably detected by generators of solid waste through their knowledge of their waste.

(c) CRITERIA FOR LISTING HAZARDOUS WASTE.

(1) The Board shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

(i) It exhibits any of the characteristics of hazardous waste identified in this section.

(ii) It has been found to be fatal to humans in low doses, or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity, rat, of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity, rat, of less than 50 milligrams per liter, or a dermal LD 50 toxicity, rabbit, of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible illness. Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.

(iii) It contains any of the toxic constituents listed in R315-50-10 and, after considering the following factors, the Board concludes that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

(A) The nature of the toxicity presented by the constituent.

(B) The concentration of the constituent in the waste.

(C) The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in paragraph (c)(1)(iii)(G) of this section.

(D) The persistence of the constituent or any toxic degradation product of the constituent.

(E) The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation.

(F) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(G) The plausible types of improper management to which the waste could be subjected.

(H) The quantities of the waste generated at individual generation sites or on a regional or national basis.

(I) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

(J) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(K) Other factors as may be appropriate.

Substances will be listed on R315-50-10 only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms. Wastes listed in accordance with these criteria will be designated Toxic wastes.

(2) The Board may list classes or types of solid waste as hazardous waste if they have reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in Section 19-6-102 of the Utah Solid and Hazardous Waste Act.

(3) The Board will use the criteria for listing specified in this section to establish the exclusion limits referred to in 40 CFR 261.5(c). R315-2-5 incorporates by reference the requirements of 40 CFR 261.5 concerning conditionally exempt small quantity generators.

(d) CHARACTERISTIC OF IGNITABILITY

(1) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 degrees C, 140 degrees F, as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79, or D-93-80, incorporated by reference, see section R315-1-2, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78, incorporated by reference, see section R315-1-2, or as determined by an equivalent test method approved under the procedures set forth in section R315-2-15.

(ii) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(iii) It is an ignitable "compressed gas" as defined in 49 CFR 173.300(a), 1990 ed., which is adopted and incorporated by reference, and as determined by the test methods described in

that regulation or equivalent test methods approved under section R315-2-15.

(iv) It is an "oxidizer" as defined in 49 CFR 173.151, 1990 ed., which is adopted and incorporated by reference.

(2) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

(e) CHARACTERISTIC OF CORROSIVITY

(1) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(i) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(ii) It is a liquid and corrodes steel, SAE 1020, at a rate greater than 6.35 mm, 0.250 inch, per year at a test temperature of 55 degrees C, 130 degrees F, as determined by the test method specified in NACE, National Association of Corrosion Engineers Standard TM-01-69 as standardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(2) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

(f) CHARACTERISTIC OF REACTIVITY

(1) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without detonating.

(ii) It reacts violently with water.

(iii) It forms potentially explosive mixtures with water.

(iv) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(v) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(vi) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(vii) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(viii) It is a "forbidden explosive" as defined in 49 CFR 173.5 ed., or a "Class 1 explosive" as defined in 49 CFR 173.50(b)(1), (2), or (3), which are incorporated by reference.

(2) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

(g) TOXICITY CHARACTERISTIC

(1) A solid waste (except manufactured gas plant waste) exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2, the extract from a representative sample of the waste contains any of the contaminants listed in Table 1 of 40 CFR 261.24 at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the

methodology outlined in Method 1311, is considered to be the extract for the purposes of this paragraph.

(2) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table 1 of 40 CFR 261.24, which corresponds to the toxic contaminant causing it to be hazardous. Table 1 of 40 CFR 261.24, 1990 ed., is adopted and incorporated by reference.

R315-2-10. Lists of Hazardous Wastes.

(a) A solid waste is a hazardous waste if it is listed in this section or R315-2-11, unless it has been excluded from this list under section R315-2-16.

(b) The Board will indicate the basis for listing the classes or types of wastes listed in this section and R315-2-11 by employing one or more of the following Hazard Codes:

Ignitable Waste: (I)

Corrosive Waste: (C)

Reactive Waste: (R)

Toxicity Characteristic Waste: (E)

Acute Hazardous Waste: (H)

Toxic Waste: (T)

R315-50-9, which incorporates by reference 40 CFR 261, Appendix VII, identifies the constituent which caused the Board to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in this section and R315-2-11.

(c) Each hazardous waste listed in this section and R315-2-11, is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number shall be used to comply with these rules where description and identification of a hazardous waste is required.

(d) The following hazardous wastes listed in this section are subject to the exclusion limits for acutely hazardous wastes established in R315-2-4:

EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.

(e) The listing of hazardous wastes from non-specific sources found in 40 CFR 261.31, 2000 ed., is adopted and incorporated by reference with the following additional waste:

(1) F999 - Residues from demilitarization, treatment, and testing of nerve, military, and chemical agents CX, GA, GB, GD, H, HD, HL, HN-1, HN-2, HN-3, HT, L, T, and VX. (R,T,C,H)

(f) The listing of hazardous wastes from specific sources found in 40 CFR 261.32, 2002 ed., is adopted and incorporated by reference.

R315-2-11. Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof.

The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in R315-2-11" refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33. Where a manufacturing process waste is deemed to be hazardous waste

because it contains a substance listed in paragraphs (e) or (f) of this section, that waste will be listed in Section R315-2-10, which incorporates the lists of hazardous wastes in 40 CFR 261.31 and 261.32, or will be identified as a hazardous waste by the characteristics set forth in Section R315-2-9.

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in Subsection R315-2-2(a)(2)(i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as, or a component of a fuel, distributed for use as a fuel, or burned as a fuel.

(a) Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33.

(b) Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraphs (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33.

(c) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33, unless the container is empty as defined in R315-2-7(b). Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or reclamation, the Board considers the residue to be intended for discard and thus, a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.

(d) Any residue or contaminated soil, water or other debris resulting from the cleanup of a discharge, into or on any land or water, of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section, which incorporate by reference, respectively, the lists of acute hazardous wastes and hazardous wastes in 40 CFR 261.33. Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or

reclamation, the Board considers the residue to be intended for discard, and thus a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to the drum reconditioner who reconditions the drum but discards the residue.

(e) The listing of chemicals, found in 40 CFR 261.33(e), 1997 ed., is adopted and incorporated by reference, with the addition of the following waste:

(1) P999 Nerve, Military, and Chemical Agents (i.e., CX, GA, GB, GD, H, HD, HL, HN-1, HN-2, HN-3, HT, L, T, and VX.)

(f) The listing of chemicals, found in 40 CFR 261.33(f), 2000 ed., is adopted and incorporated by reference.

R315-2-12. Inspections.

Any duly authorized officer, employee or representative of the Department or the Board may, at any reasonable time and upon presentation of appropriate credentials and upon providing the opportunity to have a representative of the owner, operator, or agent in charge to be present, enter upon and inspect any property, premise, or place on or at which hazardous wastes are generated, transported, stored, treated or disposed of, and may have access to and the right to copy any records relating to these wastes for the purpose of ascertaining the compliance with R315-1 through R315-101. Those persons referred to in this section may also inspect any waste and obtain samples thereof, including samples from any vehicle in which wastes are being transported or samples of any containers or labels. Any person obtaining samples shall give to the owner, operator or agent a receipt describing the sample obtained and, if requested, a portion of each sample of waste equal in volume or weight to the portion retained. If any analysis is made of those samples, a copy of the results of that analysis shall be furnished promptly to the owner, operator, or agent in charge.

R315-2-13. Variances Authorized.

(a) Variances will be granted by the Board only to the extent allowed under Federal law.

(b) The Board may consider a variance request in accordance with the statutory standard of 19-6-111. No variance shall be granted except upon application for it. Immediately upon receipt of an application for a variance, the Board shall give public notice of the application and provide for an opportunity for a public hearing. A variance granted for more than one year shall contain a timetable for coming into compliance with these regulations and shall be conditioned on adherence to that timetable.

(c) Any variance granted under this section may be renewed on terms and conditions and for periods which would be appropriate for the initial granting of a variance. No renewal shall be granted except on application for it. Immediately upon receipt of an application for renewal, the Board shall give public notice of the application and provide for an opportunity for a public hearing.

(d) The Board may, at its own instance, review any variance granted during the term for which a variance was granted. The procedure for this review shall be the same as that for an original application and the variance previously granted

may be revoked upon a finding that the conditions and the terms upon which the variance was granted are not being met.

(e) Any variance or renewal shall exist at the discretion of the Board and shall not constitute a right of the applicant or holder. However, any person adversely affected by the granting, denial or revocation of any variance or renewal by the Board may obtain judicial review of the Board's decision by filing a petition in District Court within 30 days from the date of notification of the decision.

R315-2-14. Violations, Orders, and Hearings.

(a) Whenever the Board or its duly appointed representative, as expressly delegated by the Board, determines that any person is in violation of any applicable approved hazardous waste operation plan or the requirements of R315-1 through R315-101, the Board or its duly appointed representative may cause written notice of that violation to be served upon the alleged violators. That notice shall specify the provisions of the plan, the rules alleged to have been violated, and the facts alleged to constitute the violation. The Board or its duly appointed representative may issue an order that necessary corrective action be taken within a reasonable time or may request the attorney general or the county attorney in the county in which the violation takes place to bring a civil action for injunctive relief and enforcement of R315-1 through R315-101.

(b) Any order issued pursuant to 19-6-112 and R315-2-14(a) shall become final unless, within 30 days after the order is served, the persons specified therein request a hearing. The request shall:

- (1) be in writing;
- (2) be addressed to the Executive Secretary;
- (3) include the order number;
- (4) state the facts;
- (5) state the relief sought; and
- (6) state the reasons the relief requested should be granted.

(c) Utah Administrative Procedures Act, 63-46b, and R315-12, shall govern the conduct of hearings before the Board.

R315-2-15. Petitions for Equivalent Testing or Analytical Methods.

(a) Any person seeking to add a testing or analytical method to R315-2, R315-7, R315-8, or R315-50, which incorporates the testing and analytical methods of 40 CFR 261, may petition for a regulatory amendment under this section and R315-2-17. To be successful, the person shall demonstrate to the satisfaction of the Board that the proposed method is equal to or superior to the corresponding method prescribed in R315-2, R315-7, R315-8, or R315-50, in terms of its sensitivity, accuracy, and precision, i.e., reproducibility.

(b) Each petition shall include:

- (1) The petitioner's name and address;
- (2) A statement of the petitioner's interest in the proposed action;

(3) A description of the proposed action, including, where appropriate, suggested regulatory language;

(4) A statement of the need and justification for the proposed action, including any supporting tests, studies, or other information;

(5) A full description of the proposed method, including all procedural steps and equipment used in the method;

(6) A description of the types of wastes or waste matrices for which the proposed method may be used;

(7) Comparative results obtained from using the proposed method with those obtained from using the relevant or corresponding methods prescribed in R315-2, R315-7, R315-8, and R315-50;

(8) An assessment of any factors which may interfere with, or limit the use of, the proposed method; and

(9) A description of the quality control procedures necessary to ensure the sensitivity, accuracy, and precision of the proposed method.

(c) After receiving a petition for an equivalent method, the Board may request any additional information on the proposed method which it may reasonably require to evaluate the method.

(d) The Board will consider any petitions in accordance with rulemaking procedures outlined in Section 63-46a-12.

(e) Petitioner may, alternatively, proceed under the provisions of 40 CFR 260.21 to have an alternative analytical method approved by EPA. In the event approval is granted, the petitioner shall so notify the Board and the decision of EPA will be binding upon the Board.

R315-2-16. Petitions to Amend This Rule to Exclude a Waste Produced at a Particular Facility.

(a) The requirements of 40 CFR 260.22, 1993 ed., as amended by 58 FR 46040, August 31, 1993, regarding petitions to exclude a waste are adopted and incorporated by reference with the following amendments:

(1) Substitute "Board" for "Administrator;"

(2) Include the following paragraphs:

(i) The Board will consider any petitions in accordance with rulemaking procedures outlined in Title 63, Chapter 46a, and in accordance with the procedures outlined in the Utah Administrative Procedures Act, Title 63, Chapter 46b, and Rule R315-12.

(ii) Petitioner may, alternatively, proceed under the provisions of 40 CFR 260.22 to have a particular waste delisted by EPA. In the event delisting is granted, the petitioner shall so notify the Board and the decision of EPA will be binding upon the Board unless, within 30 days after such notification, the Board specifically overrules the decision of EPA. In such event, the petitioner may petition the Board directly under this section for the relief sought.

R315-2-17. Petition to Amend Rules.

(a) It is the intent of the Board to insure the compatibility and equivalency of R315-1 through R315-101 with the regulations promulgated by EPA under the Resource Conservation and Recovery Act of 1976.

(b) Any person may petition the Board to modify or revoke any provision in R315-1 through R315-16, R315-50, R315-101, and R315-102. A petition shall be considered under the procedures outlined in 63-46a-12 and R15-2.

R315-2-18. Variances from Classification as a Solid Waste.

The variances from classification as a solid waste of 40 CFR 260.30, 1994 ed., as amended by 59 FR 47982, September 19, 1994, are adopted and incorporated by reference with the following amendment:

Substitute "Board" for "Regional Administrator."

R315-2-19. Standards and Criteria for Variances from Classification as a Solid Waste.

(a) The standards and criteria for variances from classification as a solid waste found in 40 CFR 260.31, 1994 ed., as amended by 59 FR 47982, September 19, 1994, are adopted and incorporated by reference with the following amendment:

(1) Substitute "Board" for "Regional Administrator."

R315-2-20. Variance to be Classified as a Boiler.

The provision for a variance to be classified as a boiler as found in 40 CFR 260.32, 1994 ed., as amended by 59 FR 47982, September 19, 1994, is adopted and incorporated by reference with the following amendment:

Substitute "Board" for "Regional Administrator."

R315-2-21. Procedures for Variances from Classification as a Solid Waste or to be Classified as a Boiler.

The procedures for variances from classification as a solid waste or boiler of 40 CFR 260.33, ed., as amended by 59 FR 47982, September 19, 1994, are adopted and incorporated by reference with the following amendment:

Substitute "Board" for "Regional Administrator."

R315-2-22. Additional Regulation of Certain Hazardous Waste Recycling Activities on a Case-by-Case Basis.

The provision regarding the regulation of certain hazardous waste recycling activities of 40 CFR 260.40, 1990 ed., is adopted and incorporated by reference with the following amendment:

Substitute "Executive Secretary" for "Regional Administrator."

R315-2-23. Procedures for Case-by-Case Regulation of Hazardous Waste Recycling Activities.

The Executive Secretary shall use the following procedures when determining whether to regulate hazardous waste recycling activities described in R315-2-6, which incorporates by reference the requirements of 40 CFR 261.6 regarding recyclable materials, under the provisions of 40 CFR 261.6 (b) and (c), rather than under the provisions of 40 CFR 266.70 concerning precious metals recovery.

(a) If a generator is accumulating the waste, the Executive Secretary will issue a notice setting forth the factual basis for the decision and stating that the person must comply with the applicable requirements of R315-5. The notice will become final within 30 days, unless the person served requests a public hearing before the Board to challenge the decision. Upon receiving such a request, the Board will hold a hearing. The Board will provide notice of the hearing to the public and allow public participation at the hearing. The Board will issue a final order after the hearing stating whether or not compliance with R315-5 is required. The order becomes effective 30 days after service of the decision unless the Board specifies a later date.

(b) If the person is accumulating the recyclable material as a storage facility, the notice will state that the person must obtain a hazardous waste operation permit in accordance with all applicable provisions of R315-3. The owner or operator of the facility must apply for a hazardous waste operation plan approval within no less than 60 days and no more than six months of notice, as specified in the notice. If the owner or operator of the facility wishes to challenge the Board's decision, he may do so in his hazardous waste operation plan, in a public hearing held on the draft plan approval, or in comments filed on the draft hazardous waste operation plan approval, or on the

notice of intent to deny the hazardous waste operation plan. The fact sheet accompanying the hazardous waste operation plan approval will specify the reasons for the Board's determination. The question of whether the Board's decision was proper will remain open for consideration during the public comment period discussed under R315-4-1.11 and in any subsequent hearing.

R315-2-24. Deletion of Certain Hazardous Waste Codes Following Equipment Cleaning and Replacement.

(a) Wastes from wood preserving processes at plants that do not resume or initiate use of chlorophenolic preservatives will not meet the listing definition of F032 once the generator has met all of the requirements of paragraphs (b) and (c) of this section. These wastes may, however, continue to meet another hazardous waste listing description or may exhibit one or more of the hazardous waste characteristics.

(b) Generators must either clean or replace all process equipment that may have come into contact with chlorophenolic formulations or constituents thereof, including, but not limited to, treatment cylinders, sumps, tanks, piping systems, drip pads, fork lifts, and trams, in a manner that minimizes or eliminates the escape of hazardous waste or constituents, leachate, contaminated drippage, or hazardous waste decomposition products to the ground water, surface water, or atmosphere.

(1) Generators shall do one of the following:

(i) Prepare and follow an equipment cleaning plan and clean equipment in accordance with this section;

(ii) Prepare and follow an equipment replacement plan and replace equipment in accordance with this section; or

(iii) Document cleaning and replacement in accordance with this section, carried out after termination of use of chlorophenolic preservations.

(2) Cleaning Requirements.

(i) Prepare and sign a written equipment cleaning plan that describes:

(A) The equipment to be cleaned;

(B) How the equipment will be cleaned;

(C) The solvent to be used in cleaning;

(D) How solvent rinses will be tested; and

(E) How cleaning residues will be disposed.

(ii) Equipment must be cleaned as follows:

(A) Remove all visible residues from process equipment;

(B) Rinse process equipment with an appropriate solvent until dioxins and dibenzofurans are not detected in the final solvent rinse.

(iii) Analytical requirements.

(A) Rinses must be tested in accordance with SW-846, Method 8290.

(B) "Not detected" means at or below the lower method calibration limit (MCL) in Method 8290, Table 1.

(iv) The generator must manage all residues from the cleaning process as F032 waste.

(3) Replacement requirements.

(i) Prepare and sign a written equipment replacement plan that describes:

(A) The equipment to be replaced;

(B) How the equipment will be replaced; and

(C) How the equipment will be disposed.

(ii) The generator must manage the discarded equipment as F032 waste.

(4) Documentation requirements.

(i) Document that previous equipment cleaning and/or replacement was performed in accordance with this section and occurred after cessation of use of chlorophenolic preservatives.

(c) The generator must maintain the following records documenting the cleaning and replacement as part of the facility's operating record:

- (1) The name and address of the facility;
- (2) Formulations previously used and the date on which their use ceased in each process at the plant;
- (3) Formulations currently used in each process at the plant;
- (4) The equipment cleaning or replacement plan;
- (5) The name and address of any persons who conducted the cleaning and replacement;
- (6) The dates on which cleaning and replacement were accomplished;
- (7) The dates of sampling and testing;
- (8) A description of the sample handling and preparation techniques, including techniques used for extraction, containerization, preservation, and chain-of-custody of the samples;
- (9) A description of the tests performed, the date the tests were performed, and the results of the tests;
- (10) The name and model numbers of the instrument(s) used in performing the tests;
- (11) QA/QC documentation; and
- (12) The following statement signed by the generator or his authorized representative:

I certify under penalty of law that all process equipment required to be cleaned or replaced under 40 CFR 261.35 was cleaned or replaced as represented in the equipment cleaning and replacement plan and accompanying documentation. I am aware that there are significant penalties for providing false information, including the possibility of fine or imprisonment.

R315-2-25. Requirements for Universal Waste.

The wastes listed in this section are exempt from regulation under R315-3 through R315-14 of these rules except as specified in section R315-16 of these rules and, therefore are not fully regulated as hazardous waste. The wastes listed in this section are subject to regulation under R315-16:

- (a) Batteries as described in R315-16-1.2;
- (b) Pesticides as described in R315-16-1.3;
- (c) Mercury thermostats as described in R315-16-1.4; and
- (d) Mercury lamps as described in R315-16-1.5.

R315-2-26. Comparable/Syngas Fuel Exclusion.

The requirements of 40 CFR 261.38, 2001 ed., are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for all references made to "Director".

KEY: hazardous wastes

September 15, 2003

Notice of Continuation October 18, 2001

19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.
R315-3. Application and Permit Procedures for Hazardous Waste Treatment, Storage, and Disposal Facilities.

R315-3-1. General Information.

1.1 PURPOSE AND SCOPE OF THESE REGULATIONS

(a) No person shall own, construct, modify, or operate any facility for the purpose of treating, storing, or disposing of hazardous waste without first submitting, and receiving the approval of the Executive Secretary for, a hazardous waste permit for that facility. However, any person owning or operating a facility on or before November 19, 1980, who has given timely notification as required by section 3010 of the Resource Conservation and Recovery Act (RCRA) of 1976, 42 U.S.C., section 6921, et seq., and who has submitted a proposed hazardous waste permit pursuant to this section and section 19-6-108 for that facility, may continue to operate that facility without violating this section until the time as the permit is approved or disapproved pursuant to this section.

(b) The Executive Secretary shall review each proposed hazardous waste permit application to determine whether the application will be in accord with the provisions of these rules and section 19-6-108 and, on that basis, shall approve or disapprove the application within the applicable time period specified in section 19-6-108. If, after the receipt of plans, specifications, or other information required under this section and section 19-6-108 and within the applicable time period of section 19-6-108, the Executive Secretary determines that the proposed construction, installation or establishment or any part of it will not be in accord with the requirements of this section or the applicable rules, he shall issue an order prohibiting the construction, installation or establishment of the proposal in whole or in part. The date of submission shall be deemed to be the date of all required information is provided to the Executive Secretary as required by these rules.

(c) Any permit application which does not meet the requirements of these rules shall be disapproved within the applicable time period specified in section 19-6-108. If within the applicable time period specified in section 19-6-108 the Executive Secretary fails to approve or disapprove the permit application or to request the submission of any additional information or modification to the application, the application shall not be deemed approved but the applicant may petition the Executive Secretary for a decision or seek judicial relief requiring a decision of approval or disapproval.

(d) An application for approval of a hazardous waste permit consists of two parts, part A and part B. For an existing facility, the requirement is satisfied by submitting only part A of the application until the date the Executive Secretary sets for each individual facility for submitting part B of the application, which date shall be in no case less than six months after the Executive Secretary gives notice to a particular facility that it shall submit part B of the application.

(e) Owners and operators of hazardous waste management units shall have permits during the active life, including the closure period, of the unit. Owners and operators of surface impoundments, landfills, land treatment units, and waste pile units that received waste after July 26, 1982, or that certified closure, according to R315-7-14, which incorporates by reference 40 CFR 265.115, after January 26, 1983, shall have post-closure permits, unless they demonstrate closure by removal or decontamination as provided under R315-3-1.1(e)(5)

and (6), or obtain an enforceable document in lieu of a post-closure permit, as provided under R315-3-1.1(e)(7). If a post-closure permit is required, the permit shall address applicable R315-8 groundwater monitoring, unsaturated zone monitoring, corrective action, and post-closure care requirements of R315. The denial of a permit for the active life of a hazardous waste management facility or unit does not affect the requirement to obtain a post-closure permit under R315-3-1.1.

(1) Specific inclusions. Owners or operators of certain facilities require hazardous waste permits as well as permits under other environmental programs for certain aspects of facility operation. Hazardous waste permits are required for:

(i) Injection wells that dispose of hazardous waste, and associated surface facilities that treat, store, or dispose of hazardous waste. However, the owner or operator with a State or Federal UIC permit will be deemed to have a "permit by rule" if they comply with requirements of R315-3-6.1(a).

(ii) Treatment, storage, and disposal of hazardous waste at facilities requiring and NPDES permit. However, the owner or operator of a publicly owned treatment works receiving hazardous waste will be deemed to have a "permit by rule" if they comply with provisions of R315-3-6.1(b).

(2) Specific exclusions. The following persons are among those who are not required to obtain a permit:

(i) Generators who accumulate hazardous waste on-site for less than the time periods as provided in R315-5-3.34, which incorporates the requirements of 40 CFR 262.34.

(ii) Farmers who dispose of hazardous waste pesticides from their own use as provided in R315-5-7.

(iii) Persons who own or operate facilities solely for the treatment, storage, or disposal of hazardous waste excluded from regulations under R315-2-5, small quantity generator exemption.

(iv) Owners or operators of totally enclosed treatment facilities as defined in 40 CFR 260.10, which is incorporated by reference in R315-1-1.

(v) Owners or operators of elementary neutralization units or wastewater treatment units as defined in 40 CFR 260.10, which is incorporated by reference in R315-1-1.

(vi) Transporters storing manifested shipments of hazardous waste in containers meeting the requirements of R315-5-3.32(b) at a transfer facility for a period of ten days or less.

(vii) Persons adding absorbent material to waste in a container, as defined in 40 CFR 260.10, which is incorporated by reference in R315-1, and persons adding waste to absorbent material in a container, provided that these actions occur at the time waste is first placed in the container, and R315-8-2.8(b), R315-8-9.2, and R315-8-9.3 are complied with.

(viii) Universal waste handlers and universal waste transporters (as defined in R315-16-1.9) managing the wastes listed below. These handlers are subject to regulation under R315-16.

(A) Batteries as described in R315-16-1.2;

(B) Pesticides as described in R315-16-1.3;

(C) Thermostats as described in R315-16-1.4; and

(D) Mercury lamps as described in R315-16-1.5.

(3) Further exclusions.

(i) A person is not required to obtain a permit for treatment or containment activities taken during immediate response to any of the following situations;

(A) Discharge of a hazardous waste;

(B) An imminent and substantial threat of a discharge of hazardous waste.

(C) A discharge of a material which, when discharged, becomes a hazardous waste.

(ii) Any person who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of this part for those activities.

(4) Permits for less than an entire facility. The Executive Secretary may issue or deny a permit for one or more units at a facility without simultaneously issuing or denying a permit to all units at the facility. The interim status of any unit for which a permit has not been issued or denied is not affected by the issuance or denial of a permit to any other unit at the facility.

(5) Closure by removal. Owners or operators of surface impoundments, land treatment units, and waste piles closing by removal or decontamination under R315-7 standards shall obtain a post-closure permit unless they can demonstrate to the Executive Secretary that the closure met the standards for closure by removal or decontamination in R315-8-11.5, R315-8-13.8, or R315-8-12.6, respectively. The demonstration may be made in the following ways:

(i) If the owner or operator has submitted a part B application for a post-closure permit, the owner or operator may request a determination, based on information contained in the application, that R315-8 closure by removal standards were met. If the Executive Secretary believes that R315-8 standards were met, he will notify the public of this proposed decision, allow for public comment, and reach a final determination according to the procedures in R315-3-1.1(e)(6);

(ii) If the owner or operator has not submitted a part B permit application for a post-closure permit, the owner or operator may petition the Executive Secretary for a determination that a post-closure permit is not required because the closure met the applicable R315-8 closure standards;

(A) The petition shall include data demonstrating that closure by the removal or decontamination standards of R315-8 were met.

(B) The Executive Secretary shall approve or deny the petition according to the procedures outlined in R315-3-1.1(e)(6).

(6) Procedures for Closure Equivalency Determination.

(i) If a facility owner or operator seeks an equivalency demonstration under R315-3-1.1(e)(5), the Executive Secretary will provide the public, through a newspaper notice, the opportunity to submit written comments on the information submitted by the owner or operator within 30 days from the date of the notice. The Executive Secretary will also, in response to a request or at his own discretion, hold a public hearing whenever a hearing might clarify one or more issues concerning the equivalence of the R315-7 closure to an R315-8 closure. The Executive Secretary will give public notice of the hearing at least 30 days before it occurs. Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the two notices may be combined.

(ii) The Executive Secretary will determine whether the R315-7 closure met R315-8 closure by removal or decontamination requirements within 90 days of its receipt. If the Executive Secretary finds that the closure did not meet the applicable R315-8 standards, he will provide the owner or operator with a written statement of the reasons why the closure

failed to meet R315-8 standards. The owner or operator may submit additional information in support of an equivalency demonstration within 30 days after receiving a written statement. The Executive Secretary will review any additional information submitted and make a final determination within 60 days.

(iii) If the Executive Secretary determines that the facility did not close in accordance with R315-8-7, which incorporates by reference 40 CFR 264.110 through 264.116, closure by removal standards, the facility is subject to post-closure permit requirements.

(7) Enforceable documents for post-closure care. At the discretion of the Executive Secretary, an owner or operator may obtain, in lieu of a post-closure permit, an enforceable document imposing the requirements of R315-7-14, which incorporates by reference 40 CFR 265.121. "Enforceable document" means an order, a permit, or other document issued by the Executive Secretary that meets the requirements of 19-6-104, 19-6-112, 19-6-113, and 19-6-115, including a corrective action order issued by EPA under section 3008(h), a CERCLA remedial action, or a closure or post-closure permit.

1.4 EFFECT OF A PERMIT

(a) Compliance with a permit during its term constitutes compliance, for purposes of enforcement, with these rules, except for those requirements not included in the permit which:

(1) Become effective by statute;

(2) Are promulgated under R315-13, which incorporates by reference 40 CFR 268, restricting the placement of hazardous wastes in or on the land;

(3) Are promulgated under R315-8 regarding leak detection systems for new and replacement surface impoundment, waste pile, and landfill units, and lateral expansions of surface impoundment, waste pile, and landfill units. The leak detection system requirements include double liners, CQA programs, monitoring, action leakage rates, and response action permits, and will be implemented through the procedures of R315-3-4.3, which incorporates by reference 40 CFR 270.42, Class 1 permit modifications; or

(4) Are promulgated under R315-7-26, which incorporates by reference 40 CFR 265.1030 through 265.1035, R315-7-27, which incorporates by reference 40 CFR 265.1050 through 265.1064 or R315-7-30, which incorporates by reference 40 CFR 265.1080 through 265.1091.

(b) The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

(c) The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

R315-3-2. Permit Application.

2.1 GENERAL APPLICATION REQUIREMENTS

(a) Permit Application. Any person who is required to have a permit, including new applicants and persons with expiring permits, shall complete, sign and submit, a minimum of two applications to the Executive Secretary as described in R315-3-2.1 and R315-3.7. Persons currently authorized with interim status shall apply for permits when required by the Executive Secretary. Persons covered by RCRA permits by rule, R315-3-6.1, need not apply. Procedures for applications, issuance and administration of emergency permits are found exclusively in R315-3-6.2. Procedures for application, issuance and administration of research, development, and demonstration permits are found exclusively in R315-3-6.5.

(b) Who Applies?

When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit, except that the owner shall also sign the permit application.

(c) Completeness.

(1) The Executive Secretary shall not issue a permit before receiving a complete application for a permit except for permit by rule, or emergency permit. An application for a permit is complete when the Executive Secretary receives an application form and any supplemental information which are completed to his satisfaction. An application for a permit is complete notwithstanding the failure of the owner or operator to submit the exposure information described in R315-3-2.1(i). The Executive Secretary may deny a permit for the active life of a hazardous waste management facility or unit before receiving a complete application for a permit.

(2) The Executive Secretary shall review for completeness every permit application. Each permit application submitted by a new hazardous waste management facility, should be reviewed for completeness by the Executive Secretary in accordance with the applicable review periods of 19-6-108. Upon completing the review, the Executive Secretary shall notify the applicant in writing whether the permit application is complete. If the permit application is incomplete, the Executive Secretary shall list the information necessary to make the permit application complete. When the permit application is for an existing hazardous waste management facility, the Executive Secretary shall specify in the notice of deficiency a date for submitting the necessary information. The Executive Secretary shall review information submitted in response to a notice of deficiency within 30 days after receipt. The Executive Secretary shall notify the applicant that the permit application is complete upon receiving this information. After the permit application is complete, the Executive Secretary may request additional information from an applicant but only when necessary to clarify, modify, or supplement previously submitted material.

(3) If an applicant fails or refuses to correct deficiencies in the permit application, the permit application may be denied and appropriate enforcement actions may be taken under the applicable provisions of the Utah Solid and Hazardous Waste Act.

(d) Existing Hazardous Waste Management Facilities and Interim Status Qualifications.

(1) Owners and operators of existing hazardous waste management facilities shall submit part A of their permit application to the Executive Secretary no later than:

(i) Six months after the date of publication of rules which first require them to comply with the standards set forth in R315-7 or R315-14, or

(ii) Thirty days after the date they first become subject to the standards set forth in R315-7 or R315-14, whichever first occurs.

(iii) For generators generating greater than 100 kilograms of hazardous waste in a calendar month and treats, stores, or disposes of these wastes on-site, by March 24, 1987

For facilities which had to comply with R315-7 because they handle a waste listed in EPA's May 19, 1980, Part 261 regulations, 45 FR 33006 et seq., the deadline for submitting an application was November 19, 1980. Where other existing facilities shall begin complying with R315-7 or R315-14 at a later date because of revisions to R315-1, R315-2, R315-7, or

R315-14, the Executive Secretary will specify when those facilities shall submit a permit application.

(2) The Executive Secretary may extend the date by which owners and operators of specified classes of existing hazardous waste management facilities shall submit Part A of their permit application if he finds that there has been substantial confusion as to whether the owners and operators of such facilities were required to file a permit application and such confusion is attributed to ambiguities in R315-1, R315-2, R315-7 or R315-14 of the regulations.

(3) The Executive Secretary may by compliance order issued under 19-6-112 and 19-6-113 extend the date by which the owner and operator of an existing hazardous waste management facility must submit part A of their permit application.

(4) The owner or operator of an existing hazardous waste management facility may be required to submit part B of the permit application. Any owner or operator shall be allowed at least six months from the date of request to submit part B of the application. Any owner or operator of an existing hazardous waste management facility may voluntarily submit part B of the application at any time. Notwithstanding the above, any owner or operator of an existing hazardous waste management facility shall submit a part B application in accordance with the dates specified in R315-3-7.4. Any owner or operator of a land disposal facility in existence on the effective date of statutory or regulatory amendments under R315 that render the facility subject to the requirement to have a permit, shall submit a part B application in accordance with the dates specified in R315-3-7.4.

(5) Failure to furnish a requested part B application on time, or to furnish in full the information required by the part B application, is grounds for termination of interim status under R315-3-4.4.

(e) New Hazardous Waste Management Facilities.

(1) Except as provided in R315-3-2.1(e)(3), no person shall begin physical construction of a new hazardous waste management facility without having submitted part A and part B of the application and having received a finally effective permit.

(2) An application for a permit for a new hazardous waste management facility, including both part A and part B, may be filed any time after promulgation of applicable regulations. The application shall be filed with the Regional Administrator if at the time of application the State has not received final authorization for permitting such facility; otherwise it shall be filed with the Executive Secretary. Except as provided in R315-3-2.1(e)(3), all applications shall be submitted at least 180 days before physical construction is expected to commence.

(3) Notwithstanding R315-3-2.1(e)(1), a person may construct a facility for the incineration of polychlorinated biphenyls pursuant to an approval issued by the U.S. EPA Administrator under section (6)(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 et seq., and any person owning or operating such a facility may, at any time after construction or operation of the facility has begun, file an application for a permit to incinerate hazardous waste authorizing the facility to incinerate waste identified or listed in these rules.

(f) Updating permit applications.

(1) If any owner or operator of a hazardous waste management facility has filed part A of a permit application and has not yet filed part B, the owner or operator shall file an amended part A application:

(i) With the Executive Secretary, within six months after the promulgation of revised regulations under 40 CFR 261 listing or identifying additional hazardous wastes, if the facility is treating, storing or disposing of any of those newly listed or identified wastes.

(ii) With the Executive Secretary no later than the effective date of regulatory provisions listing or designating wastes as hazardous in the State in addition to those listed or designated under the previously approved State program, if the facility is treating, storing, or disposing of any of those newly listed or designated wastes; or

(iii) As necessary to comply with changes during interim status, R315-3-7.3. Revised part A applications necessary to comply with the provisions of interim status shall be filed with the Executive Secretary.

(2) The owner or operator of a facility who fails to comply with the updating requirements of R315-3-2.1(f)(1) does not receive interim status as to the wastes not covered by duly filed part A applications.

(g) Reapplications. Any hazardous waste management facility with an effective permit shall submit a new application at least 180 days before the expiration date of the effective permit, unless permission for a later date has been granted by the Executive Secretary. The Executive Secretary shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

(h) Recordkeeping.

Applicants shall keep records of all data used to complete permit application and any supplemental information submitted under R315-3-2.4 through R315-3-2.12, for a period of at least three years from the date the application is signed.

(i) Exposure information.

(1) Any part B permit application submitted by an owner or operator of a facility that stores, treats, or disposes of hazardous waste in a surface impoundment or a landfill shall be accompanied by information, reasonably ascertainable by the owner or operator, on the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to the unit. At a minimum, the information shall address:

(i) Reasonably foreseeable potential releases from both normal operations and accidents at the unit, including releases associated with transportation to or from the unit;

(ii) The potential pathways of human exposure to hazardous wastes or constituents resulting from the releases described under R315-3-2.1(i)(1)(i); and

(iii) The potential magnitude and nature of the human exposure resulting from such releases.

(2) Owners and operators of a landfill or a surface impoundment who have already submitted a part B application shall submit the exposure information required in R315-3-2.1(i)(1).

(j) The Executive Secretary may require a permittee or an applicant to submit information in order to establish permit conditions under R315-3-3.3(b)(2), and R315-3-5.1(d).

2.2 SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS

(a) Applications. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice-president;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency; by either a principal executive officer or ranking elected official.

(b) Reports. All reports required by permits and other information requested by the Executive Secretary shall be signed by a person described in R315-3-2.2(a), or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in R315-3-2.2(a);

(2) The authorization specified either an individual or a position having responsibility for overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and

(3) The written authorization is submitted to the Executive Secretary.

(c) Changes to authorization. If an authorization under R315-3-2.2(b) is no longer accurate because different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of R315-3-2.2(b) shall be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d)(1) Certification. Any person signing a document under R315-3-2.2(a) or (b) shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(2) For remedial action plans (RAPs) under R315-3-8, which incorporates by reference 40 CFR 270, subpart H, if the operator certifies according to R315-3-2.2(d)(1), then the owner may choose to make the following certification instead of the certification in R315-3-2.2(d)(1):

"Based on my knowledge of the conditions of the property described in the RAP and my inquiry of the person or persons who manage the system referenced in the operator's certification, or those persons directly responsible for gathering the information, the information submitted is, upon information and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

2.4 CONTENTS OF PART A OF THE PERMIT APPLICATION

All applicants shall provide the following information to the Executive Secretary:

(a) The activities conducted by the applicant which require it to obtain a hazardous waste operation permit.

(b) Name, mailing address, and location of the facility for which the application is submitted.

(c) Up to four SIC codes which best reflect the principal products or services provided by the facility.

(d) The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.

(e) The name, address, and telephone number of the owner of the facility.

(f) Whether the facility is located on Indian lands.

(g) An indication of whether the facility is new or existing and whether it is a first or revised application.

(h) For existing facilities, (1) a scale drawing of the facility showing the location of all past, present, and future treatment, storage, and disposal areas; and (2) photographs of the facility clearly delineating all existing structures; existing treatment, storage, and disposal areas; and sites of future treatment, storage, and disposal areas.

(i) A description of the processes to be used for treating, storing, or disposing of hazardous waste, and the design capacity of these items.

(j) A specification of the hazardous wastes or hazardous waste mixtures listed or designated under R315-2 to be treated, stored, or disposed at the facility, an estimate of the quantity of these wastes to be treated, stored, or disposed annually, and a general description of the processes to be used for these wastes.

(k) A listing of all permits or construction approvals received or applied for under any of the following programs:

(1) Hazardous Waste Management program under the Utah Solid and Hazardous Waste Act or RCRA.

(2) Underground Injection Control (UIC) program under Safe Drinking Water Act (SDWA), 42 U.S.C. 300f et seq.

(3) NPDES program under Clean Water Act (CWA), 33 U.S.C. 1251 et seq.

(4) Prevention of Significant Deterioration (PSD) program under the Clean Air Act, 42 U.S.C. 7401 et seq.

(5) Nonattainment program under the Clean Air Act.

(6) National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.

(7) Dredge or fill permits under section 404 of the Clean Water Act.

(8) Other relevant environmental permits, including State and Federal permits or permits.

(l) A topographic map, or other map if a topographic map is unavailable, extending one mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within 1/4 mile of the facility property boundary.

(m) A brief description of the nature of the business.

(n) For hazardous debris, a description of the debris category(ies) and contaminant category(ies) to be treated, stored, or disposed of at the facility.

(o) The legal description of the facility with reference to the land survey of the State of Utah.

2.5 GENERAL INFORMATION REQUIREMENTS FOR PART B

(a) Part B information requirements presented below reflect the standards promulgated in R315-8. These information requirements are necessary in order for the Executive Secretary to determine compliance with the standards of R315-8. If owners and operators of hazardous waste management facilities can demonstrate that the information prescribed in part B cannot

be provided to the extent required, the Executive Secretary may make allowance for submission of the information on a case-by-case basis. Information required in part B shall be submitted to the Executive Secretary and signed in accordance with requirements in R315-3-2.2. Certain technical data, such as design drawings and specifications, and engineering studies shall be certified by a registered professional engineer. For post-closure permits, only the information specified in R315-3-2.19 is required in part B of the permit application.

(b) General information requirements. The following information is required for all hazardous waste management facilities, except as R315-8-1 provides otherwise:

(1) A general description of the facility,

(2) Chemical and physical analyses of the hazardous wastes and hazardous debris to be handled at the facility. At a minimum, these analyses shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with R315-8.

(3) A copy of the waste analysis plan required by R315-8-2.4, which incorporates by reference 40 CFR 264.13 (b) and, if applicable 40 CFR 264.13(c).

(4) A description of the security procedures and equipment required by R315-8-2.5, or a justification demonstrating the reasons for requesting a waiver of this requirement.

(5) A copy of the general inspection schedule required by R315-8-2.6(b). Include, where applicable, as part of the inspection schedule, specific requirements in R315-8-9.5, R315-8-10, which incorporates by reference the specific provisions of 40 CFR 264.193(i) and 264.195, R315-8-11.3, R315-8-12.3, R315-8-13.4, R315-8-14.3, and R315-8-16, which incorporates by reference 40 CFR 264.602, R315-8-17, which incorporates by reference 40 CFR 264.1033, R315-8-18, which incorporates by reference 40 CFR 264.1052, 264.1053, and 264.1058, and R315-8-22, which incorporates by reference 40 CFR 264.1084, 264.1085, 264.1086, and 264.1088.

(6) A justification of any request for a waiver(s) of the preparedness and prevention requirements of R315-8-3.

(7) A copy of the contingency plan required by R315-8-4. Include, where applicable, as part of the contingency plan, specific requirements in R315-8-11.8 and R315-8-10, which incorporates by reference 40 CFR 264.200.

(8) A description of procedures, structures, or equipment used at the facility to:

(i) Prevent hazards in unloading operations, for example, ramps, special forklifts;

(ii) Prevent run-off from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding, for example, berms, dikes, trenches;

(iii) Prevent contamination of water supplies;

(iv) Mitigate effects of equipment failure and power outages;

(v) Prevent undue exposure of personnel to hazardous waste, for example, protective clothing; and

(vi) Prevent releases to the atmosphere.

(9) A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with R315-8-2.8 including documentation demonstrating compliance with R315-8-2.8(c).

(10) Traffic pattern, estimated volume, number, types of vehicles and control, for example, show turns across traffic

lanes, and stacking lanes, if appropriate; describe access road surfacing and load bearing capacity; show traffic control signals.

(11) Facility location information:

(i) In order to determine the applicability of the seismic standard R315-8-2.9(a), the owner or operator of a new facility shall identify the political jurisdiction, e.g., county, township, or election district, in which the facility is proposed to be located. If the county or election district is not listed in R315-50-11, no further information is required to demonstrate compliance with R315-8-2.9(a).

(ii) If the facility is proposed to be located in an area listed in R315-50-11, the owner or operator shall demonstrate compliance with the seismic standard. This demonstration may be made using either published geologic data or data obtained from field investigations carried out by the applicant. The information provided shall be of a quality to be acceptable to geologists experienced in identifying and evaluating seismic activity. The information submitted shall show that either:

(A) No faults which have had displacement in Holocene time are present, or no lineations which suggest the presence of a fault, which have displacement in Holocene time, within 3,000 feet of a facility are present, based on data from:

(I) Published geologic studies,

(II) Aerial reconnaissance of the area within a five mile radius from the facility,

(III) An analysis of aerial photographs covering a 3,000 foot radius of the facility, and

(IV) If needed to clarify the above data, a reconnaissance based on walking portions of the area within 3,000 feet of the facility, or

(B) If faults, to include lineations, which have had displacement in Holocene time are present within 3,000 feet of a facility, no faults pass within 200 feet of the portions of the facility where treatment, storage, or disposal of hazardous waste will be conducted, based on data from a comprehensive geologic analysis of the site. Unless a site analysis is otherwise conclusive concerning the absence of faults within 200 feet of the portions of the facility, data shall be obtained from a subsurface exploration, trenching, of the area within a distance no less than 200 feet from portions of the facility where treatment, storage, or disposal of hazardous waste will be conducted. The trenching shall be performed in a direction that is perpendicular to known faults, which have had displacement in Holocene time, passing within 3,000 feet of the portions of the facility where treatment, storage, and disposal of hazardous waste will be conducted. The investigation shall document with supporting maps and other analyses, the location of any faults found. The Guidance Manual for the Location Standards provides greater detail on the content of each type of seismic investigation and the appropriate conditions under which each approach or a combination of approaches would be used.

(iii) Owners and operators of all facilities shall provide an identification of whether the facility is located within a 100-year floodplain. This identification shall indicate the source of data for the determination and include a copy of the relevant Federal Insurance Administration (FIA) flood map, if used, or the calculations and maps used where an FIA map is not available. Information shall also be provided identifying the 100-year flood level and any other special flooding factors, e.g., wave action, which shall be considered in designing, constructing, operating, or maintaining the facility to withstand washout from a 100-year flood.

Where maps for the National Flood Insurance Program produced by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency are available, they will normally be determinative of whether a facility is located within or outside of the 100-year floodplain. However, where the FIA map excludes an area, usually areas of the floodplain less than 200 feet in width, these areas shall be considered and a determination made as to whether they are in the 100-year floodplain. Where FIA maps are not available for a proposed facility location, the owner or operator shall use equivalent mapping techniques to determine whether the facility is within the 100-year floodplain, and if so located, what the 100-year flood elevation would be.

(iv) Owners and operators of facilities located in the 100-year floodplain shall provide the following information:

(A) Engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood.

(B) Structural or other engineering studies showing the design of operational units, e.g., tanks, incinerators, and flood protection devices, e.g., floodwalls, dikes, at the facility and how these will prevent washout.

(C) If applicable, and in lieu of R315-3-2.5(b)(11)(iv)(A) and (B), a detailed description of procedures to be followed to remove hazardous waste to safety before the facility is flooded, including:

(I) Timing of the movement relative to flood levels, including estimated time to move the waste, to show that the movement can be completed before floodwaters reach the facility.

(II) A description of the location(s) to which the waste will be moved and demonstration that those facilities will be eligible to receive hazardous waste in accordance with the rules under R315-3, R315-7, R315-8, and R315-14.

(III) The planned procedures, equipment, and personnel to be used and the means to ensure that the resources will be available in time for use.

(IV) The potential for accidental discharges of the waste during movement.

(v) Existing facilities NOT in compliance with R315-8-2.9(b) shall provide a plan showing how the facility will be brought into compliance and a schedule for compliance.

(12) An outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the hazardous waste management facility in a safe manner as required to demonstrate compliance with R315-8-2.7. A brief description of how training will be designed to meet actual job tasks in accordance with requirements in R315-8-2.7(a)(3).

(13) A copy of the closure plan and where applicable, the post-closure plan required by R315-8-7 which incorporates by reference 40 CFR 264.112, and 264.118, and R315-8-10 which incorporates by reference 40 CFR 264.197. Include where applicable as part of the plans specific requirements in R315-8-9.9, R315-8-10, which incorporates by reference 40 CFR 264.197, R315-8-11.5, R315-8-12.6, R315-8-13.8, R315-8-14.5, R315-8-15.8, and R315-8-16, which incorporates by reference 40 CFR 264.601 and 264.603.

(14) For hazardous waste disposal units that have been closed, documentation that notices required under R315-8-7 which incorporates by reference 40 CFR 264.119, have been filed.

(15) The most recent closure cost estimate for the facility prepared in accordance with R315-8-8 which incorporates by reference 40 CFR 264.142, and a copy of the documentation required to demonstrate financial assurance under R315-8-8 which incorporates by reference 40 CFR 264.143. For a new facility, a copy of the required documentation may be submitted 60 days prior to the initial receipt of hazardous wastes, if that is later than the submission of the part B.

(16) Where applicable, the most recent post-closure cost estimate for the facility prepared in accordance with R315-8-8, which incorporates by reference 40 CFR 264.144, plus a copy of the financial assurance mechanism adopted in compliance with R315-8-8.3 documentation required to demonstrate financial assurance under R315-8-8, which incorporates by reference 40 CFR 264.145. For a new facility, a copy of the required documentation may be submitted 60 days prior to the initial receipt of hazardous wastes, if that is later than the submission of the part B.

(17) Where applicable, a copy of the insurance policy or other documentation which comprises compliance with the requirements of R315-8-8, which incorporates by reference 40 CFR 264.147. For a new facility, documentation showing the amount of insurance meeting the specification of R315-8-8, which incorporates by reference 40 CFR 264.147(a), and if applicable 40 CFR 264.147(b), also incorporated by reference in R315-8-8, that the owner or operator plans to have in effect before initial receipt of hazardous waste for treatment, storage, or disposal. A request for a variance in the amount of required coverage, for a new or existing facility, may be submitted as specified in 40 CFR 264.147(c), incorporated by reference in R315-8-8.

(18) Where appropriate, proof of coverage by a financial mechanism as required in R315-8-8, which incorporates by reference 40 CFR 264.149 and 150.

(19) A topographic map showing a distance of 1000 feet around the facility at a scale of 2.5 centimeters, one inch, equal to not more than 61.0 meters, 200 feet. For large hazardous waste management facilities, the Executive Secretary will allow the use of other scales on a case-by-case basis. Contours shall be shown on the map. The contour interval shall be sufficient to clearly show the pattern of surface water flow in the vicinity of and from each operational unit of the facility. For example, contours with an interval of 1.5 meters, five feet, if relief is greater than 6.1 meters, 20 feet, or an interval of 0.6 meters, two feet, if relief is less than 6.1 meters, 20 feet. Owners and operators of hazardous waste management facilities located in mountainous areas should use larger contour intervals to adequately show topographic profiles of facilities. The map shall clearly show the following:

- (i) Map scale and date.
- (ii) 100-year floodplain area.
- (iii) Surface waters including intermittent streams.
- (iv) Surrounding land uses, residential, commercial, agricultural, recreational.
- (v) A wind rose, i.e., prevailing windspeed and direction.
- (vi) Orientation of map, north arrow.
- (vii) Legal boundaries of the hazardous waste management facility site.
- (viii) Access control, fences, gates.
- (ix) Injection and withdrawal wells both on-site and off-site.

(x) Buildings; treatment, storage, or disposal operations; or other structures, recreation areas, run-off control systems, access and internal roads, storm, sanitary, and process sewerage systems, loading and unloading areas, fire control facilities, etc.

(xi) Barriers for drainage or flood control.

(xii) Location of operational units within hazardous waste management facility site, where hazardous waste is, or will be, treated, stored, or disposed, include equipment cleanup areas.

(20) Applicants may be required to submit such information as may be necessary to enable the Executive Secretary and the Board to carry out duties under State laws and Federal laws as specified in 40 CFR 270.3.

(21) For land disposal facilities, if a case-by-case extension has been approved under R315-13, which incorporates by reference 40 CFR 268.5, or a petition has been approved under R315-13, which incorporates by reference 40 CFR 268.6, a copy of the notice of approval for the extension is required.

(22) A summary of the pre-application meeting, along with a list of attendees and their addresses, and copies of any written comment or materials submitted at the meeting, as required under R315-4-2.31(c).

(c) Additional information requirements.

The following additional information regarding protection of groundwater is required from owners or operators of hazardous waste facilities containing a regulated unit except as otherwise provided in R315-8-6.1(b).

(1) A summary of the groundwater monitoring data obtained during the interim status period under R315-7-13 where applicable.

(2) Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including groundwater flow direction and rate, and the basis for the identification, i.e., the information obtained from hydrogeologic investigations of the facility area.

(3) On the topographic map required under R315-3-2.5(b)(19), a delineation of the waste management area, the property boundary, the proposed "point of compliance" as defined in R315-8-6.6, the proposed location of groundwater monitoring wells as required by R315-8-6.8 and, to the extent possible, the information required in R315-3-2.5(c)(2);

(4) A description of any plume of contamination that has entered the groundwater from a regulated unit at the time that the application is submitted that:

(i) Delineates the extent of the plume on the topographic map required under R315-3-2.5(b)(19);

(ii) Identifies the concentration of each constituent listed in R315-50-14, which incorporates by reference Appendix IX of 40 CFR 264, throughout the plume or identifies the maximum concentrations of each constituent listed in R315-50-14 in the plume.

(5) Detailed plans and an engineering report describing the proposed groundwater monitoring program to be implemented to meet the requirements of R315-8-6.8.

(6) If the presence of hazardous constituents has not been detected in the groundwater at the time of permit application, the owner or operator shall submit sufficient information, supporting data, and analyses to establish a detection monitoring program which meets the requirements of R315-8-6.9. This submission shall address the following items as specified under R315-8-6.9:

(i) A proposed list of indicator parameters, waste constituents, or reaction products that can provide a reliable

indication of the presence of hazardous constituents in the groundwater;

- (ii) A proposed groundwater monitoring system;
- (iii) Background values for each proposed monitoring parameters or constituent, or procedures to calculate the values; and

- (iv) A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating groundwater monitoring data.

(7) If the presence of hazardous constituents has been detected in the groundwater at the point of compliance at the time of permit application, the owner or operator shall submit sufficient information, supporting data, and analyses to establish a compliance monitoring program which meets the requirements of R315-8-6.10. Except as provided in R315-8-6.9(g)(5), the owner or operator shall also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of R315-8-6.11, unless the owner or operator obtains written authorization in advance from the Executive Secretary to submit a proposed permit schedule for submittal of a plan. To demonstrate compliance with R315-8-6.10, the owner or operator shall address the following items:

- (i) A description of the wastes previously handled at the facility;

- (ii) A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

- (iii) A list of hazardous constituents for which compliance monitoring will be undertaken in accordance with R315-8-6.8 and R315-8-6.10;

- (iv) Proposed concentration limits for each hazardous constituent, based on the criteria set forth in R315-8-6.5(a) including a justification for establishing any alternate concentration limits;

- (v) Detailed plans and an engineering report describing the proposed groundwater monitoring system, in accordance with the requirements of R315-8-6.8, and

- (vi) A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating groundwater monitoring data.

(8) If hazardous constituents have been measured in the groundwater which exceed the concentration limits established under R315-8-6.5 Table 1, or if groundwater monitoring conducted at the time of permit application under R315-8-6.1 through R315-8-6.5 at the waste boundary indicates the presence of hazardous constituents from the facility in groundwater over background concentrations, the owner or operator shall submit sufficient information, supporting data, and analyses to establish a corrective action program which meets the requirements of R315-8-6.11. However, an owner or operator is not required to submit information to establish a corrective action program if he demonstrates to the Executive Secretary that alternate concentration limits will protect human health and the environment after considering the criteria listed in R315-8-6.5(b). An owner or operator who is not required to establish a corrective action program for this reason shall instead submit sufficient information to establish a compliance monitoring program which meets the requirements of R315-8-6.10 and R315-3-2.5(c)(6). To demonstrate compliance with R315-8-6.11, the owner or operator shall address, at a minimum, the following items:

- (i) A characterization of the contaminated groundwater, including concentration of hazardous constituents;

- (ii) The concentration limit for each hazardous constituent found in the groundwater as set forth in R315-8-6.5;

- (iii) Detailed plans and engineering report describing the corrective action to be taken; and

- (iv) A description of how the groundwater monitoring program will assess the adequacy of the corrective action.

- (v) The permit may contain a schedule for submittal of the information required in R315-3-2.5(c)(8)(iii) and (iv) provided the owner or operator obtains written authorization from the Executive Secretary prior to submittal of the complete permit application.

(9) An intended schedule of construction shall be submitted with the permit application and will be incorporated into the permit as an approval condition. Facility permits shall be reviewed by the Executive Secretary no later than 18 months from the date of permit issuance, and periodically thereafter, to determine if a program of continuous construction is proceeding. Failure to maintain a program of continuous construction may result in revocation of the permit.

(d) Information requirements for solid waste management units.

(1) The following information is required for each solid waste management unit at a facility seeking a permit:

- (i) The location of the unit on the topographic map required under R315-3-2.5(b)(19);

- (ii) Designation of type of unit;

- (iii) General dimensions and structural description, supply any available drawings;

- (iv) When the unit was operated; and

- (v) Specification of all wastes that have been managed at the unit, to the extent available.

(2) The owner or operator of any facility containing one or more solid waste management units shall submit all available information pertaining to any release of hazardous wastes or hazardous constituents from the unit or units.

(3) The owner or operator shall conduct and provide the results of sampling and analysis of groundwater, land surface, and subsurface strata, surface water, or air, which may include the installation of wells, where the Executive Secretary ascertains it is necessary to complete a RCRA Facility Assessment that will determine if a more complete investigation is necessary.

2.6 SPECIFIC PART B INFORMATION REQUIREMENTS FOR CONTAINERS

Facilities that store containers of hazardous waste, except as otherwise provided in R315-8-9.1, shall provide the following additional information:

- (a) A description of the containment system to demonstrate compliance with R315-8-9.6. Show at least the following:

- (1) Basic design parameters, dimensions, and materials of construction.

- (2) How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system.

- (3) Capacity of the containment system relative to the number and volume of containers to be stored.

- (4) Provisions for preventing or managing run-on.

- (5) How accumulated liquids can be analyzed and removed to prevent overflow.

- (b) For storage areas that store containers holding wastes that do not contain free liquids, a demonstration of compliance with R315-8-9.6(c) including:

(1) Test procedures and results or other documentation or information to show that the wastes do not contain free liquids; and

(2) A description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids.

(c) Sketches, drawings, or data demonstrating compliance with R315-8-9.7, location of buffer zone and containers holding ignitable or reactive wastes, and R315-8-9.8(c), location of incompatible wastes, where applicable.

(d) Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with R315-8-9.8(a) and (b) and R315-8-2.8(b) and (c).

(e) Information on air emission control equipment as required in R315-3-2.18, which incorporates by reference 40 CFR 270.27.

2.7 SPECIFIC PART B INFORMATION REQUIREMENTS FOR TANK SYSTEMS

For facilities that use tanks to store or treat hazardous waste, the requirements of 40 CFR 270.16, 1996 ed., are adopted and incorporated by reference.

2.8 SPECIFIC PART B INFORMATION REQUIREMENTS FOR SURFACE IMPOUNDMENTS

Facilities that store, treat, or dispose of hazardous waste in surface impoundments, except as otherwise provided in R315-8-1.1, shall provide the following additional information:

(a) A list of the hazardous wastes placed or to be placed in each surface impoundment;

(b) Detailed plans and an engineering report describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of R315-8-2.10, R315-8-11.2, R315-8-11.9, R315-8-11.10, addressing the following items:

(1) The liner system, except for an existing portion of a surface impoundment. If an exemption from the requirement for a liner is sought as provided by R315-8-11.2(b), submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time;

(2) The double liner and leak, leachate, detection, collection, and removal system, if the surface impoundment must meet the requirements of R315-8-11.2(c). If an exemption from the requirements for double liners and a leak detection, collection, and removal system or alternative design is sought as provided by R315-8-11.2(d), (e), or (f), submit appropriate information;

(3) If the leak detection system is located in a saturated zone, submit detailed plans and an engineering report explaining the leak detection system design and operation, and the location of the saturated zone in relation to the leak detection system;

(4) The construction quality assurance, CQA, plan if required under R315-8-2.10;

(5) Proposed action leakage rate, with rationale, if required under R315-8-11.9, and response action plan, if required under R315-8-11.10;

(6) Prevention of overtopping; and

(7) Structural integrity of dikes.

(c) A description of how each surface impoundment, including the double liner, leak detection system, cover system,

and appurtenances for control of overtopping, will be inspected in order to meet the requirements of R315-8-11.3(a), (b), and (d). This information should be included in the inspection plan submitted under R315-3-2.5(b)(5);

(d) A certification by a qualified engineer which attests to the structural integrity of each dike, as required under R315-8-11.3(c). For new units, the owner or operator shall submit a statement by a qualified engineer that he will provide a certification upon completion of construction in accordance with the plans and specifications;

(e) A description of the procedure to be used for removing a surface impoundment from service, as required under R315-8-11.4(b) and (c). This information should be included in the contingency plan submitted under R315-3-2.5(b)(7);

(f) A description of how hazardous waste residues and contaminated materials will be removed from the unit at closure, as required under R315-8-11.5(a)(1). For any wastes not to be removed from the unit upon closure, the owner or operator shall submit detailed plans and an engineering report describing how R315-8-11.5(a)(2) and (b) will be complied with. This information should be included in the closure plan, and, where applicable, the post-closure plan submitted under R315-3-2.5(b)(13);

(g) If ignitable or reactive wastes are to be placed in a surface impoundment, an explanation of how R315-8-11.6 will be complied with;

(h) If incompatible wastes, or incompatible wastes and materials will be placed in a surface impoundment, an explanation of how R315-8-11.7 will be complied with.

(i) A waste management plan for EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027 describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of R315-8-11.8. This submission shall address the following items as specified in R315-8-11.8:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(j) Information on air emission control equipment as required by R315-3-2.18, which incorporates by reference 40 CFR 270.27.

2.9 SPECIFIC PART B INFORMATION REQUIREMENTS FOR WASTE PILES

Facilities that store or treat hazardous waste in waste piles, except as otherwise provided in R315-8-1, shall provide the following additional information:

(a) A list of hazardous wastes placed or to be placed in each waste pile;

(b) If an exemption is sought to R315-8-12.2 and R315-8-6 as provided by R315-8-12.1(c) or R315-8-6(b)(2), an explanation of how the standards of R315-8-12.1(c) will be complied with or detailed plans and an engineering report describing how the requirements of R315-8-6(b)(2) will be met.

(c) Detailed plans and an engineering report describing how the waste pile is or will be designed, constructed, operated and maintained to meet the requirements of R315-8-2.10, R315-

8-12.2, R315-8-12.8, and R315-8-12.9, addressing the following items:

(1)(i) The liner system, except for an existing portion of a waste pile, if the waste pile must meet the requirements of R315-8-12.2(a). If an exemption from the requirement for a liner is sought as provided by R315-8-12.2(b), submit detailed plans, and engineering and hydrogeological reports, as appropriate, describing alternate designs and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the ground water or surface water at any future time;

(ii) The double liner and leak, leachate, detection, collection, and removal system, if the waste pile must meet the requirements of R315-8-12.2(c). If an exemption from the requirements for double liners and a leak detection, collection, and removal system or alternative design is sought as provided by R315-8-12.2(d), (e), or (f), submit appropriate information;

(iii) If the leak detection system is located in a saturated zone, submit detailed plans and an engineering report explaining the leak detection system design and operation, and the location of the saturated zone in relation to the leak detection system;

(iv) The construction quality assurance (CQA) plan if required under R315-8-2.10;

(v) Proposed action leakage rate, with rationale, if required under R315-8-12.8, and response action plan, if required under R315-8-12.9;

(2) Control of run-on;

(3) Control of run-off;

(4) Management of collection and holding units associated with run-on and run-off control systems; and

(5) Control of wind dispersal of particulate matter, where applicable;

(d) A description of how each waste pile, including the double liner system, leachate collection and removal system, leak detection system, cover system, and appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of R315-8-12.3(a), (b), and (c). This information shall be included in the inspection plan submitted under R315-3-2.5(b)(5);

(e) If treatment is carried out on or in the pile, details of the process and equipment used, and the nature and quality of the residuals;

(f) If ignitable or reactive wastes are to be placed in a waste pile, an explanation of how the requirements of R315-8-12.4 will be complied with;

(g) If incompatible wastes, or incompatible wastes and materials will be placed in a waste pile, an explanation of how R315-8-12.5 will be complied with;

(h) A description of how hazardous waste residues and contaminated materials will be removed from the waste pile at closure, as required under R315-8-12.6(a). For any waste not to be removed from the waste pile upon closure, the owner or operator shall submit detailed plans and an engineering report describing how R315-8-14.5(a) and (b) will be complied with. This information should be included in the closure plan, and, where applicable, the post-closure plan submitted under R315-3-2.5(b)(13);

(i) A waste management plan for EPA Hazardous Waste Nos. F020, F021, F022, F023, F026 and F027 describing how a waste pile that is not enclosed, as defined in R315-8-12.1(c) is or will be designed, constructed, operated, and maintained to meet

the requirements of R315-8-12.7. This submission shall address the following items as specified in R315-8-12.7:

(1) The volume, physical, and chemical characteristics of the wastes to be disposed in the waste pile, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

2.10 SPECIFIC PART B INFORMATION REQUIREMENTS FOR INCINERATORS

For facilities that incinerate hazardous waste, except as R315-8-15.1 and R315-3-2.10(e) provides otherwise, the applicant shall fulfill the requirements of R315-3-2.10(a), (b), or (c).

(a) When seeking exemption under R315-8-15.1(b) or (c) (ignitable, corrosive or reactive wastes only):

(1) Documentation that the waste is listed as a hazardous waste in R315-2-10 solely because it is ignitable, Hazard Code I, corrosive, Hazard Code C, or both; or

(2) Documentation that the waste is listed as a hazardous waste in R315-2-10 solely because it is reactive, Hazard Code R, for characteristics other than those listed in R315-2-9(f)(1)(iv) and (v), and will not be burned when other hazardous wastes are present in the combustion zone; or

(3) Documentation that the waste is a hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous wastes under R315-2-9; or

(4) Documentation that the waste is a hazardous waste solely because it possesses the reactivity characteristics listed in R315-2-9(f)(i), (ii), (iii), (vi), (vii), or (viii) and that it will not be burned when other hazardous wastes are present in the combustion zone; or

(b) Submit a trial burn plan or the results of the trial burn, including all required determinations, in accordance with R315-3-6.3; or

(c) In lieu of a trial burn, the applicant may submit the following information:

(1) An analysis of each waste or mixture of wastes to be burned including:

(i) Heat value of the waste in the form and composition in which it will be burned.

(ii) Viscosity, if applicable, or description of physical form of the waste.

(iii) An identification of any hazardous organic constituents listed in R315-50-10, which incorporates by reference 40 CFR part 261 Appendix VIII, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, which would reasonably not be expected to be found in the waste. The constituents excluded from analysis shall be identified and the basis for their exclusion stated. The waste analysis shall rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2, or their equivalent.

(iv) An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(v) A quantification of those hazardous constituents in the waste which may be designated as POHC's based on data submitted from other trial or operational burns which demonstrate compliance with the performance standard in R315-8-15.4.

(2) A detailed engineering description of the incinerator, including:

- (i) Manufacturer's name and model number of incinerator.
- (ii) Type of incinerator.
- (iii) Linear dimension of incinerator unit including cross sectional area of combustion chamber.
- (iv) Description of auxiliary fuel system, type/feed.
- (v) Capacity of prime mover.
- (vi) Description of automatic waste feed cutoff system(s).
- (vii) Stack gas monitoring and pollution control monitoring system.
- (viii) Nozzle and burner design.
- (ix) Construction materials.
- (x) Location and description of temperature, pressure, and flow indicating devices and control devices.

(3) A description and analysis of the waste to be burned compared with the waste for which data from operational or trial burns are provided to support the contention that a trial burn is not needed. The data should include those items listed in R315-3-2.10(c)(1). This analysis should specify the POHC's which the applicant has identified in the waste for which a permit is sought, and any differences from the POHC's in the waste for which burn data are provided.

(4) The design and operating conditions of the incinerator unit to be used, compared with that for which comparative burn data are available.

(5) A description of the results submitted from any previously conducted trial burn(s) including:

(i) Sampling and analysis techniques used to calculate performance standards in R315-8-15.4.

(ii) Methods and results of monitoring temperatures, waste feed rates, air feed rates, and carbon monoxide, and an appropriate indicator of combustion gas velocity, including a statement concerning the precision and accuracy of this measurement.

(6) The expected incinerator operation information to demonstrate compliance with R315-8-15.4 and R315-8-15.6 including:

(i) Expected carbon monoxide (CO) level in the stack exhaust gas.

(ii) Waste feed rate.

(iii) Combustion zone temperature.

(iv) Indication of combustion gas velocity.

(v) Expected stack gas volume, flow rate, and temperature.

(vi) Computed residence time for waste in the combustion zone.

(vii) Expected hydrochloric acid removal efficiency.

(viii) Expected fugitive emissions and their control procedures.

(ix) Proposed waste feed cut-off limits based on the identified significant operating parameters.

(7) Any supplemental information as the Executive Secretary finds necessary to achieve the purposes of this paragraph.

(8) Waste analysis data, including that submitted in R315-3-2.10(c)(1), sufficient to allow the Executive Secretary to specify as permit Principal Organic Hazardous Constituents (POHC's) those constituents for which destruction and removal efficiencies will be required.

(d) The Executive Secretary shall approve a permit application without a trial burn if he finds that:

(1) The wastes are sufficiently similar; and

(2) The incinerator units are sufficiently similar, and the data from other trial burns are adequate to specify, under R315-8-15.6, operating conditions that will ensure that the performance standards in R315-8-15.4 will be met by the incinerator.

(e) When an owner or operator demonstrates compliance with the air emission standards and limitations in R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE (i.e., by conducting a comprehensive performance test and submitting a Notification of Compliance), the requirements of R315-3-2.10 do not apply, except those provisions the Executive Secretary determines are necessary to ensure compliance with R315-8-15.6(a) and R315-8-15.6(c) if you elect to comply with R315-3-9(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events. Nevertheless, the Executive Secretary may apply the provisions of R315-3-2.10, on a case-by-case basis, for purposes of information collection in accordance with R315-3-2.1(j) and R315-3-3.3(b)(2).

2.11 SPECIFIC PART B INFORMATION REQUIREMENTS FOR LAND TREATMENT FACILITIES

Facilities that use land treatment to dispose of hazardous waste, except as otherwise provided in R315-8-1.1, shall provide the following additional information:

(a) A description of plans to conduct a treatment demonstration as required under R315-8-13.3. The description shall include the following information:

(1) The wastes for which the demonstration will be made and the potential hazardous constituents in the wastes;

(2) The data sources to be used to make the demonstration, e.g., literature, laboratory data, field data, or operating data;

(3) Any specific laboratory or field test that will be conducted, including:

(i) The type of test, e.g., column leaching, degradation;

(ii) Materials and methods, including analytical procedures;

(iii) Expected time for completion;

(iv) Characteristics of the unit that will be simulated in the demonstration, including treatment zone characteristics, climatic conditions, and operating practices;

(b) A description of a land treatment program, as required under R315-8-13.2. This information shall be submitted with the plans for the treatment demonstration, and updated following the treatment demonstration. The land treatment program shall address the following items:

(1) The wastes to be land treated;

(2) Design measures and operating practices necessary to maximize treatment in accordance with R315-8-13.4(a) including:

(i) Waste application method and rate;

(ii) Measures to control soil pH;

(iii) Enhancement of microbial or chemical reactions;

- (iv) Control of moisture content.
- (3) Provisions for unsaturated zone monitoring including:
 - (i) Sampling equipment, procedures and frequency;
 - (ii) Procedures for selecting sampling locations;
 - (iii) Analytical procedures;
 - (iv) Chain of custody control;
 - (v) Procedures for establishing background values;
 - (vi) Statistical methods for interpreting results;
 - (vii) The justification for any hazardous constituents recommended for selection as principal hazardous constituents, in accordance with the criteria for the selection in R315-8-13.6(a);

(4) A list of hazardous constituents reasonably expected to be in, or derived from, the wastes to be land treated based on waste analysis performed pursuant to R315-8-2.4, which incorporates by reference 40 CFR 264.13;

(5) The proposed dimensions of the treatment zone;

(c) A description of how the unit is or will be designed, constructed, operated, and maintained in order to meet the requirements of R315-8-13.4. This submission shall address the following items:

- (1) Control of run-on;
- (2) Collection and control of run-off;
- (3) Minimization of run-off of hazardous constituents from the treatment zone;

(4) Management of collection and holding facilities associated with run-on and run-off control systems;

(5) Periodic inspection of the unit. This information should be included in the inspection plan submitted under R315-3-2.5(b)(5).

(6) Control of wind dispersal of particulate matter, if applicable;

(d) If food-chain crops are to be grown in or on the treatment zone of the land treatment unit, a description of how the demonstration required under R315-8-13.5(a) will be conducted including:

(1) Characteristics of the food-chain crop for which the demonstration will be made;

(2) Characteristics of the waste, treatment zone, and waste application method and rate to be used in the demonstration;

(3) Procedures for crop growth, sample collection, sample analysis, and data evaluation;

(4) Characteristics of the comparison crop including the location and conditions under which it was or will be grown.

(e) If food-chain crops are to be grown, and cadmium is present in the land treated waste, a description of how the requirements of R315-8-13.5(b) will be complied with;

(f) A description of the vegetative cover to be applied to closed portions of the facility, and a plan for maintaining such cover during the post-closure care period, as required under R315-8-13.8(a)(8) and R315-8-13.8(c)(2). This information should be included in the closure plan, and, where applicable, the post-closure care plan submitted under R315-3-2.5(b)(13).

(g) If ignitable or reactive wastes will be placed in or on the treatment zone, an explanation of how the requirements of R315-8-13.9 will be complied with;

(h) If incompatible wastes, or incompatible wastes and materials, will be placed in or on the same treatment zone, an explanation of how R315-8-13.10 will be complied with.

(i) A waste management plan for EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027 describing how a land treatment facility is or will be designed, constructed,

operated, and maintained to meet the requirements of R315-8-13.11. This submission shall address the following items as specified in R315-8-13.11:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

2.12 SPECIFIC PART B INFORMATION REQUIREMENTS FOR LANDFILLS

Facilities that dispose of hazardous waste in landfills, except as otherwise provided in R315-8-1.1, shall provide the following additional information:

(a) A list of the hazardous wastes placed or to be placed in each landfill or landfill cell;

(b) Detailed plans and an engineering report describing how the landfill is designed and is or will be constructed, operated, and maintained to comply with the requirements of R315-8-2.10, R315-8-14.2., R315-8-14.3, and R315-8-14.12, addressing the following items:

(1)(i) The liner system, except for an existing portion of a landfill, if the landfill must meet the requirements of R315-8-14.2(a). If an exemption from the requirement for a liner is sought as provided by R315-8-14.2(b), submit detailed plans, and engineering and hydrogeological reports, as appropriate, describing alternate designs and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time;

(ii) The double liner and leak (leachate) detection, collection, and removal system, if the landfill must meet the requirements of R315-8-14.2(c). If an exemption from the requirements for double liners and a leak detection, collection, and removal system or alternative design is sought as provided by R315-8-14.2(d), (e), or (f), submit appropriate information;

(iii) If the leak detection system is located in a saturated zone, submit detailed plans and an engineering report explaining the leak detection system design and operation, and the location of the saturated zone in relation to the leak detection system;

(iv) The construction quality assurance, CQA, plan if required under R315-8-2.10;

(v) Proposed action leakage rate, with rationale, if required under R315-8-14.12, and response action plan, if required under R315-8-14.3;

(2) Control of run-on;

(3) Control of run-off;

(4) Management of collection and holding facilities associated with run-on and run-off control systems; and

(5) Control of wind dispersal of particulate matter, where applicable.

(c) A description of how each landfill, including the double liner system, leachate collection and removal system, leak detection system, cover system, and appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of R315-8-14.3(a), (b), and (c). This information shall be included in the inspection plan submitted under R315-3-2.5(b)(5);

(d) A description of how each landfill, including the liner and cover systems, will be inspected in order to meet the requirements of R315-8-14.3(a) and (b). This information should be included in the inspection plan submitted under R315-3-2.5(b)(5).

(e) Detailed plans and engineering report describing the final cover which will be applied to each landfill or landfill cell at closure in accordance with R315-8-14.5(a), and a description of how each landfill will be maintained and monitored after closure in accordance with R315-8-14.5(b). This information should be included in the closure and post-closure plans submitted under R315-3-2.5(b)(13).

(f) If ignitable or reactive wastes will be landfilled, an explanation of how the requirements of R315-8-14.6 will be complied with;

(g) If incompatible wastes, or incompatible wastes and materials will be landfilled, an explanation of how R315-8-14.7 will be complied with;

(h) If bulk or non-containerized liquid waste or wastes containing free liquids is to be landfilled prior to May 8, 1985, an explanation of how the requirements of R315-8-14.8(a) will be complied with;

(i) If containers of hazardous waste are to be landfilled, an explanation of how the requirements of R315-8-14.9 or R315-8-14.10 as applicable, will be complied with.

(j) A waste management plan for EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027 describing how a landfill is or will be designed, constructed, operated, and maintained to meet the requirements of R315-8-14.11. This submission shall address the following items as specified in R315-8-14.11:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

2.13 SPECIFIC PART B INFORMATION REQUIREMENTS FOR BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE

For facilities that burn hazardous wastes in boilers and industrial furnaces which R315-14-7 applies, which incorporates by reference 40 CFR subpart H, 266.100 through 266.112, the requirements of 40 CFR 270.22, 2002 ed., are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for "Director."

2.14 SPECIFIC PART B INFORMATION REQUIREMENTS FOR MISCELLANEOUS UNITS

Facilities that treat, store or dispose of hazardous waste in miscellaneous units except as otherwise provided in R315-8-16, which incorporates by reference 40 CFR 264.600, shall provide the following additional information:

(a) A detailed description of the unit being used or proposed for use, including the following:

(1) Physical characteristics, materials of construction, and dimensions of the unit;

(2) Detailed plans and engineering reports describing how the unit will be located, designed, constructed, operated, maintained, monitored, inspected, and closed to comply with the

requirements of R315-8-16, which incorporates by reference 40 CFR 264.601 and 264.602; and

(3) For disposal units, a detailed description of the plans to comply with the post-closure requirements of R315-8-16, which incorporates by reference 40 CFR 264.603.

(b) Detailed hydrologic, geologic, and meteorologic assessments and land-use maps for the region surrounding the site that address and ensure compliance of the unit with each factor in the environmental performance standards of R315-8-16, which incorporates by reference 40 CFR 264.601. If the applicant can demonstrate that he does not violate the environmental performance standards of R315-8-16, which incorporates by reference 40 CFR 264.601 and the Executive Secretary agrees with such demonstration, preliminary hydrologic, geologic, and meteorologic assessments will suffice.

(c) Information on the potential pathways of exposure of humans or environmental receptors to hazardous waste or hazardous constituents and on the potential magnitude and nature of these exposures;

(d) For any treatment unit, a report on a demonstration of the effectiveness of the treatment based on laboratory or field data;

(e) Any additional information determined by the Executive Secretary to be necessary for evaluation of compliance of the unit with the environmental performance standards of R315-8-16, which incorporates by reference 40 CFR 264.601.

2.15 SPECIFIC PART B INFORMATION REQUIREMENTS FOR PROCESS VENTS

For facilities that have process vents to which R315-8-17 applies, which incorporates by reference 40 CFR subpart AA of 264, the requirements of 40 CFR 270.24, 1991 ed., regarding information requirements for process vents are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for "Regional Administrator."

2.16 SPECIFIC PART B INFORMATION REQUIREMENTS FOR EQUIPMENT

For facilities that have equipment to which R315-8-18 applies, which incorporates by reference 40 CFR subpart BB of 264, the requirements of 40 CFR 270.25, 1991 ed., regarding information requirements for equipment are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for "Regional Administrator."

2.17 SPECIFIC PART B INFORMATION REQUIREMENTS FOR DRIP PADS

For facilities that have drip pads to which R315-8-19 applies, which incorporates by reference 40 CFR subpart W, 264.570 through 264.575, the requirements of 40 CFR 270.26, 1991 ed., are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for "Director."

2.18 SPECIFIC PART B INFORMATION REQUIREMENTS FOR AIR EMISSION CONTROLS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS

The requirements as found in 40 CFR 270.27 1996 ed., as amended by 61 FR 59931, November 25, 1996, are adopted and incorporated by reference.

2.19 PART B INFORMATION REQUIREMENTS FOR POST-CLOSURE PERMITS

For post-closure permits, the owner or operator is required to submit only the information specified in R315-3-2.5(b)(1), (4), (5), (6), (11), (13), (14), (16), (18), (19), and R315-3-2.5(c) and (d), unless the Executive Secretary determines that additional information from R315-3-2.5, R315-3-2.7, which incorporates by reference 40 CFR 270.16, R315-3-2.8, R315-3-2.9, R315-3-2.11, or R315-3-2.12 is necessary. The owner or operator is required to submit the same information when an alternative authority is used in lieu of a post-closure permit as provided in R315-3-1.3(e)(7).

2.20 PERMIT DENIAL

The Executive Secretary may, pursuant to the procedures in R315-4, deny the permit application either in its entirety or as to the active life of a hazardous waste management facility or unit only.

R315-3-3. Permit Conditions.

3.1 CONDITIONS APPLICABLE TO PERMITS

The following conditions apply to all permits. All conditions applicable to permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation of these rules shall be given in the permit.

(a) Duty to comply. The permittee shall comply with all conditions of this permit, except that the permittee need not comply with the conditions of this permit to the extent and for the duration any noncompliance is authorized in an emergency permit. (See R315-3-6.2). Any plan noncompliance except under the terms of an emergency permit, constitutes a violation of the Utah Solid and Hazardous Waste Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

(b) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit.

(c) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the approved activity in order to maintain compliance with the conditions of this permit.

(d) In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out all measures as are reasonable to prevent significant adverse impact on human health or the environment.

(e) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control, and related appurtenances, which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

(f) Permit actions. This permit may be modified, revoked and reissued, or terminated in accordance with the provisions of R315-3-4.2 or R315-4.4 and the procedures of R315-4-1.5. The filing of a request by the permittee for a permit modification,

revocation and reissuance, or termination, or a notification or planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to provide information. The permittee shall furnish to the Executive Secretary within a reasonable time, any relevant information which the Executive Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary upon request, copies of records required to be kept by this permit.

(i) Inspection and entry. The permittee shall allow the Executive Secretary, the Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter at reasonable times upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Utah Solid and Hazardous Waste Act, any substances or parameters at any location.

(j) Monitoring and records.

(1) Sample and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, the certification required by R315-8-5.3, which incorporates by reference 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Executive Secretary and the Board at any time. The permittee shall maintain records of all groundwater quality and groundwater surface elevations, for the active life of the facility, and for the post-closure care period as well.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of all analyses.

(k) Signatory requirement. All applications, reports, or information submitted to the Executive Secretary shall be signed and certified, see R315-3-2.2.

(l) Reporting requirements.

(1) Planned changes. The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the approved facility.

(2) Anticipated noncompliance. The permittee shall give advance notice to the Executive Secretary of any planned changes in the approved facility or activity which may result in noncompliance with permit requirements. For a new facility, the permittee may not treat, store, or dispose of hazardous waste; and for a facility being modified, the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in R315-3-4.3, which incorporates by reference 40 CFR 270.42, until:

(i) The permittee has submitted to the Executive Secretary by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

(ii)(A) The Executive Secretary or the Board has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

(B) Within 15 days of the date of submission of the letter in R315-3-3.1(l)(2)(i), the permittee has not received notice from the Executive Secretary or Board of their intent to inspect, prior inspection is waived and the permittee may commence treatment, storage, or disposal of hazardous waste.

(3) Transfers. The permit is not transferable to any person except after notice to the Executive Secretary. The Executive Secretary may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate any other requirements as may be necessary. See R315-3-4.1.

(4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(5) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(6) Twenty-four hour reporting. See R315-9 for Emergency Controls.

(i) The permittee shall report any noncompliance which may endanger health or the environment orally within 24 hours from the time the permittee becomes aware of the circumstances, including:

(A) Information concerning release of hazardous waste that may cause an endangerment to public drinking water supplies.

(B) Any information of a release of hazardous waste or of a fire or explosion from the hazardous waste management facility, which could threaten the environment or human health outside the facility.

(ii) The description of the occurrence and its cause shall include:

(A) Name, address, and telephone number of the owner or operator;

(B) Name, address, and telephone number of the facility;

(C) Date, time, and type of incident;

(D) Name and quantity of material(s) involved;

(E) The extent of injuries, if any;

(F) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and

(G) Estimated quantity and disposition of recovered material that resulted from the incident.

(iii) A written submission shall also be provided within five days of the time the permittee becomes aware of the

circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. The Executive Secretary may waive the five-day written notice requirement in favor of a written report within 15 days.

(7) Manifest discrepancy report. If a significant discrepancy in a manifest is discovered, the permittee shall attempt to reconcile the discrepancy. If not resolved within fifteen days, the permittee shall submit a letter report, including a copy of the manifest, to the Executive Secretary. (See R315-8-5.4)

(8) Unmanifested waste report. This report shall be submitted to the Executive Secretary within 15 days of receipt of unmanifested wastes.

(9) Biennial report. A biennial report shall be submitted covering facility activities during odd numbered calendar years.

(10) Other noncompliance. The permittee shall report all instances of noncompliance not reported under R315-3-3.1(l)(4), (5), and (6), at the time monitoring reports are submitted. The reports shall contain the information listed in R315-3-3.1(l)(6).

(11) Other information. Where the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Executive Secretary, he shall promptly submit all facts or information.

(m) Information repository. The Executive Secretary may require the permittee to establish and maintain an information repository at any time, based on the factors set forth in R315-4-2.33(b). The information repository will be governed by the provisions in R315-4-2.33 (c) through (f).

3.2 REQUIREMENTS FOR RECORDING AND REPORTING OF MONITORING RESULTS

All permits shall specify:

(a) Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, including biological monitoring methods when appropriate;

(b) Required monitoring including type, intervals, and frequency sufficient yield data which are representative of the monitored activity including, when appropriate, continuous monitoring;

(c) Applicable reporting requirements based upon the impact of the regulated activity and as specified in R315-8 and R315-14. Reporting shall be no less frequent than specified in R315-8 and R315-14.

3.3 ESTABLISHING PERMIT CONDITIONS

In addition to the conditions established, each permit shall include:

(a) A list of the wastes or classes of wastes which will be treated, stored, or disposed of at the facility, and a description of the processes to be used for treating, storing, and disposing of these hazardous wastes at the facility including the design capacities of each storage, treatment, and disposal unit. Except in the case of containers, the description shall identify the particular wastes or classes of wastes which will be treated, stored, or disposed of in particular equipment or locations, e.g., "Halogenated organics may be stored in Tank A", and "Metal hydroxide sludges may be disposed of in landfill cells B, C, and D", and

(b)(1) Each permit shall include conditions necessary to achieve compliance with the Utah Solid and Hazardous Waste Act and these rules, including each of the applicable requirements specified in R315-7, R315-8, R315-13, which incorporates by reference 40 CFR 268, and R315-14, which incorporates by reference 40 CFR 266. In satisfying this provision, the Executive Secretary may incorporate applicable requirements of R315-7, R315-8, R315-13, which incorporates by reference 40 CFR 268, and R315-14, which incorporates by reference 40 CFR 266, directly into the permit or establish other permit conditions that are based on these rules.

(2) Each permit issued under the Utah Solid and Hazardous Waste Act shall contain terms and conditions as the Executive Secretary determines necessary to protect human health and the environment.

(c) New or reissued permits, and to the extent allowed under R315-3-4.2, modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in R315-3-3.2 and R315-3-3.3.

(d) Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable requirements shall be given in the permit.

3.4 SCHEDULES OF COMPLIANCE

(a) The permit may, when appropriate, specify a schedule of compliance leading to compliance with these rules.

(1) Time for compliance. Any schedules of compliance under this section shall require compliance as soon as possible.

(2) Interim dates. Except as provided in R315-3-3.4(b)(1)(ii), if a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(i) The time between interim dates shall not exceed one year.

(ii) If the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) Reporting. The permit shall be written to require that no later than 14 days following each interim date and the final date of compliance, the permittee shall notify the Executive Secretary or Board or both in writing, of its compliance or noncompliance with the interim or final requirement, or submit progress reports if R315-3-3.4(a)(2)(ii) is applicable.

(b) Alternative schedules of permit compliance. An applicant or permittee may cease conducting regulated activities, by receiving a terminal volume of hazardous waste, and for treatment and storage facilities, closing pursuant to applicable requirements; and for disposal facilities, closing and conducting post-closure care pursuant to applicable requirement, rather than continue to operate and meet permit requirements as follows:

(1) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(i) The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(ii) The permittee shall cease conducting activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to permit termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the Executive Secretary may issue or modify a permit to contain two schedules as follows:

(i) Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(ii) One schedule shall lead to timely compliance with applicable requirements.

(iii) The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(iv) Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under R315-3-3.4(b)(3)(i) it shall follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Executive Secretary, such as resolution of the board of directors of a corporation.

R315-3-4. Changes to Permit.

4.1 TRANSFER OF PERMITS

(a) A permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued under R315-3-4.1(b) or R315-3-4.2(b)(2) to identify the new permittee and incorporate such other requirements as may be necessary under the appropriate Act.

(b) Changes in the ownership or operational control of a facility may be made as a Class 1 modification with prior written approval of the Executive Secretary in accordance with R315-3-4.3, which incorporates by reference 40 CFR 270.42. The new owner or operator shall submit a revised permit application no later than 90 days prior to the scheduled change. A written agreement containing a specific date for transfer of permit responsibility between the current and new permittees shall also be submitted to the Executive Secretary. When a transfer of ownership or operational control occurs, the old owner or operator shall comply with the requirements of R315-8-8, which incorporates by reference 40 CFR 264, subpart H, until the new owner or operator has demonstrated that he is complying with the requirements of that subpart. The new owner or operator shall demonstrate compliance with R315-8-8, which incorporates by reference 40 CFR 264, subpart H requirements within six months of the date of the change of ownership or operational control of the facility. Upon demonstration to the Executive Secretary by the new owner or operator of compliance with R315-8-8, which incorporates by reference 40 CFR 264, subpart H, the Executive Secretary shall notify the old owner or operator that he no longer needs to comply with R315-8-8, which incorporates by reference 40 CFR 264, subpart H as of the date of demonstration.

4.2 MODIFICATION OR REVOCATION AND REISSUANCE OF PERMITS

When the Executive Secretary receives any information, for example, inspects the facility, receives information submitted by the permittee as required in the permit see R315-3-3.1, receives a request for modification or revocation and reissuance under R315-4-1.5 or conducts review of the permit file, he may determine whether one or more of the causes listed in R315-3-4.2(a) and (b) for modification or revocation and reissuance or both exist. If cause exists, the Executive Secretary may modify or revoke and reissue the permit accordingly, subject to the limitations of R315-3-4.2(c), and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. See R315-4-1.5(c)(2). If cause does not exist under this section, the Executive Secretary shall not modify or revoke and reissue the permit, except on request of the permittee. If a permit modification is requested by the permittee, the Executive Secretary shall approve or deny the request according to the procedures of R315-3-4.3, which incorporates by reference 40 CFR 270.42. Otherwise, a draft permit shall be prepared and other procedures in R315-4 followed.

(a) Causes for modification. The following are causes for modification but not revocation and reissuance of permits, and the following may be causes for revocation and reissuance as well as modification under any program when the permittee requests or agrees.

(1) Alterations. There are material and substantial alterations or additions to the approved facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

(2) Information. The Executive Secretary has received information. Permits may be modified during their terms for this cause only if the information was not available at the time of permit issuance, other than revised rules, guidance, or test methods, and would have justified the application of different permit conditions at the time of issuance.

(3) New statutory requirements or rules. The standards or rules on which the permit was based have been changed by statute, through promulgation of new or amended standards or rules or by judicial decision after the permit was issued.

(4) Compliance schedules. The Executive Secretary determined good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.

(5) Notwithstanding any other provision in this section, when a permit for a land disposal facility is reviewed by the Executive Secretary under R315-3-5.1(d), the Executive Secretary shall modify the permit as necessary to assure that the facility continues to comply with the currently applicable requirements in these rules.

(b) Causes for modification or revocation and reissuance. The following are causes to modify, or, alternatively, revoke and reissue a permit;

(1) Cause exists for termination under R315-3-4.4 and the Executive Secretary determines that modification or revocation and reissuance is appropriate.

(2) The Executive Secretary has received notification as required in the permit, see R315-3-3.1(l)(3) of a proposed transfer of the permit.

(c) Facility siting. Suitability of the facility location may not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

4.3 PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE

The requirements of 40 CFR 270.42, including Appendix I, 2002 ed., are adopted and incorporated by reference with the following exception;

substitute "Executive Secretary" for all Federal regulation references made to "Director" or "Administrator";

4.4 TERMINATION OF PERMITS

(a) The following are causes for terminating a permit during its term, or for denying a permit renewal application:

(1) Noncompliance by the permittee with any condition of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

(b) The Executive Secretary shall follow the applicable procedures in R315-4 in terminating any permit under R315-3-4.4.

R315-3-5. Expiration and Continuation of Permits.

5.1 DURATION OF PERMITS

(a) Hazardous waste operation permits shall be effective for a fixed term not to exceed ten years.

(b) Except as provided in R315-3-5.2, the term of a permit shall not be extended by modification beyond the maximum duration specified in R315-3-5.1.

(c) The Executive Secretary may issue any permit for a duration that is less than the full allowable term under this section.

(d) Each permit for a land disposal facility shall be reviewed by the Board five years after the date of permit issuance or reissuance and shall be modified as necessary, as provided in R315-3-4.2.

5.2 CONTINUATION OF EXPIRING PERMITS

(a) The conditions of an expired permit continue in force until the effective date of a new permit if:

(1) The permittee has submitted a timely application under R315-3-2.5 and the applicable requirements of R315-3-2.5 and the applicable sections in R315-3-2.6 through R315-3-2.20, which is a complete application for a new permit; and

(2) The Executive Secretary through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit, for example, when issuance is impracticable due to time or resource constraints.

(b) Effect. Permits continued under this section remain fully effective and enforceable.

(c) Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit, the Executive Secretary or Board or both may choose to do any or all of the following:

(1) Initiate enforcement action based upon the permit which has been continued;

(2) Issue a notice of intent to deny the new permit under R315-4-1.6. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(3) Issue a new permit under R315-4 with appropriate conditions;

(4) Take other actions authorized by these rules.

(d) State Continuation. If the permittee has submitted a timely and complete application, including timely and adequate response to any deficiency notice, for permit under applicable State law and rules, the terms and conditions of an EPA issued RCRA permit shall continue in force until the effective date of the State's issuance or denial of a State permit.

(e) Permits which have been issued under authority of the Federal Resource Conservation and Recovery Act will be administered by the State when hazardous waste program authorization becomes effective.

R315-3-6. Special Forms of Permits.

6.1 PERMITS BY RULE

Notwithstanding any other provision of R315-3 and R315-4, the following shall be deemed to have an approved hazardous waste permit if the conditions listed are met:

(a) Injection wells. The owner or operator of an injection well disposing of hazardous waste, if the owner or operator:

(1) Has a permit for underground injection issued under State or Federal law.

(2) Complies with the conditions of that permit and the requirements in R317-7, Underground Injection Control Program, for managing hazardous waste in a well.

(3) For UIC permits issued after November 8, 1984:

(i) Complies with R315-8-6.12; and

(ii) Where the UIC well is the only unit at a facility which requires a permit, complies with R315-3-2.5(d).

(b) Publicly owned treatment works. The owner or operator of a POTW which accepts hazardous waste, for treatment if the owner or operator:

(1) Has an NPDES permit;

(2) Complied with the conditions of that permit;

(3) Complies with the following rules;

(i) R315-8-2.2, Identification number;

(ii) R315-8-5.2, Use of manifest system;

(iii) R315-8-5.4, Manifest discrepancies;

(iv) R315-8-5.3, which incorporates by reference 40 CFR 264.73(a) and (b)(1), Operating record;

(v) R315-8-5.6, Biennial report;

(vi) R315-8-5.7, Unmanifested waste report; and

(vii) R315-8-6.12, For NPDES permits issued after November 8, 1984.

(4) If the waste meets all Federal, State, and local pretreatment requirements which would be applicable to the waste if it were being discharged into the POTW through a sewer, pipe, or similar conveyance.

(c) Elementary Neutralization Units and Wastewater Treatment Units, as defined in 40 CFR 270.2, which R315-1-1(d) incorporates by reference.

6.2 EMERGENCY PERMITS

(a) Notwithstanding any other provision of R315-3 or R315-4, in the event the Executive Secretary finds an imminent and substantial endangerment to human health or the environment the Executive Secretary may issue a temporary

emergency permit: (1) to a non-permitted facility to allow treatment, storage, or disposal of hazardous waste or (2) to a permitted facility to allow treatment, storage, or disposal of a hazardous waste not covered by an effective permit.

(b) This emergency permit:

(1) May be oral or written. If oral, it shall be followed in five days by a written emergency permit;

(2) Shall not exceed 90 days in duration;

(3) Shall clearly specify the hazardous waste to be received, and the manner and location of their treatment, storage, or disposal;

(4) May be terminated by the Executive Secretary at any time without process if he determines that termination is appropriate to protect human health and the environment;

(5) Shall be accompanied by a public notice published under R315-4-1.10(b) including:

(i) Name and address of the office granting the emergency authorization;

(ii) Name and location of the permitted hazardous waste management facility;

(iii) A brief description of the wastes involved;

(iv) A brief description of the action authorized and reasons for authorizing it; and

(v) Duration of the emergency permit; and

(6) Shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of R315-3, R315-8, and R315-14.

6.3 HAZARDOUS WASTE INCINERATOR PERMITS

When an owner or operator demonstrates compliance with the air emission standards and limitations in R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE (i.e., by conducting a comprehensive performance test and submitting a Notification of Compliance), the requirements of R315-3-6.3 do not apply, except those provisions the Executive Secretary determines are necessary to ensure compliance with R315-8-15.6(a) and R315-8-15.6(c) if you elect to comply with R315-3-9(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events. Nevertheless, the Executive Secretary may apply the provisions of R315-3-6.3, on a case-by-case basis, for purposes of information collection in accordance with R315-3-2.1(j) and R315-3-3.3(b)(2).

(a) For the purposes of determining operational readiness following completion of physical construction, the Executive Secretary shall establish permit conditions, including but not limited to allowable waste feeds and operating conditions, in the permit to a new hazardous waste incinerator. These permit conditions will be effective for the minimum time required to bring the incinerator to a point of operational readiness sufficient to conduct a trial burn, not to exceed 720 hours operating time for treatment of hazardous waste. The Executive Secretary may extend the duration of this operational period once, for up to 720 additional hours, at the request of the applicant when good cause is shown. The permit may be modified to reflect the extension according to R315-3-4.3, which incorporates by reference 40 CFR 270.42.

(1) Applicants shall submit a statement, with part B of the permit application, which suggests the conditions necessary to operate in compliance with the performance standards of R315-8-15.4 during this period. This statement should include, at a minimum, restrictions on waste constituents, waste feed rates and the operating parameters identified in R315-8-15.6.

(2) The Executive Secretary will review this statement and any other relevant information submitted with part B of the permit and specify requirements for this period sufficient to meet the performance standards of R315-8-15.4 based on its engineering judgment.

(b) For the purpose of determining feasibility of compliance with the performance standards of R315-8-15.4, and of determining adequate operating conditions under R315-8-15.6, the Executive Secretary shall establish conditions in the permit to a new hazardous waste incinerator to be effective during the trial burn.

(1) Applicants shall propose a trial burn plan, prepared under R315-3-6.3(b)(2) with part B of the permit application.

(2) The trial burn plan shall include the following information:

(i) An analysis of each waste or mixture of wastes to be burned which includes:

(A) Heat value of the waste in the form and composition in which it will be burned.

(B) Viscosity, if applicable, or description of physical form of the waste.

(C) An identification of any hazardous organic constituents listed in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII, which would reasonably not be expected to be found in the waste. The constituents excluded from analysis shall be identified, and the basis for their exclusion stated. The waste analysis shall rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11 and 270.6, see R315-1-2, or other equivalent.

(D) An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11 and 270.6, see R315-1-2, or, their equivalent.

(ii) A detailed engineering description of the incinerator for which the permit is sought including:

(A) Manufacturer's name and model number of incinerator, if available.

(B) Type of incinerator.

(C) Linear dimensions of the incinerator unit including the cross sectional area of combustion chamber.

(D) Description of the auxiliary fuel system type and feed.

(E) Capacity of prime mover.

(F) Description of automatic waste feed cut-off system(s).

(G) Stack gas monitoring and pollution control equipment.

(H) Nozzle and burner design.

(I) Construction materials.

(J) Location and description of temperature, pressure, and flow indicating and control devices.

(iii) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations of the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(iv) A detailed test schedule for each waste for which the trial burn is planned including date(s), duration, quantity of

waste to be burned, and other factors relevant to the Executive Secretary's decision under R315-3-6.3(b)(5).

(v) A detailed test protocol, including, for each waste identified, the ranges of temperature, waste feed rate, combustion gas velocity, use of auxiliary fuel, and any other relevant parameters that will be varied to affect the destruction and removal efficiency of the incinerator.

(vi) A description of, and planned operating conditions for, any emission control equipment which will be used.

(vii) Procedures for rapidly stopping waste feed, shutting down the incinerator, and controlling emissions in the event of an equipment malfunction.

(viii) All other information as the Executive Secretary reasonably finds necessary to determine whether to approve the trial burn plan in light of the purpose of this paragraph and the criteria in R315-3-6.3(b)(5).

(3) The Executive Secretary, in reviewing the trial burn plan, shall evaluate the sufficiency of the information provided and may require the applicant to supplement this information, if necessary, to achieve the purposes of this paragraph.

(4) Based on the waste analysis data in the trial burn plan, the Executive Secretary will specify as trial Principal Organic Hazardous Constituents (POHCs), those constituents for which destruction and removal efficiencies shall be calculated during the trial burn. These trial POHCs will be specified by the Executive Secretary based on his estimate of the difficulty of incineration of the constituents identified in the waste analysis, their concentration or mass in the waste feed, and, for wastes listed in R315-2-10, the hazardous waste organic constituent or constituents identified in R315-50-9 as the basis for listing.

(5) The Executive Secretary shall approve a trial burn plan if he finds that:

(i) The trial burn is likely to determine whether the incinerator performance standard required by R315-8-15.4 can be met;

(ii) The trial burn itself will not present an imminent hazard to human health or the environment;

(iii) The trial burn will help the Executive Secretary to determine operating requirements to be specified under R315-8-15.6; and

(iv) The information sought in R315-3-6.3(b)(5)(i) and (ii) cannot reasonably be developed through other means.

(6) The Executive Secretary shall send a notice to all persons on the facility mailing list as set forth in R315-4-1.10(c)(1)(iv) and to the appropriate units of State and local government as set forth in R315-4-1.10(c)(1)(v) announcing the scheduled commencement and completion dates for the trial burn. The applicant may not commence the trial burn until after the Executive Secretary has issued such notice.

(i) This notice shall be mailed within a reasonable time period before the scheduled trial burn. An additional notice is not required if the trial burn is delayed due to circumstances beyond the control of the facility or the Division.

(ii) This notice shall contain:

(A) The name and telephone number of the applicant's contact person;

(B) The name and telephone number of the Division;

(C) The location where the approved trial burn plan and any supporting documents can be reviewed and copied; and

(D) An expected time period for commencement and completion of the trial burn.

(7) During each approved trial burn, or as soon after the burn as is practicable, the applicant shall make the following determinations:

(i) A quantitative analysis of the trial POHCs in the waste feed to the incinerator.

(ii) A quantitative analysis of the exhaust gas for the concentration and mass emissions of the trial POHC, oxygen (O₂) and hydrogen chloride (HCl).

(iii) A quantitative analysis of the scrubber water, if any, ash residues, and other residues, for the purpose of estimating the fate of the trial POHCs.

(iv) A computation of destruction and removal efficiency (DRE), in accordance with the DRE formula specified in R315-8-15.4(a).

(v) If the HCl emission rate exceeds 1.8 kilograms of HCl per hour (4 pounds per hour), a computation of HCl removal efficiency in accordance with R315-8-15.4(b).

(vi) A computation of particulate emissions in accordance with R315-8-15.4(c).

(vii) An identification of sources of fugitive emissions and their means of control.

(viii) A measurement of average, maximum, and minimum temperatures and combustion gas velocity.

(ix) A continuous measurement of carbon monoxide (CO) in the exhaust gas.

(x) All other information as the Executive Secretary may specify as necessary to ensure that the trial burn will determine compliance with the performance standards in R315-8-15.4 and to establish the operating conditions required by R315-8-15.6 as necessary to meet that performance standard.

(8) The applicant shall submit to the Executive Secretary a certification that the trial burn has been carried out in accordance with the approved trial burn plan, and shall submit the results of all the determinations required in R315-3-6.3(b)(7). This submission shall be made within 90 days of completion of the trial burn, or later if approved by the Executive Secretary.

(9) All data collected during any trial burn shall be submitted to the Executive Secretary following the completion of the trial burn.

(10) All submissions required by this paragraph shall be certified on behalf of the applicant by the signature of a person authorized to sign a permit application or a report under R315-3-2.2.

(11) Based on the results of the trial burn, the Executive Secretary shall set the operating requirements in the final permit according to R315-8-15.6. The permit modification shall proceed according to R315-3-4.3, which incorporates by reference 40 CFR 270.42.

(c) For the purpose of allowing operation of a new hazardous waste incinerator following completion of the trial burn and prior to final modification of the permit conditions to reflect the trial burn results, the Executive Secretary may establish permit conditions, including but not limited to allowable waste feeds and operating conditions sufficient to meet the requirements of R315-8-15.6, in the permit to a new hazardous waste incinerator. These permit conditions will be effective for the minimum time required to complete sample analysis, data computation and submission of the trial burn results by the applicant, and modification of the facility permit by the Executive Secretary.

(1) Applicants shall submit a statement, with part B of the permit application, which identifies the conditions necessary to

operate in compliance with the performance standards of R315-8-15.4 during this period. This statement should include, at a minimum, restrictions on waste constituents, waste feed rates and the operating parameters identified in R315-8-15.6.

(2) The Executive Secretary will review this statement and any other relevant information submitted with part B of the permit application and specify those requirements for this period most likely to meet the performance standards of R315-8-15.4 based on its engineering judgment.

(d) For the purposes of determining feasibility of compliance with the performance standards of R315-8-15.4 and of determining adequate operating conditions under R315-8-15.6, the applicant for a permit for an existing hazardous waste incinerator shall prepare and submit a trial burn plan and perform a trial burn in accordance with R315-3-2.10(b) and R315-3-6.3(b)(2) through (b)(5) and (b)(7) through (b)(10) or, instead, submit other information as specified in R315-3-2.10(c). The Executive Secretary shall announce his or her intention to approve the trial burn plan in accordance with the timing and distribution requirements of R315-3-6.3(b)(6). The contents of the notice shall include: the name and telephone number of a contact person at the facility; the name and telephone number of a contact office at the Division; the location where the trial burn plan and any supporting documents can be reviewed and copied; and a schedule of the activities that are required prior to permit issuance, including the anticipated time schedule for agency approval of the plan and the time period during which the trial burn would be conducted. Applicants submitting information under R315-3-2.10(a) are exempt from compliance with R315-8-15.4 and R315-8-15.6 and, therefore, are exempt from the requirement to conduct a trial burn. Applicants who submit trial burn plans and receive approval before submission of a permit application shall complete the trial burn and submit the results, specified in R315-3-6.3(b)(7), with part B of the permit application. If completion of this process conflicts with the date set for submission of the part B application, the applicant shall contact the Executive Secretary to establish a later date for submission of the part B application or the trial burn results. Trial burn results shall be submitted prior to issuance of the permit. When the applicant submits a trial burn plan with part B of the permit application, the Executive Secretary will specify a time period prior to permit issuance in which the trial burn shall be conducted and the results submitted.

6.4 PERMITS FOR LAND TREATMENT DEMONSTRATIONS USING FIELD TEST OR LABORATORY ANALYSES

(a) For the purpose of allowing an owner or operator to meet the treatment demonstration requirements of R315-8-13.3, the Executive Secretary may issue a treatment demonstration permit. The permit shall contain only those requirements necessary to meet the standards in R315-8-13.3(c). The permit may be issued either as a treatment or disposal approval covering only the field test or laboratory analyses, or as a two-phase facility approval covering the field tests, or laboratory analyses, and design, construction, operation and maintenance of the land treatment unit.

(1) The Executive Secretary may issue a two-phase facility permit if they find that, based on information submitted in part B of the application, substantial, although incomplete or inconclusive, information already exists upon which to base the issuance of a facility permit.

(2) If the Executive Secretary finds that not enough information exists upon which they can establish permit conditions to attempt to provide for compliance with all the requirements of R315-8-13, he shall issue a treatment demonstration permit covering only the field test or laboratory analyses.

(b) If the Executive Secretary finds that a phased permit may be issued, he will establish, as requirements in the first phases of the facility permit, conditions for conducting the field tests or laboratory analyses. These permit conditions will include design and operating parameters, including the duration of the tests or analyses and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, post-demonstration cleanup activities, and any other conditions which the Executive Secretary finds may be necessary under R315-8-13.3(c). The Executive Secretary will include conditions in the second phase of the facility permit to attempt to meet all R315-8-13 requirements pertaining to unit design, construction, operation, and maintenance. The Executive Secretary will establish these conditions in the second phase of the permit based upon the substantial but incomplete or inconclusive information contained in the part B application.

(1) The first phase of the permit will be effective as provided in R315-4-1.15.

(2) The second phase of the permit will be effective as provided in R315-3-6.4(d).

(c) When the owner or operator who has been issued a two-phase permit has completed the treatment demonstration, he shall submit to the Executive Secretary certification, signed by a person authorized to sign a permit application or report under R315-3-2.2, that the field tests or laboratory analyses have been carried out in accordance with the conditions specified in phase one of the permit for conducting the tests or analyses. The owner or operator shall also submit all data collected during the field tests or laboratory analyses within 90 days of completion of those tests or analyses unless the Executive Secretary approves a later date.

(d) If the Executive Secretary determines that the results of the field tests or laboratory analyses meet the requirements of R315-8-13.3, he will modify the second phase of the permit to incorporate any requirement necessary for operation of the facility in compliance with R315-8-13, based upon the results of the field tests or laboratory analyses.

(1) This permit modification may proceed under R315-3-4.3, which incorporates by reference 40 CFR 270.42, or otherwise will proceed as a modification under R315-3-4.2(a)(2). If such modifications are necessary, the second phase of the permit will become effective only after those modifications have been made.

(2) If no modification of the second phase of the permit are necessary, the Executive Secretary will give notice of his final decision to the permit applicant and to each person who submitted written comments on the phased permit or who requested notice of final decision on the second phase of the permit. The second phase of the permit then will become effective as specified in R315-4-1.15(b).

6.5 RESEARCH, DEVELOPMENT, AND DEMONSTRATION PERMITS

(a) The Executive Secretary may issue a research, development, and demonstration permit for any hazardous waste treatment facility which proposes to utilize an innovative and

experimental hazardous waste treatment technology or process for which permit standards for any experimental activity have not been promulgated under R315-8 and R315-14. Any such permits shall include such terms and conditions as will assure protection of human health and the environment. These permits:

(1) Shall provide for the construction of these facilities as necessary, and for operation of the facility for not longer than one year unless renewed as provided in R315-3-6.5(d), and

(2) Shall provide for the receipt and treatment by the facility of only those types and quantities of hazardous waste which the Executive Secretary deems necessary for purposes of determining the efficiency and performance capabilities of the technology or process and the effects of the technology or process on human health and the environment; and

(3) Shall include all requirements as the Executive Secretary deems necessary to protect human health and the environment, including, but not limited to requirements regarding monitoring, operation, financial responsibility, closure, and remedial action, and all requirements as the Executive Secretary or Board or both deems necessary regarding testing and providing of information to the Executive Secretary with respect to the operation of the facility.

(b) For the purpose of expediting review and issuance of permit under this section, the Executive Secretary may, consistent with the protection of human health and the environment, modify or waive permit application and permit issuance requirements in R315-3 and R315-4 except that there may be no modification or waiver of regulations regarding financial responsibility, including insurance, or of procedures regarding public participation.

(c) The Executive Secretary or Board or both may order an immediate termination of all operations at the facility at any time they determine that termination is necessary to protect human health and the environment.

(d) Any permit issued under this section may be renewed not more than three times. Each renewal shall be for a period of not more than one year.

6.6 PERMITS FOR BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE

The requirements of 40 CFR 270.66, 2002 ed., are adopted and incorporated by reference with the following exception:

Substitute "Executive Secretary" for all references made to "Director."

6.7 REMEDIAL ACTION PLANS

Remedial Action Plans (RAPs) are special forms of permits that are regulated under R315-3-8, which incorporates by reference 40 CFR 270, subpart H.

R315-3-7. Interim Status.

7.1 QUALIFYING FOR INTERIM STATUS

(a) Any person who owns or operates an "existing hazardous waste management facility" or a facility in existence on the effective date of statutory or regulatory amendments under the State or Federal Act that render the facility subject to the requirement to have a RCRA permit or State permit shall have interim status and shall be treated as having been issued a permit to the extent he or she has:

(1) Complied with the Federal requirements of section 3010(a) of RCRA pertaining to notification of hazardous waste activity or the notification requirements of these rules.

Comment: Some existing facilities may not be required to file a notification under section 3010(a) of RCRA. These

facilities may qualify for interim status by meeting R315-3-7.1(a)(2).

(2) Complied with the requirements of 40 CFR 270.10 or R315-3-2.1 governing submission of part A applications;

(b) Failure to qualify for interim status. If the Executive Secretary has reason to believe upon examination of a part A application that it fails to meet the requirements of R315-3-2.4, the Executive Secretary shall notify the owner or operator in writing of the apparent deficiency. The notice shall specify the grounds for the Executive Secretary's belief that the application is deficient. The owner or operator shall have 30 days from receipt to respond to the notification and to explain or cure the alleged deficiency in his part A application. If, after the notification and opportunity for response, the Executive Secretary determines that the application is deficient he may take appropriate enforcement action.

(c) R315-3-7.1(a) shall not apply to any facility which has been previously denied a permit or RCRA permit or if authority to operate the facility under State or Federal authority has been previously terminated.

7.2 OPERATION DURING INTERIM STATUS

(a) During the interim status period the facility shall not:

(1) Treat, store, or dispose of hazardous waste not specified in part A of the permit or permit application;

(2) Employ processes not specified in part A of the permit or permit application; or

(3) Exceed the design capacities specified in part A of the permit or permit application.

(b) Interim status standards. During interim status, owners or operators shall comply with the interim status standards in R315-7.

7.3 CHANGES DURING INTERIM STATUS

(a) Except as provided in R315-3-7.3(b), the owner or operator of an interim status facility may make the following changes at the facility:

(1) Treatment, storage, or disposal of new hazardous wastes not previously identified in part A of the permit application and, in the case of newly listed or identified wastes, addition of the units being used to treat, store, or dispose of the hazardous wastes on the effective date of the listing or identification if the owner or operator submits a revised part A permit application prior to treatment, storage, or disposal;

(2) Increases in the design capacity of processes used at the facility if the owner or operator submits a revised part A permit application prior to a change, along with a justification explaining the need for the change, and the Executive Secretary approves the changes because:

(i) There is a lack of available treatment, storage, or disposal capacity at other hazardous waste management facilities, or

(ii) The change is necessary to comply with a Federal, State, or local requirement.

(3) Changes in the processes for the treatment, storage, or disposal of hazardous waste or addition of processes if the owner or operator submits a revised part A permit application prior to such change, along with a justification explaining the need for the change, and the Executive Secretary approves the change because:

(i) The change is necessary to prevent a threat to human health and the environment because of an emergency situation, or

(ii) The change is necessary to comply with a Federal, State, or local requirement.

(4) Changes in the ownership or operational control of a facility if the new owner or operator submits a revised part A permit application no later than 90 days prior to the scheduled change. When a transfer of operational control of a facility occurs, the old owner or operator shall comply with the requirements of R315-7-15, which incorporates by reference 40 CFR 265 subpart H, until the new owner or operator has demonstrated to the Executive Secretary that he is complying with the requirements of that subpart. The new owner or operator shall demonstrate compliance with R315-7-15, which incorporates by reference 40 CFR 265 subpart H, within six months of the date of the change in ownership or operational control of the facility. Upon demonstration to the Executive Secretary by the new owner or operator of compliance with R315-7-15, which incorporates by reference 40 CFR 265 subpart H, the Executive Secretary shall notify the old owner or operator in writing that he no longer needs to comply with R315-7-15, which incorporates by reference 40 CFR 265 subpart H, as of the date of demonstration. All other interim status duties are transferred effective immediately upon the date of the change in ownership or operational control of the facility.

(5) Changes made in accordance with an interim status corrective action order issued, under 19-6-105(d), or by EPA under section 3008(h) RCRA or other Federal authority or by a court in a judicial action brought by EPA or by an authorized State. Changes under this paragraph are limited to the treatment, storage, or disposal of solid waste from releases that originate within the boundary of the facility.

(6) Addition of newly regulated units for the treatment, storage, or disposal of hazardous waste if the owner or operator submits a revised part A permit application on or before the date on which the unit becomes subject to the new requirements.

(b) Except as specifically allowed under this paragraph, changes listed under R315-3-7.3(a) may not be made if they amount to reconstruction of the hazardous waste management facility. Reconstruction occurs when the capital investment in the changes to the facility exceeds 50 percent of the capital cost of a comparable entirely new hazardous waste management facility. If all other requirements are met, the following changes may be made even if they amount to a reconstruction:

(1) Changes made solely for the purposes of complying with the requirements of R315-7-17, which incorporates by reference 40 CFR 265.193, for tanks and ancillary equipment.

(2) If necessary to comply with Federal, State, or local requirements, changes to an existing unit, changes solely involving tanks or containers, or addition of replacement surface impoundments that satisfy the standards of section 3004(o) of RCRA.

(3) Changes that are necessary to allow owners or operators to continue handling newly listed or identified hazardous wastes that have been treated, stored, or disposed of at the facility prior to the effective date of the rule establishing the new listing or identification.

(4) Changes during closure of a facility or of a unit within a facility made in accordance with an approved closure plan.

(5) Changes necessary to comply with an interim status corrective action order issued, under subsection 19-6-105(d), or by EPA under section 3008(h) of RCRA or other Federal authority, or by a court in a judicial proceeding brought by EPA, provided that such changes are limited to the treatment, storage,

or disposal of solid waste from releases that originate within the boundary of the facility.

(6) Changes to treat or store, in tanks or containers, or containment buildings, hazardous wastes subject to land disposal restrictions imposed by R315-13, which incorporates by reference 40 CFR 268, or R315-8, provided that these changes are made solely for the purpose of complying with R315-13, which incorporates by reference 40 CFR 268, or R315-8.

(7) Addition of newly regulated units under R315-3-7.3(a)(6).

(8) Changes necessary to comply with standards under 40 CFR part 63, subpart EEE - National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors.

7.4 TERMINATION OF INTERIM STATUS

Interim status terminates when:

(a) Final administrative disposition of a permit application, except an application for a remedial action plan (RAP) under R315-3-8, which incorporates by reference 40 CFR 270, subpart H, is made.

(b) Interim status is terminated as provided in R315-3-2.1(d)(5).

(c) For owners or operators of each land disposal facility which has been granted interim status prior to November 8, 1984, on November 8, 1985, unless:

(1) The owner or operator submits a part B application for a permit for a facility prior to that date; and

(2) The owner or operator certifies that the facility is in compliance with all applicable groundwater monitoring and financial responsibility requirements.

(d) For owners or operators of each land disposal facility which is in existence on the effective date of statutory or regulatory amendments under the Federal Act that render the facility subject to the requirement to have a RCRA permit and which is granted interim status, twelve months after the date on which the facility first becomes subject to the permit requirement unless the owner or operator of the facility:

(1) Submits a part B application for a permit for the facility before the date 12 months after the date on which the facility first becomes subject to the permit requirement; and

(2) Certifies that the facility is in compliance with all applicable groundwater monitoring and financial responsibility requirements.

(e) For owners or operators of any land disposal unit that is granted authority to operate under R315-3-7.3(a)(1), (2) or (3), on the date 12 months after the effective date of the requirement, unless the owner or operator certifies that this unit is in compliance with all applicable groundwater monitoring and financial responsibility requirements.

(f) For owners or operators of each incinerator facility which has achieved interim status prior to November 8, 1984, interim status terminates on November 8, 1989, unless the owner or operator of the facility submits a part B application for a permit for an incinerator facility by November 8, 1986.

(g) For owners or operators of any facility, other than a land disposal or an incinerator facility, which has achieved interim status prior to November 8, 1984, interim status terminates on November 8, 1992, unless the owner or operator of the facility submits a part B application for a hazardous waste permit for the facility by November 8, 1988.

R315-3-8. Remedial Action Plans (RAPs).

The requirements of 40 CFR 270, subpart H, which includes sections 270.79 through 270.230, 2000 ed., are adopted and incorporated by reference with the following exception:

substitute "Executive Secretary" for all Federal regulation references made to "Director."

R315-3-9. Integration with Maximum Achievable Control Technology (MACT) Standards.

9.1 OPTIONS FOR INCINERATORS AND CEMENT AND LIGHTWEIGHT AGGREGATE KILNS TO MINIMIZE EMISSIONS FROM STARTUP, SHUTDOWN, AND MALFUNCTION EVENTS

(a) Facilities with existing permits. (1) Revisions to permit conditions after documenting compliance with MACT. The owner or operator of a hazardous waste-permitted incinerator, cement kiln, or lightweight aggregate kiln may request that the Executive Secretary address permit conditions that minimize emissions from startup, shutdown, and malfunction events under any of the following options when requesting removal of permit conditions that are no longer applicable according to R315-8-15.1(b) and R315-14-7, which incorporates by reference 40 CFR 266.100(b):

(i) Retain relevant permit conditions. Under this option, the Executive Secretary will:

(A) Retain permit conditions that address releases during startup, shutdown, and malfunction events, including releases from emergency safety vents, as these events are defined in the facility's startup, shutdown, and malfunction plan required under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2); and

(B) Limit applicability of those permit conditions only to when the facility is operating under its startup, shutdown, and malfunction plan.

(ii) Revise relevant permit conditions.

(A) Under this option, the Executive Secretary will:

(1) Identify a subset of relevant existing permit requirements, or develop alternative permit requirements, that ensure emissions of toxic compounds are minimized from startup, shutdown, and malfunction events, including releases from emergency safety vents, based on review of information including the source's startup, shutdown, and malfunction plan, design, and operating history.

(2) Retain or add these permit requirements to the permit to apply only when the facility is operating under its startup, shutdown, and malfunction plan.

(B) Changes that may significantly increase emissions.

(1) You must notify the Executive Secretary in writing of changes to the startup, shutdown, and malfunction plan or changes to the design of the source that may significantly increase emissions of toxic compounds from startup, shutdown, or malfunction events, including releases from emergency safety vents. You must notify the Executive Secretary of such changes within five days of making such changes. You must identify in the notification recommended revisions to permit conditions necessary as a result of the changes to ensure that emissions of toxic compounds are minimized during these events.

(2) The Executive Secretary may revise permit conditions as a result of these changes to ensure that emissions of toxic compounds are minimized during startup, shutdown, or malfunction events, including releases from emergency safety vents either:

(i) Upon permit renewal, or, if warranted;

(ii) By modifying the permit under R315-3-4.2(a) or R315-3-4.3, which incorporates by reference 40 CFR 270.42.

(iii) Remove permit conditions. Under this option:

(A) The owner or operator must document that the startup, shutdown, and malfunction plan required under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2), has been approved by the Board under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2)(ii)(B); and

(B) The Executive Secretary will remove permit conditions that are no longer applicable according to R315-8-15.1(b) and R315-14-7, which incorporates by reference 40 CFR 266.100(b).

(2) Addressing permit conditions upon permit reissuance. The owner or operator of an incinerator, cement kiln, or lightweight aggregate kiln that has conducted a comprehensive performance test and submitted to the Board a Notification of Compliance documenting compliance with the standards of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE, may request in the application to reissue the permit for the combustion unit that the Executive Secretary control emissions from startup, shutdown, and malfunction events under any of the following options:

(i) RCRA option A.

(A) Under this option, the Executive Secretary will:

(1) Include, in the permit, conditions that ensure compliance with R315-8-15.6(a) and (c) or R315-14-7, which incorporates by reference 40 CFR 266.102(e)(1) and (e)(2)(iii), to minimize emissions of toxic compounds from startup, shutdown, and malfunction events, including releases from emergency safety vents; and

(2) Specify that these permit requirements apply only when the facility is operating under its startup, shutdown, and malfunction plan.; or

(ii) RCRA option B.

(A) Under this option, the Executive Secretary will:

(1) Include, in the permit conditions, that ensure emissions of toxic compounds are minimized from startup, shutdown, and malfunction events, including releases from emergency safety vents, based on review of information including the source's startup, shutdown, and malfunction plan, design, and operating history; and

(2) Specify that these permit requirements apply only when the facility is operating under its startup, shutdown, and malfunction plan.

(B) Changes that may significantly increase emissions.

(1) You must notify the Executive Secretary in writing of changes to the startup, shutdown, and malfunction plan or changes to the design of the source that may significantly increase emissions of toxic compounds from startup, shutdown, or malfunction events, including releases from emergency safety vents. You must notify the Executive Secretary of such changes within five days of making such changes. You must identify in the notification recommended revisions to permit conditions necessary as a result of the changes to ensure that emissions of toxic compounds are minimized during these events.

(2) The Executive Secretary may revise permit conditions as a result of these changes to ensure that emissions of toxic compounds are minimized during startup, shutdown, or malfunction events, including releases from emergency safety vents either:

(i) Upon permit renewal, or, if warranted;

(ii) By modifying the permit under R315-3-4.2(a) or R315-3-4.3, which incorporates by reference 40 CFR 270.42; or

(iii) CAA option. Under this option:

(A) The owner or operator must document that the startup, shutdown, and malfunction plan required under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2), has been approved by the Board under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2)(ii)(B); and

(B) The Executive Secretary will omit from the permit conditions that are not applicable under R315-8-15.1(b) and R315-14-7, which incorporates by reference 40 CFR 266.100(b).

(b) Interim status facilities.

(1) Interim status operations. In compliance with R315-7-22 and R315-14-7, which incorporates by reference 40 CFR 266.100(b), the owner or operator of an incinerator, cement kiln, or lightweight aggregate kiln that is operating under the interim status standards of R315-7 or R315-14 may control emissions of toxic compounds during startup, shutdown, and malfunction events under either of the following options after conducting a comprehensive performance test and submitting to the Board a Notification of Compliance documenting compliance with the standards of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE:

(i) RCRA option. Under this option, the owner or operator continues to comply with the interim status emission standards and operating requirements of R315-7 or R315-14 relevant to control of emissions from startup, shutdown, and malfunction events. Those standards and requirements apply only during startup, shutdown, and malfunction events; or

(ii) CAA option. Under this option, the owner or operator is exempt from the interim status standards of R315-7 or R315-14 relevant to control of emissions of toxic compounds during startup, shutdown, and malfunction events upon submission of written notification and documentation to the Executive Secretary that the startup, shutdown, and malfunction plan required under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2), has been approved by the Board under R307-214-2, which incorporates by reference 40 CFR 63.1206(c)(2)(ii)(B).

(2) Operations under a subsequent hazardous waste permit. When an owner or operator of an incinerator, cement kiln, or lightweight aggregate kiln that is operating under the interim status standards of R315-7 or R315-14 submits a hazardous waste permit application, the owner or operator may request that the Executive Secretary control emissions from startup, shutdown, and malfunction events under any of the options provided by R315-3-9(a)(2)(i), (a)(2)(ii), or (a)(2)(iii).

KEY: hazardous waste

September 15, 2003

Notice of Continuation October 18, 2001

19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.

R315-4. Procedures for Decisionmaking.

R315-4-1. General Program Requirements.

1.3 APPLICATION FOR A PERMIT

(a) If the Executive Secretary decides that a site visit is necessary for any reason in conjunction with the processing of an application, he shall notify the applicant and a reasonable date shall be scheduled.

(b) The effective date of an application is the date on which the Executive Secretary notifies the applicant that the application is complete as provided in R315-3-2.1(c).

(c) For each application from a major new hazardous waste management facility, the Executive Secretary shall no later than the effective date of the application, prepare and mail to the applicant a project decision schedule. The schedule shall specify target dates by which the Executive Secretary intends to:

- (1) Prepare a draft permit;
- (2) Give public notice;
- (3) Complete the public comment period, including any public hearing; and
- (4) Issue a final permit.

1.5 MODIFICATION, REVOCATION AND REISSUANCE, OR TERMINATION OF PERMITS

(a) Permits may be modified, revoked and reissued, or terminated either at the request of any interested person, including the permittee, or upon the Executive Secretary's initiative. However, permits may only be modified, revoked and reissued, or terminated for the reasons specified in R315-3-4.2 or R315-3-4.4. All requests shall be in writing and shall contain facts or reasons supporting the request.

(b) If the Executive Secretary decides the request is not justified, he shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment, or hearings. Denials by the Executive Secretary may be appealed to the Board under R315-12-3 by filing a Request for Agency Action pursuant to R315-12-3.1.

(c)(1) If the Executive Secretary tentatively decides to modify or revoke and reissue a permit under R315-3-4.2 or R315-3-4.3, which incorporates by reference 40 CFR 270.42(c), he shall prepare a draft permit under R315-4-1.6 incorporating the proposed changes. The Executive Secretary may request additional information and, in the case of a modified permit, may require the submission of an updated permit application. In the case of revoked and reissued permits, the Executive Secretary shall require the submission of a new application.

(2) In a permit modification under this section, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.

(3) Classes 1 and 2 modifications, as defined in R315-3-4.3, which incorporates by reference 40 CFR 270.42(a) and (b), are not subject to the requirements of this section.

(d) If the Executive Secretary tentatively decides to terminate a permit under R315-3-4.4, he shall issue a notice of intent to terminate. A notice of intent to terminate is a type of

draft permit which follows the same procedures as any draft permit prepared under R315-4-1.6.

1.6 DRAFT PERMIT

(a) Once an application is complete, the Executive Secretary shall tentatively decide whether to prepare a draft permit or to deny the application.

(b) If the Executive Secretary tentatively decides to deny the permit, he shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. If the Executive Secretary's final decision is that the tentative decision to deny the permit application was incorrect, he shall withdraw the notice of intent to deny and proceed to prepare a draft permit under R315-4-1.6(c).

(c) If the Executive Secretary decides to prepare a draft permit, he shall prepare a draft permit that contains the following information:

- (1) All conditions under R315-3-3.1 and R315-3-3.3;
- (2) All compliance schedules under R315-3-3.4;
- (3) All monitoring requirements under R315-3-3.2; and
- (4) Standards for treatment, storage, or disposal or all and other permit conditions under R315-3-3.1.

(d) All draft permits prepared by the Executive Secretary under this section shall be publicly noticed and made available for public comment. The Executive Secretary shall give notice of opportunity for a public hearing, issue a final decision, and respond to comments.

1.8 FACT SHEET REQUIRED

(a) A fact sheet shall be prepared by the Executive Secretary for every draft permit. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. The Executive Secretary shall send this fact sheet to the applicant and, on request, to any other person.

(b) The fact sheet shall include, when applicable:

- (1) A brief description of the type of facility or activity which is the subject of the draft permit.
- (2) The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.

(3) A brief summary of the basis of the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references.

(4) Reasons why any requested variance or alternatives to required standards do or do not appear justified.

(5) A description of the procedures for reaching a final decision on the draft permit including:

(i) The beginning and ending dates of the comment period under R315-4-1.10 and the address where comments will be received;

(ii) Procedures for requesting a hearing and the nature of that hearing; and

(iii) Any other procedures by which the public may participate in the final decision.

(6) Name and telephone number of a person to contact for additional information.

1.10 PUBLIC NOTICE OF PERMIT ACTIONS AND PUBLIC COMMENT PERIOD

(a) Scope.

(1) The Executive Secretary shall give public notice that the following actions have occurred:

(i) The permit application has been tentatively denied under R315-4-1.6(b).

(ii) A draft permit has been prepared under R315-4-1.6(c).

(iii) A hearing has been scheduled under R315-4-1.12; or

(iv) An appeal has been granted by the Board.

(2) No public notice is required when a request for a permit modification, revocation and reissuance, or termination is denied under R315-4-1.5(b). Written notice of that denial shall be given to the requestor and to the permittee.

(3) Public notices may describe more than one permit or permit action.

(b) Timing.

(1) Public notice of the preparation of a draft permit, including a notice of intent to deny a permit application, required under R315-4-1.10(a), shall allow at least 45 days for public comment.

(2) Public notice of a public hearing shall be given at least 30 days before the hearing. Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.

(c) Methods.

Public notices of activities described in R315-4-1.10(a)(1) shall be given by the following methods:

(1) By mailing a copy of a notice to the following persons:

(i) The applicant;

(ii) Any other agency which the Executive Secretary knows has issued or is required to issue a permit, for the same facility or activity including EPA;

(iii) Federal and State agencies with jurisdiction over fish, and wildlife resources, State Historic Preservation Officers, and other appropriate government authorities;

(iv) Persons on a mailing list developed by:

(A) Including those who request in writing to be on the list;

(B) Soliciting persons for area lists from participants in past permit proceedings in the area of the facility; and

(C) Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in regional- and state-funded newsletters, environmental bulletins, or law journals. The Executive Secretary may update the mailing list by requesting written indication of continued interest from those listed. The Executive Secretary may delete from the list the name of any person who fails to respond to a request from the Executive Secretary to remain on the mailing list; and

(v)(A) To any unit of local government having jurisdiction over the area where the facility is proposed to be located;

(B) To each State agency having any authority under State law with respect to the construction or operation of the facility.

(2) Publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity and broadcast over local radio stations;

(3) In a manner constituting legal notice to the public under State law; and

(4) Any other method reasonably calculated to give actual notice of the action in question to the person potentially affected by it, including press releases or any other forum or medium to elicit public participation.

(d)(1) All public notices issued under this section shall contain the following minimum information:

(i) Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

(ii) A brief description of the business conducted at the facility or activity described in the permit application or draft permit;

(iii) Name, address and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit or fact sheet, and the application;

(iv) A brief description of the comment procedures required by R315-4-1.11 and R315-4-1.12, and the time and place of any hearing that will be held, including a statement of procedures to request a hearing, unless a hearing has already been scheduled and other procedures by which the public may participate in the final permit decision; and

(v) Any additional information considered necessary or proper.

(2) Public notices of hearings. In addition to the general public notice described in R315-4-1.10(d)(1), the public notice of a hearing under R315-4-1.12, shall contain the following information:

(i) Reference to the date of previous public notices relating to the permit;

(ii) Date, time, and place of the hearing;

(iii) A brief description of the nature and purpose of the hearing, including the applicable rules and procedures; and

(e) In addition to the general public notice described in R315-4-1.10(d)(1), all persons identified in R315-4-1.10(c)(1)(i), (ii), and (iii) shall be mailed a copy of the fact sheet.

1.11 PUBLIC COMMENTS AND REQUESTS FOR PUBLIC HEARINGS

During the public comment period provided under R315-4-1.10, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in R315-4-1.17.

1.12 PUBLIC HEARINGS

(a)(1) The Executive Secretary shall hold a public hearing whenever he finds, on the basis of requests, a significant degree of public interest in a draft permit.

(2) The Executive Secretary may also hold a public hearing at his discretion, whenever, for instance, a hearing might clarify one or more issues involved in the permit decision.

(3)(i) The Executive Secretary shall hold a public hearing whenever he receives written notice of opposition to a draft permit and a request for a hearing within 45 days of public notice under R315-4-1.10(b).

(ii) Whenever possible the Executive Secretary shall schedule a hearing under this section at a location convenient to the nearest population center to the proposed facility.

(4) Public notice of the hearing shall be given as specified in R315-4-1.10.

(b) Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R315-4-1.10 shall automatically be extended to the

close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

(c) A tape recording or written transcript of the hearing shall be made available to the public.

1.15 ISSUANCE AND EFFECTIVE DATE OF PERMIT

(a) After the close of the public comment period under R315-4-1.10 on a draft permit, the Executive Secretary shall issue a final permit decision (or a decision to deny a permit for the active life of a hazardous waste management facility or unit under R315-3-2.20). The Executive Secretary shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a hazardous waste permit or a decision to terminate a hazardous waste permit. For the purposes of R315-4-1.15, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.

(b) A final permit decision (or a decision to deny a permit for the active life of a hazardous waste management facility or unit under R315-3-2.20) shall become effective upon issuance unless:

(1) A later effective date is specified in the decision; or

(2) The permit decision is challenged under R315-12-3 and a stay of the decision is granted under R315-12-8.

1.17 RESPONSE TO COMMENTS

(a) At the time that any final permit decision is issued, the Executive Secretary shall issue a response to comments. This response shall:

(1) Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

(2) Briefly describe and respond to all significant comments on the draft permit or permit application raised during the public comment period, or during any hearing.

(b) The response to comments shall be available to the public.

R315-4-2. Specific Procedures Applicable to Hazardous Waste Permits.

2.31 PRE-APPLICATION PUBLIC MEETING AND NOTICE

(a) Applicability. The requirements of this section shall apply to all part B applications seeking initial permits for hazardous waste management units. The requirements of this section shall also apply to part B applications seeking renewal of permits for such units, where the renewal application is proposing a significant change in facility operations. For the purposes of this section, a "significant change" is any change that would qualify as a class 3 permit modification under R315-3-4.3, which incorporates by reference 40 CFR 270.42. The requirements of this section do not apply to permit modifications under R315-3-4.3, which incorporates by reference 40 CFR 270.42, or to applications that are submitted for the sole purpose of conducting post-closure activities or post-closure activities and corrective action at a facility.

(b) Prior to the submission of a part B permit for a facility, the applicant shall hold at least one meeting with the public in order to solicit questions from the community and inform the community of proposed hazardous waste management activities. The applicant shall post a sign-in sheet or otherwise provide a

voluntary opportunity for attendees to provide their names and addresses.

(c) The applicant shall submit a summary of the meeting, along with the list of attendees and their addresses developed under R315-4-2.31(b), and copies of any written comments or materials submitted at the meeting, to the Executive Secretary as a part of the part B application in accordance with R315-3-2.5(b).

(d) The applicant shall provide public notice of the pre-application meeting at least 30 days prior to the meeting. The applicant shall maintain, and provide to the Division upon request, documentation of the notice.

(1) The applicant shall provide public notice in all of the following forms:

(i) A newspaper advertisement. The applicant shall publish a notice, fulfilling the requirements in R315-4-2.31(d)(2), in a newspaper of general circulation in the county or equivalent jurisdiction that hosts the proposed location of the facility. In addition, the Executive Secretary shall instruct the applicant to publish the notice in newspapers of general circulation in adjacent counties or equivalent jurisdictions, where the Executive Secretary determines that such publication is necessary to inform the affected public. The notice shall be published as a display advertisement.

(ii) A visible and accessible sign. The applicant shall post a notice on a clearly marked sign at or near the facility, fulfilling the requirements in R315-4-2.31(d)(2). If the applicant places the sign on the facility property, then the sign shall be large enough to be readable from the nearest point where the public would pass by the site.

(iii) A broadcast media announcement. The applicant shall broadcast a notice, fulfilling the requirements in R315-4-2.31(d)(2), at least once on at least one local radio station or television station. The applicant may employ another medium with prior approval from the Executive Secretary.

(iv) A notice to the permitting agency. The applicant shall send a copy of the newspaper notice to the Division and local governments in accordance with R315-4-1.10(c)(1)(v).

(2) The notices required under R315-4-2.31(d)(1) shall include:

(i) The date, time, and location of the meeting;

(ii) A brief description of the purpose of the meeting;

(iii) A brief description of the facility and proposed operations, including the address or a map, e.g., a sketched or copied street map, of the facility location;

(iv) A statement encouraging people to contact the facility at least 72 hours before the meeting if they need special access to participate in the meeting; and

(v) The name, address, and telephone number of a contact person for the applicant.

2.32 PUBLIC NOTICE REQUIREMENTS AT THE APPLICATION STAGE

(a) Applicability. The requirements of this section shall apply to all part B applications seeking initial permits for hazardous waste management units. The requirements of this section shall also apply to part B applications seeking renewal of permits for such units under R315-3-5.2(b) through (d). The requirements of this section do not apply to permit modifications under R315-3-4.3, which incorporates by reference 40 CFR 270.42, or permit applications submitted for the sole purpose of conducting post-closure activities or post-closure activities and corrective action at a facility.

(b) Notification at application submittal.

(1) The Executive Secretary shall provide public notice as set forth in R315-4-1.10(c)(1)(iv), and notice to appropriate units of State and local government as set forth in R315-4-1.10(c)(1)(v), that a part B permit application has been submitted to the Division and is available for review.

(2) The notice shall be published within a reasonable period of time after the application is received by the Executive Secretary. The notice shall include:

(i) The name and telephone number of the applicant's contact person;

(ii) The name and telephone number of the Division, and a mailing address to which information, opinions, and inquiries may be directed throughout the permit review process;

(iii) An address to which people can write in order to be put on the facility mailing list;

(iv) The location where copies of the permit application and any supporting documents can be viewed and copied;

(v) A brief description of the facility and proposed operations, including the address or a map, e.g., a sketched or copied street map, of the facility location on the front page of the notice; and

(vi) The date that the application was submitted.

(c) Concurrent with the notice required under R315-4-2.32(b), the Executive Secretary shall place the permit application and any supporting documents in a location accessible to the public in the vicinity of the facility or at the Division's office.

2.33 INFORMATION REPOSITORY

(a) Applicability. The requirements of this section shall apply to all part B applications seeking initial permits for hazardous waste management units.

(b) The Executive Secretary may assess the need, on a case-by-case basis, for an information repository. When assessing the need for an information repository, the Executive Secretary shall consider a variety of factors, including: the level of public interest; the type of facility; the presence of an existing repository; and the proximity of the nearest copy of the administrative record. If the Executive Secretary determines, at any time after submittal of a permit application, that there is a need for a repository, then the Executive Secretary shall notify the facility that it shall establish and maintain an information repository. See R315-3-3.1(m) for similar provisions relating to the information repository during the life of a permit.

(c) The information repository shall contain all documents, reports, data, and information deemed necessary by the Executive Secretary to fulfill the purposes for which the repository is established. The Executive Secretary shall have the discretion to limit the contents of the repository.

(d) The information repository shall be located and maintained at a site chosen by the facility. If the Executive Secretary finds the site unsuitable for the purposes and persons for which it was established, due to problems with the location, hours of availability, access, or other relevant considerations, then the Executive Secretary shall specify a more appropriate site.

(e) The Executive Secretary shall specify requirements for informing the public about the information repository. At a minimum, the Executive Secretary shall require the facility to provide a written notice about the information repository to all individuals on the facility mailing list.

(f) The facility owner/operator shall be responsible for maintaining and updating the repository with appropriate information throughout a time period specified by the Executive Secretary. The Executive Secretary may close the repository at his or her discretion, based on the factors in R315-4-2.33(b).

R315-4-10. Public Participation.

In addition to hearings required under the State Administrative Procedures Act and proceedings otherwise outlined or referenced in these rules, the Executive Secretary will investigate and provide written response to all citizen complaints duly submitted. In addition, the Executive Secretary shall not oppose intervention in any civil or administrative proceeding by any citizen where permissive intervention may be authorized by statute, rule or regulation. The Executive Secretary will publish notice of and provide at least 30 days for public comment on any proposed settlement of any enforcement action.

R315-4-11. Commercial Hazardous Waste Facility Siting Criteria.

(a) Applicability.

R315-4-11 applies to all permit applications for commercial facilities that have been submitted and that have not yet been approved, as well as all future applications.

(b) Land Use Compatibility and Location.

(1) Siting of commercial hazardous waste treatment, storage, and disposal facilities, including commercial hazardous waste incinerators, is prohibited within:

(i) national, state, and county parks, monuments, and recreation areas; designated wilderness and wilderness study areas; wild and scenic river areas;

(ii) ecologically and scientifically significant natural areas, including but not limited to, wildlife management areas and habitat for listed or proposed endangered species as designated pursuant to the Endangered Species Act of 1982;

(iii) 100 year floodplains, unless, for non-land based facilities only, the conditions found in subsection R315-8-2.9 are met to the satisfaction of the Executive Secretary;

(iv) 200 ft. of Holocene faults;

(v) underground mines, salt domes and salt beds;

(vi) dam failure flood areas;

(vii) areas likely to be impacted by landslide, mudflow, or other earth movement;

(viii) farmlands classified or evaluated as "prime," "unique," or of "statewide importance" by the U.S. Department of Agriculture Soil Conservation Service under the Prime Farmland Protection Act;

(ix) areas above aquifers containing ground water which has a total dissolved solids (TDS) content of less than 500 mg/l and which does not exceed applicable ground water quality standards for any contaminant. Land disposal facilities are also prohibited above aquifers containing ground water which has a TDS content of less than 3000 mg/l and which does not exceed applicable ground water quality standards for any contaminant. Non-land-based facilities above aquifers containing ground water which has a TDS content of 500 to 3000 mg/l and all facilities above aquifers containing ground water which has a TDS content between 3000 and 10,000 mg/l are permitted only where the depth to ground water is greater than 100 ft. The applicant for the proposed facility will make the demonstration

of ground water quality necessary to determine the appropriate aquifer classification;

(x) recharge zones of aquifers containing ground water which has a TDS content of less than 3000 mg/l. Land disposal facilities are also prohibited in recharge zones of aquifers containing ground water which has a TDS content of less than 10,000 mg/l;

(xi) designated drinking water source protection areas or, if no source protection area is designated, a distance to existing drinking water wells and watersheds for public water supplies of one year ground water travel time plus 1000 feet for non-land-based facilities and five years ground water travel time plus 1000 feet for land disposal facilities. This requirement does not include on-site facility operation wells. The applicant for the proposed facility will make the demonstration, acceptable to the Executive Secretary, of hydraulic conductivity and other information necessary to determine the one or five year ground water travel distance as applicable. The facility operator may be required to conduct vadose zone or other near surface monitoring if determined to be necessary and appropriate by the Executive Secretary;

(xii) five miles of existing permanent dwellings, residential areas, and other incompatible structures including, but not limited to, schools, churches, and historic structures;

(xiii) five miles of surface waters including intermittent streams, perennial streams, rivers, lakes, reservoirs, estuaries, and wetlands; and

(xiv) 1000 ft. of archeological sites to which adverse impacts cannot reasonably be mitigated.

(c) Emergency Response and Transportation Safety.

(1) An assessment of the availability and adequacy of emergency services, including medical and fire response, shall be included in the permit application. The application shall also contain evidence that emergency response plans have been coordinated with local and regional emergency response personnel. The permit may be delayed or denied if these services are deemed inadequate.

(2) Trained emergency response personnel and equipment are to be retained by the facility and be capable of responding to emergencies both at the site and involving wastes being transported to and from the facility within the state. Details of the proposed emergency response capability shall be given in the permit application and will be stipulated in the permit.

(3) Proposed routes of transport within the state shall be specified in the permit application. No hazardous waste shall be transported on roads where weight restrictions for the road or any bridge on the road will be exceeded in the selected route of travel. Prime consideration in the selection of routes shall be given to roads which bypass population centers. Route selection should consider residential and non-residential populations along the route; the width, condition, and types of roads used; roadside development along the route; seasonal and climatic factors; alternate emergency access to the facility site; the type, size, and configuration of vehicles expected to be hauling to the site; transportation restrictions along the proposed routes; and the transportation means and routes available to evacuate the population at risk in the event of a major accident, including spills and fires.

(d) Exemptions.

Exemptions from the criteria of this section may be granted upon application on a case by case basis by the Solid and Hazardous Waste Control Board after an appropriate public

comment period and when the Board determines that there will be no adverse impacts to public health or the environment. The Board cannot grant exemptions which would conflict with applicable regulations and restrictions of other regulatory authorities.

(e) Completeness of Application.

The permit application shall not be considered complete until the applicant demonstrates compliance with the criteria given herein.

(f) Siting Authority.

It is recognized that Titles 10 and 17 of the Utah Code give cities and counties authority for local land use planning and zoning. Nothing in these rules precludes cities and counties from establishing additional requirements as provided by applicable state and federal law.

KEY: hazardous waste

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19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.

R315-5. Hazardous Waste Generator Requirements.

R315-5-1. General.

1.10 PURPOSE, SCOPE, AND APPLICABILITY.

(a) R315-5 establishes standards for generators of hazardous waste.

(b) R315-2-5, which incorporates by reference, 40 CFR 261.5(c) and (d), must be used to determine the applicability of provisions of R315-5 that are dependent on calculations of the quantity of hazardous waste generated per month.

(c) A generator who treats, stores, or disposes of hazardous waste on-site shall only comply with the following sections of this rule with respect to that waste: R315-5-1.11, which incorporates by reference 40 CFR 262.11, for determining whether or not he has a hazardous waste, R315-5-1.12 for obtaining an EPA identification number, R315-5-3.34 for accumulation of hazardous waste, R315-5-4.40(c) and (d) for recordkeeping, R315-5-4.43 for additional reporting, and if applicable, R315-5-7 for farmers.

(d) Any person who exports or imports hazardous waste as identified in R315-5-8, which incorporates by reference 40 CFR 262.80(a), and is subject to the manifesting requirements of R315-5, or subject to the universal waste management standards as found in R315-16, to or from the countries listed in 40 CFR 262.58(a)(1), which R315-5-5 incorporates by reference, for recovery shall comply with R315-5-8, which incorporates by reference 40 CFR 262 subpart H.

(e) Any person who imports hazardous waste into the United States shall comply with the standards applicable to generators established in R315-5.

(f) A farmer who generates waste pesticides which are hazardous wastes and who complies with all the requirements of R315-5-7 is not required to comply with other standards in this rule or R315-3, R315-7, R315-8, or R315-13, which incorporates by reference 40 CFR 268, with respect to these pesticides.

(g) A person who generates a hazardous waste as defined by R315-2 is subject to the compliance requirements and penalties prescribed in The Utah Solid and Hazardous Waste Act if he does not comply with the requirements of this rule.

A generator who treats, stores, or disposes of hazardous waste on-site shall comply with the applicable standards and plan approval requirements set forth in R315-3, R315-7, and R315-8.

(h) An owner or operator who initiates a shipment of hazardous waste from a treatment, storage, or disposal facility shall comply with the generator standards established in R315-5.

The provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, are applicable to the on-site accumulation of hazardous waste by generators. Therefore, the provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, only apply to owners or operators who are shipping hazardous waste which they generated at that facility.

A generator who treats, stores, or disposes of hazardous waste on-site shall comply with the applicable standards and permit requirements set forth in R315-3, R315-7, R315-8, R315-13, which incorporates by reference 40 CFR 268, and R315-14.

1.11 HAZARDOUS WASTE DETERMINATION

The requirements of 40 CFR 262.11, 1994 ed., as amended by 60 FR 25540, May 11, 1995, are adopted and incorporated by reference with the following exception:

Substitute "Board" for all federal regulation references made to "Administrator".

1.12 EPA IDENTIFICATION NUMBERS

(a) A generator shall not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an EPA identification number from the Executive Secretary.

(b) A generator who has not received an EPA identification number may obtain one by applying to the Executive Secretary using EPA form 8700-12. Upon receiving the request the Executive Secretary will assign an EPA identification number to the generator.

(c) A generator shall not offer his hazardous waste to transporters or to treatment, storage, or disposal facilities that do not have an EPA identification number.

R315-5-2. The Manifest.

A sample hazardous waste manifest form containing information required pursuant to these rules is found in the Appendix to 40 CFR 262. All applicable sections of each manifest shall be completely and legibly filled out.

2.20 GENERAL REQUIREMENTS

(a) A generator who transports, or offers for transportation, hazardous waste for off-site treatment, storage or disposal shall prepare a Manifest OMB control number 2050-0039 on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the instructions, including the additional information requirements, found in R315-50-1, which incorporates by reference 40 CFR 262, Appendix.

(b) A generator shall designate on the manifest one facility which is permitted to handle the waste described on the manifest.

(c) A generator may also designate on the manifest one alternate facility which is permitted to handle his waste in the event an emergency prevents delivery of the waste to the primary designated facility.

(d) If the transporter is unable to deliver the hazardous waste to the designated facility or the alternate facility, the generator shall either designate another facility or instruct the transporter to return the waste.

(e) These manifest requirements do not apply to hazardous waste produced by generators of greater than 100 kg but less than 1000 kg in a calendar month where:

(1) The waste is reclaimed under a contractual agreement pursuant to which:

(i) The type of waste and frequency of shipments are specified in the agreement;

(ii) The vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer of the waste; and

(2) The generator maintains a copy of the reclamation agreement in his files for a period of at least three years after termination or expiration of the agreement.

(f) The requirements of R315-5-2 and R315-5-3.32(b) do not apply to the transport of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way. Notwithstanding R315-6-1.10(a), the generator or transporter shall comply with the requirements for transporters set forth in R315-9-1 and R315-9-3 in the event of a discharge of hazardous waste on a public or private right-of-way.

2.21 ACQUISITION OF MANIFESTS

(a) If the State to which the shipment is manifested (consignment State) supplies the manifest and requires its use, then the generator must use that manifest.

(b) If the consignment State does not supply the manifest, but the State in which the generator is located, generator State, supplies the manifest and requires its use, then the generator must use that State's manifest.

(c) If neither the generator State nor the consignment State supplies the manifest, then the generator may obtain the manifest from any source.

2.22 NUMBER OF COPIES

The manifest shall consist of at least the number of copies which will provide the generator, each transporter, and the owner or operator of the designated facility with one copy each for their records and another copy to be returned to the generator.

2.23 USE OF THE MANIFEST

(a) The generator shall:

(1) Sign the manifest certification by hand; and

(2) Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest; and

(3) Retain one copy, in accordance with R315-5-4.40(a).

(b) The generator shall give the transporter the remaining copies of the manifest.

(c) Hazardous wastes to be shipped within Utah solely by water (bulk shipments only) require that the generator send three copies of the manifest dated and signed in accordance with this section to the owner and operator of the designated facility or the last water (bulk shipment) transporter to handle the waste in the United States if exported by water. Copies of the manifest are not required for each transporter.

(d) For rail shipments of the hazardous wastes within Utah which originate at the site of generation, the generator shall send at least three copies of the manifest dated and signed in accordance with this section to:

(1) The next non-rail transporter, if any; or

(2) The designated facility if transported solely by rail; or

(3) The last rail transporter to handle the waste in the United States if exported by rail.

(e) The generator shall include on the manifest a description of the hazardous waste(s) as set forth in the regulations of the U.S. Department of Transportation in 49 CFR 172.101, 172.202, and 172.203.

(f) For shipments of hazardous waste to a designated facility in an authorized state which has not yet obtained federal authorization to regulate that particular waste as hazardous, the generator must assure that the designated facility agrees to sign and return the manifest to the generator, and that any out-of-state transporter signs and forwards the manifest to the designated facility.

R315-5-3. Pre-Transport Requirements.

3.30 PACKAGING

Prior to transporting or offering hazardous waste for transportation off-site, a generator shall package the waste in accordance with the Department of Transportation regulations on packaging under 49 CFR 173, 178, and 179.

3.31 LABELING

Prior to transporting or offering hazardous waste for transportation off-site, a generator shall label each hazardous waste package in accordance with the applicable Department of

Transportation regulations on hazardous materials under 49 CFR 172.

3.32 MARKING

(a) Before transporting or offering hazardous waste for transportation off-site, a generator shall mark each package of hazardous waste in accordance with the Department of Transportation regulations on hazardous materials under 49 CFR 172.

(b) Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator shall mark each container of 110 gallons or less used in transportation with the following words and information displayed in accordance with the requirements of 49 CFR 172.304:

HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.

Generator's Name and Address

Manifest Document Number

3.33 PLACARDING

Prior to transporting hazardous waste or offering hazardous waste for transportation off-site, a generator shall placard or offer the initial transporter the appropriate placards according to the Department of Transportation regulations for the movement of hazardous materials under 49 CFR 172, subpart F.

3.34 ACCUMULATION TIME

(a) These requirements as found in 40 CFR 262.34, 2000 ed., are adopted and incorporated by reference with the following addition.

(b) The notification required by 40 CFR 262.34(d)(5)(iv)(C) shall also be made to the Executive Secretary or to the 24-hour answering service listed in R315-9-1(b).

R315-5-4. Recordkeeping and Reporting.

4.40 RECORDKEEPING

(a) A generator shall keep a copy of each manifest signed in accordance with R315-5-2.23(a) for three years or until a signed copy is received from the designated facility which received the waste. The signed copy shall be retained as a record for at least three years from the date the waste was accepted by the initial transporter.

(b) A generator shall keep a copy of each Biennial Report and Exception Report for a period of at least three years from the due date of the report.

(c) Records maintained in accordance with this section and any other records which the Board or Executive Secretary deems necessary to determine quantities and disposition of hazardous waste or other determinations, test results, or waste analyses made in accordance with R315-5-1.11, which incorporates by reference 40 CFR 262.11, shall be available for inspection by any duly authorized officer, employee or representative of the Department or the Board as provided in R315-2-12 for a period of at least three years from the date the waste was last sent to on-site or off-site treatment, storage, or disposal facilities.

(d) The periods of retention referred to in this section are automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Board or its duly appointed representative.

4.41 BIENNIAL REPORTING

(a) A generator who ships any hazardous waste off-site to a treatment, storage, or disposal facility within the United States must prepare and submit a single copy of a biennial report to the

Executive Secretary by March 1 of each even numbered year. The biennial report shall be submitted on EPA Form 8700-13A and must cover generator activities during the previous calendar year, and must include the following information:

- (1) The EPA identification number, name, and address of the generator;
- (2) The calendar year covered by the report;
- (3) The EPA identification number, name, and address for each off-site treatment, storage, or disposal facility in the United States to which waste was shipped during the year;
- (4) The name and EPA identification number of each transporter used during the reporting year for shipments to a treatment, storage, or disposal facility within the United States;
- (5) A description, EPA hazardous waste number, from R315-2-9, R315-2-10, or R315-2-11, DOT hazard class, and quantity of each hazardous waste shipped off-site for shipments to a treatment, storage, or disposal facility within the United States. This information must be listed by EPA Identification number of each off-site facility to which waste was shipped;
- (6) A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;
- (7) A description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent the information is available for years prior to 1984;
- (8) The certification signed by the generator or authorized representative.
- (b) Any generator who treats, stores, or disposes of hazardous waste on-site shall submit a biennial report covering those wastes in accordance with the provisions of R315-3, R315-7, and R315-8. Reporting for exports of hazardous waste is not required on the Biennial Report form. A separate annual report requirement is set forth in R315-5-5, which incorporates by reference 40 CFR 262.56.

4.42 EXCEPTION REPORTING

(a)(1) A generator of greater than 1000 kilograms of hazardous waste in a calendar month who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated treatment, storage or disposal facility within 35 days of the date the waste was accepted by the initial transporter shall contact the transporter or the owner or operator of the designated facility to determine the status of the hazardous waste.

(2) A generator of greater than 1000 kilograms of hazardous waste in a calendar month shall submit an Exception Report to the Executive Secretary if he has not received a signed copy of the manifest from the owner or operator of the designated facility within 45 days of the date the waste was accepted by the initial transporter. The Exception Report shall consist of a legible copy of the manifest for which the generator does not have confirmation of delivery and a cover letter signed by the generator or his authorized representative explaining the efforts taken by the generator to locate the hazardous waste, and the results of those efforts.

(b) A generator of greater than 100 kilograms but less than 1000 kilograms of hazardous waste in a calendar month who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 60 days of the date the waste was accepted by the initial transporter must submit a legible copy of the manifest, with some indication that the generator has not received confirmation of delivery, to the Executive Secretary. The submission to the

Executive Secretary need only be a hand written or typed note on the manifest itself, or on an attached sheet of paper, stating that the return copy was not received.

4.43 ADDITIONAL REPORTING

The Board or Executive Secretary, as is deemed necessary pursuant to these rules, may require generators to furnish additional reports concerning the quantities and disposition of hazardous wastes identified or listed in Section R315-2-9, R315-2-10, or R315-2-11.

4.44 SPECIAL REQUIREMENTS FOR GENERATORS OF BETWEEN 100 AND 1000 KG/MO

A generator of greater than 100 kilograms but less than 1000 kilograms of hazardous waste in a calendar month is subject only to the following requirements in R315-5-4:

- (a) R315-5-4.40(a), (c), and (d);
- (b) R315-5-4.42(b); and
- (c) R315-5-4.43.

R315-5-5. Exports of Hazardous Waste.

The provisions of 40 CFR 262 subpart E, 262.50 - 262.58, 1996 ed., are adopted and incorporated by reference within this rule, except for the following changes:

(a) Other than in Section 40 CFR 262.53, substitute "Executive Secretary" for all references to "EPA" or "Regional Administrator".

(b) Paragraph 40 CFR 262.58(a) shall be as follows:

Any person who exports or imports hazardous waste as identified in 40 CFR 262.80(a) and is subject to the manifesting requirements of R315-5-2, or subject to the universal waste management standards as found in R315-16, to or from the countries listed in 40 CFR 262.58(a)(1), which R315-5-5 incorporates by reference, for recovery shall comply with R315-5-8, which incorporates by reference 40 CFR 262 subpart H. The requirements of subparts E and F do not apply.

R315-5-6. Imports of Hazardous Waste.

The requirements of 40 CFR 262.60, 1990 ed., are adopted and incorporated by reference.

R315-5-7. Farmers.

A farmer disposing of waste pesticides from his own use which are hazardous wastes is not required to comply with the standards in this rule or other standards in R315-3, R315-7, R315-8, and R315-13, which incorporates by reference 40 CFR 268, for those wastes provided he triple rinses each emptied pesticide container in accordance with R315-2-7(b)(3) and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label.

R315-5-8. Transfrontier Shipments of Hazardous Waste for Recovery within the OECD.

The requirements of 40 CFR 262 subpart H, 262.80 - 262.89, 1996 ed., are adopted and incorporated by reference.

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R315. Environmental Quality, Solid and Hazardous Waste.

R315-6. Hazardous Waste Transporter Requirements.

R315-6-1. General.

1.10 SCOPE

(a) These hazardous waste transporter requirements establish standards which apply only to persons transporting hazardous waste within the State of Utah if the transportation requires a manifest as specified under R315-5.

(b) These rules do not apply to persons that transport hazardous waste on-site if they are either a hazardous waste generator or are owners or operators of an approved hazardous waste management facility.

(c) A transporter shall also comply with R315-5, if he:

(1) Transports hazardous waste from abroad into the State;

(2) Mixes hazardous wastes of different DOT shipping descriptions by placing them into a single container.

(d) A transporter of hazardous waste subject to the manifesting requirements of R315-5, or subject to the waste management standards of R315-16, that is being imported from or exported to any of the countries listed in 40 CFR 262.58(a)(1), which R315-5-5 incorporates by reference, for purposes of recovery is subject to R315-6-1 and to all other relevant requirements of R315-5-8, which incorporates by reference 40 CFR 262 subpart H, including 40 CFR 262.84 for tracking documents.

1.11 IDENTIFICATION NUMBER

(a) A transporter shall not transport hazardous wastes without having received an EPA identification number from the Executive Secretary.

(b) A transporter who has not received an EPA identification number may obtain one by applying to the Executive Secretary using EPA form 8700-12. Upon receiving the request, the Executive Secretary will assign an EPA identification number to the transporter.

1.12 TRANSFER FACILITY REQUIREMENTS

A transporter who stores manifested shipments of hazardous waste in containers meeting the requirements of R315-5-3.30 at a transfer facility for a period of ten days or less is not subject to regulation under R315-3, R315-7, R315-8, and R315-13, which incorporates by reference 40 CFR 268, with respect to the storage of those wastes.

R315-6-2. Compliance With the Manifest System and Recordkeeping.

2.20 THE MANIFEST SYSTEM

(a) A transporter may not accept hazardous waste from a generator unless it is accompanied by a manifest signed in accordance with the provisions of R315-5-2.20. In the case of exports other than those subject to R315-5-8, which incorporates by reference 40 CFR 262 subpart H, a transporter may not accept hazardous waste from a primary exporter or other person if he knows the shipment does not conform to the EPA Acknowledgment of Consent; and unless, in addition to a manifest signed in accordance with the provisions of R315-5-2.20, the waste is also accompanied by an EPA Acknowledgment of Consent which, except for shipment by rail, is attached to the manifest, or shipping paper for exports by water (bulk shipment). For exports of hazardous waste subject to the requirements of R315-5-8, which incorporates by reference 40 CFR 262 subpart H, a transporter may not accept hazardous waste without a tracking document that includes all

information required by 40 CFR 262.84, which R315-5-8 incorporates by reference.

(b) Before transporting the hazardous waste, the transporter shall hand sign and date the manifest acknowledging acceptance of the hazardous waste from the generator. The transporter shall return a signed copy to the generator before leaving the generator's property.

(c) The transporter shall ensure that the manifest accompanies the hazardous waste. In the case of exports, the transporter shall ensure that a copy of the EPA Acknowledgment of Consent also accompanies the hazardous waste.

(d) A transporter who delivers a hazardous waste to another transporter or to the designated facility shall:

(1) Obtain the date of delivery and the handwritten signature of that transporter or of the owner or operator of the designated facility on the manifest; and

(2) Retain one copy of the manifest in accordance with R315-6-5; and

(3) Give the remaining copies of the manifest to the accepting transporter or designated facility.

(e) The requirements of R315-6-2.10(c), (d), and (f) do not apply to water (bulk shipment) transporters if:

(1) The hazardous waste is delivered by water (bulk shipment) to the designated facility; and

(2) A shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generators certification, and signatures) and, for exports, an EPA Acknowledgment of Consent accompanies the hazardous waste; and

(3) The delivering transporter obtains the date of delivery and handwritten signature of the owner or operator of the designated facility on either the manifest or the shipping paper; and

(4) The person delivering the hazardous waste to the initial water (bulk shipment) transporter obtains the date of delivery and signature of the water (bulk shipment) transporter on the manifest and forwards it to the manifested facility; and

(5) A copy of the shipping paper or manifest is retained by each water (bulk shipment) transporter in accordance with R315-6-2.22.

(f) For shipments involving rail transportation, the requirements of R315-6-2.20(c), (d) and (e) do not apply and the following requirements do apply:

(1) When accepting hazardous waste from a non-rail transporter, the initial rail transporter shall:

(i) Sign and date the manifest acknowledging acceptance of the hazardous waste;

(ii) Return a signed copy of the manifest to the non-rail transporter;

(iii) Forward at least three copies of the manifest to:

(A) The next non-rail transporter, if any; or

(B) The designated facility, if the shipment is delivered to that facility by rail; or

(C) The last rail transporter designated to handle the waste in the United States.

(iv) Retain one copy of the manifest and rail shipping paper in accordance with R315-6-2.22.

(2) Rail transporters shall ensure that a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generator certification, and signatures) and, for exports, an EPA

Acknowledgment of Consent accompanies the hazardous waste at all times.

(3) When delivering hazardous waste to the designated facility, a rail transporter shall:

(i) Obtain the date of delivery and handwritten signature of the owner or operator of the designated facility on the manifest or the shipping paper, if the manifest has not been received by the facility; and

(ii) Retain a copy of the manifest or signed shipping paper in accordance with R315-6-2.22.

(4) When delivering hazardous waste to a non-rail transporter a rail transporter shall:

(i) Obtain the date of delivery and the handwritten signature of the next non-rail transporter on the manifest; and

(ii) Retain a copy of the manifest in accordance with R315-6-2.22.

(5) Before accepting hazardous waste from a rail transporter, a non-rail transporter shall sign and date the manifest and provide a copy to the rail transporter.

(g) Transporters who transport hazardous waste out of the United States shall:

(1) Indicate on the manifest the date the hazardous waste left the United States; and

(2) Sign the manifest and retain one copy as specified in R315-6-2.22(d); and

(3) Return a signed copy of the manifest to the generator; and

(4) Give a copy of the manifest to a U.S. Customs official at the point of departure from the United States.

(h) A transporter transporting hazardous waste from a generator who generates greater than 100 kilograms of hazardous waste in a calendar month need not comply with the requirements of R315-6-2.20 or those of R315-6-2.22 provided that:

(1) The waste is being transported pursuant to a reclamation agreement as provided for in R315-5-2.20(e);

(2) The transporter records, on a log or shipping paper, the following information for each shipment:

(i) The name, address, and U.S. EPA Identification Number of the generator of the waste;

(ii) The quantity of waste accepted;

(iii) All DOT-required shipping information;

(iv) The date the waste is accepted; and

(3) The transporter carries this record when transporting waste to the reclamation facility; and

(4) The transporter retains these records for a period of at least three years after termination or expiration of the agreement.

(i) A transporter shall not transport hazardous waste not properly labeled or hazardous waste containers which are leaking or appear to be damaged, since those packages become the transporter's responsibility during transport.

2.21 COMPLIANCE WITH THE MANIFEST

(a) The transporter shall deliver the entire quantity of hazardous waste which he has accepted from a generator or a transporter to:

(1) The designated facility listed on the manifest; or

(2) The alternate designated facility, if the hazardous waste cannot be delivered to the designated facility because an emergency prevents delivery; or

(3) The next designated transporter; or

(4) The place outside the United States designated by the generator.

(b) If the hazardous waste cannot be delivered in accordance with R315-6-2.21(a), the transporter shall contact the generator for further directions and shall revise the manifest according to the generator's instructions.

2.22 RECORDKEEPING

(a) A transporter of hazardous waste shall keep a copy of the manifest signed by the generator, himself, and the next designated transporter of the owner or operator of the designated facility for a period of three years from the date the hazardous waste was accepted by the initial transporter.

(b) For shipments delivered to the designated facility by water (bulk shipment), each water (bulk shipment) transporter shall retain a copy of the shipping paper containing all the information required in R315-6-2.20(e)(2) for a period of three years from the date the hazardous waste was accepted by the initial transporter.

(c) For shipments of hazardous waste by rail within the United States:

(1) The initial rail transporter shall keep a copy of the manifest and shipping paper with all the information required in R315-6-2.20(f)(2) for a period of three years from the date the hazardous waste was accepted by the initial transporter; and

(2) The final rail transporter shall keep a copy of the signed manifest (or the shipping paper if signed by the designated facility in lieu of the manifest) for a period of three years from the date the hazardous waste was accepted by the initial transporter.

(d) A transporter who transports hazardous waste out of the United States shall keep a copy of the manifest indicating that the hazardous waste left the United States for a period of three years from the date the hazardous waste was accepted by the initial transporter.

(e) The periods of retention referred to in this section are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Executive Secretary.

R315-6-10. Emergency Controls.

Transporters shall comply with R315-9 in the event of a discharge of hazardous waste.

R315-6-11. Compliance with Department of Transportation Regulations.

Transporters of hazardous waste shall comply with the following pertinent regulations of the U.S. Department of Transportation governing the transportation of hazardous materials for both interstate and intrastate shipments:

(a) 49 CFR 171, General Information Regulations and Definitions;

(b) 49 CFR 172, Hazardous Materials Table and Hazardous Material Communications Regulations;

(c) 49 CFR 173, Shippers - General Requirements for Shipments and Packaging;

(d) 49 CFR 174, Carriage by Rail;

(e) 49 CFR 175, Carriage by Aircraft;

(f) 49 CFR 176, Carriage by Vessel;

(g) 49 CFR 177, Carriage by Public Highway;

(h) 49 CFR 178, Shipping Container Specification; and

(i) 49 CFR 179, Specifications for Tank Cars.

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**R315. Environmental Quality, Solid and Hazardous Waste.
R315-7. Interim Status Requirements for Hazardous Waste
Treatment, Storage, and Disposal Facilities.**

R315-7-8. General Interim Status Requirements.

8.1 PURPOSE, SCOPE, APPLICABILITY

(a) The purpose of R315-7 is to establish minimum State of Utah standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure or, if the facility is subject to post-closure requirements, until post-closure responsibilities are fulfilled.

(b) Except as provided in R315-7-30, which incorporates by reference 40 CFR 265.1080(b), the standards of R315-7 and of R315-8-21, which incorporates by reference 40 CFR 264.552 through 264.554, apply to owners and operators of facilities that treat, store, or dispose of hazardous waste who have fully complied with the requirements of interim status under State or Federal requirements and R315-3-2.1 until either a permit is issued under R315-3 or until applicable R315-7 closure and post-closure responsibilities are fulfilled, and to those owners and operators of facilities in existence on November 19, 1980, who have failed to provide timely notification as required by Section 3010(a) of RCRA or failed to file part A of the permit application as required by R315-3-2.1(d) and (f). These standards apply to all treatment, storage, and disposal of hazardous waste at these facilities after the effective date of these rules, except as specifically provided otherwise in R315-7 or R315-2.

(c) The requirements of R315-7 do not apply to the following:

(1) The owner or operator of a POTW with respect to the treatment or storage of hazardous wastes which are delivered to the POTW;

(2) The owner or operator of a facility approved by the State of Utah to manage municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under R315-7 by R315-2-5;

(3) The owner or operator of a facility managing recyclable materials described in 40 CFR 261.6(a)(2), (3), and (4), which is incorporated by reference in R315-2-6, except to the extent that they are referred to in R315-15 or R315-14-2, which incorporates by reference 40 CFR subpart D, R315-14-5, which incorporates by reference 40 CFR 266 subpart F, and R315-14-6, which incorporates by reference 40 CFR 266 subpart G;

(4) A generator accumulating hazardous waste on-site in compliance with R315-5-3.34, which incorporates by reference 40 CFR 262.34, except to the extent the requirements are included in R315-5-3.34, which incorporates by reference 40 CFR 262.34;

(5) A farmer disposing of waste pesticides from his own use in compliance with R315-5-7;

(6) The owner or operator of a totally enclosed treatment facility, as defined in R315-1;

(7) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, provided that if the owner or operator is diluting hazardous ignitable (D001) wastes, other than the D001 High TOC Subcategory defined in the Table of Treatment Standards for Hazardous Wastes in 40 CFR 268.40 as incorporated by reference at R315-13, or reactive (D003) waste, to remove the characteristic before land disposal,

the owner/operator must comply with the requirements set out in R315-7-9.8(b);

(8) A transporter storing manifested shipments of hazardous waste in containers meeting the requirements of R315-5-3.30 at a transfer facility for a period of ten days or less;

(9)(i) Except as provided in R315-7-8(c)(9)(i), a person engaged in treatment or containment activities during immediate response to any of the following situations:

(A) A discharge of a hazardous waste;

(B) An imminent and substantial threat of a discharge of a hazardous waste;

(C) A discharge of a material which, when discharged, becomes a hazardous waste.

(ii) An owner or operator of a facility otherwise regulated by this section shall comply with all applicable requirements of R315-7-10 and R315-7-11.

(iii) Any person who is covered by R315-7-8(c)(9)(i) and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of R315-7 and of R315-3 for those activities.

(10) The addition of absorbent material to waste in a container, as defined in R315-1, or the addition of waste to the absorbent material in a container provided that these actions occur at the time waste is first placed in the containers; and R315-7-9.8(b), R315-7-16.2 and R315-7-16.3 are complied with;

(11) Universal waste handlers and universal waste transporters (as defined in R315-16-1.9) handling the wastes listed below. These handlers are subject to regulation under section R315-16, when handling the below listed universal wastes:

(i) Batteries as described in R315-16-1.2;

(ii) Pesticides as described in R315-16-1.3;

(iii) Mercury thermostats as described in R315-16-1.4; and

(iv) Mercury lamps as described in R315-16-1.5

(d) Notwithstanding any other provisions of these rules enforcement actions may be brought pursuant to R315-2-14 or Section 19-6-115 Utah Solid and Hazardous Waste Act.

(e) The following hazardous wastes shall not be managed at facilities subject to regulation under R315-7.

(1) EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027 unless:

(i) The wastewater treatment sludge is generated in a surface impoundment as part of the plant's wastewater treatment system;

(ii) The waste is stored in tanks or containers;

(iii) The waste is stored or treated in waste piles that meet the requirements of R315-8-12.1(c) as well as all other applicable requirements of R315-8-12;

(iv) The waste is burned in incinerators that are certified pursuant to the standard and procedures in R315-7-22.6; or

(v) The waste is burned in facilities that thermally treat the waste in a device other than an incinerator and that are certified pursuant to the standards and procedures in R315-7-23.7.

(f) The requirements of this rule apply to owners or operators of all facilities which treat, store, or dispose of hazardous waste referred to in R315-13, which incorporates by reference 40 CFR 268, and the R315-13 standards are considered material conditions or requirements of the R315-7 interim status standards.

R315-7-9. General Facility Standards.

9.1 APPLICABILITY

The rules in this section apply to the owners and operators of all hazardous waste management facilities, except as provided otherwise in R315-7-8.1.

9.2 IDENTIFICATION NUMBER

Every facility owner or operator shall apply for an EPA identification number in accordance with Section 3010 of RCRA. Facility owners or operators who did not obtain an EPA Identification Number for their facilities through the notification process shall obtain one. Information on obtaining this number can be acquired by contacting the Utah Division of Solid and Hazardous Waste Management.

9.3 REQUIRED NOTICES

(a)(1) An owner or operator of a facility that has arranged to receive hazardous waste from a foreign source shall notify the Board in writing at least four weeks in advance of the expected date of arrival of these shipments at the facility. A notice of subsequent shipments of the same waste from the same foreign sources is not required.

(2) The owner or operator of a recovery facility that has arranged to receive hazardous waste subject to R315-5-15, which incorporates by reference 40 CFR 262, subpart H, shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Division of Solid and Hazardous Waste, P.O. Box 144880, Salt Lake City, Utah, 84114-4880; Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to the competent authorities of all other concerned countries within three working days of receipt of the shipment. The original of the signed tracking document must be maintained at the facility for at least three years.

(b) Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator shall notify the new owner or operator in writing of the requirements of R315-7 and R315-3. An owner's or operator's failure to notify the new owner or operator of the requirements of R315-7 in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.

9.4 GENERAL WASTE ANALYSIS

The requirements of 40 CFR 265.13, 1996 ed., are adopted and incorporated by reference.

9.5 SECURITY

(a) A facility owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility; unless

(1) Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and

(2) Disturbance of the waste or equipment by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility will not cause a violation of the requirements of R315-7.

(b) Unless exempt under R315-7-9.5(a)(1) and (a)(2), facilities shall have;

(1) A 24-hour surveillance system, e.g., television monitoring or surveillance by guards or facility personnel, which

continuously monitors and controls entry onto the active portion of the facility; or

(2)(i) An artificial or natural barrier or both, e.g. a fence in good repair or a cliff, which completely surrounds the active portion of the facility; and

(ii) A means to control entry at all times through the gates or other entrances to the active portion of the facility, e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility.

The requirements of R315-7-9.5(b) are satisfied if the facility or plant within which the active portion is located itself has a surveillance system or a barrier and a means to control entry which complies with the requirements of R315-7-9.5(b)(1) and (2).

(c) Unless exempt under R315-7-9.5(a)(1) and (a)(2), a sign with the legend, "Danger -Unauthorized Personnel Keep Out", shall be posted at each entrance to the active portion of a facility and at other locations, in sufficient numbers to be seen from any approach to the active portion. The legend shall be written in English and any other language predominant in the area surrounding the facility and shall be legible from a distance of at least twenty-five feet. Existing signs with a legend other than "Danger - Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion is potentially dangerous.

Owners or operators are encouraged to also describe on the sign the type of hazard, e.g., hazardous waste, flammable wastes, etc., contained within the active portion of the facility. See R315-7-14.7(b) for discussion of security requirements at disposal facilities during the post-closure care period.

9.6 GENERAL INSPECTION REQUIREMENTS

(a) Facility owners or operators shall inspect their facilities for malfunctions and deterioration, operator errors, and discharges, which may be causing or may lead to (1) release of hazardous waste constituents to the environment or (2) a threat to human health. These inspections shall be conducted frequently enough to identify problems in time to correct them before they harm human health or the environment.

(b)(1) Facility owners or operators shall develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment, e.g., dikes and sump pumps, that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) The schedule shall be kept at the facility.

(3) The schedule shall identify the types of problems, e.g., malfunctions or deterioration, which are to be looked for during the inspection, e.g., inoperative sump pump, leaking fitting, eroding dike, etc.

(4) The frequency of inspection may vary for the items on the schedule. However, the frequency should be based on the rate of deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, malfunction, or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas shall be inspected daily when in use. At a minimum, the inspection schedule shall include the items and frequencies called for in R315-7-16.5, R315-7-17, which incorporates by reference 40 CFR 265.190 - 265.201, R315-7-18.5, R315-7-19.12, R315-7-20.5, R315-7-21.12, R315-7-22.4, R315-7-23.4, R315-7-24.4, R315-7-26, which incorporates by

reference 40 CFR 265.1033, R315-7-27, which incorporates by reference 40 CFR 265.1052, 265.1053, and 265.1058 and R315-7-30, which incorporates by reference 40 CFR 265.1084 through 265.1090.

(c) The owner or operator shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall keep records of inspections in an inspection log or summary. These records shall be retained for at least three years. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs made or remedial actions taken.

9.7 PERSONNEL TRAINING

(a)(1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of R315-7, and that includes all the elements described in R315-7-9.7(d)(3).

(2) This program shall be directed by a person trained in hazardous waste management procedures, and shall include instruction supplementing the facility personnel's existing job knowledge, which teaches facility personnel hazardous waste management procedures, including contingency plan implementation, relevant to the positions in which they are employed.

(3) At a minimum, the training program shall be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, but not necessarily limited to, the following, where applicable:

- (i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- (ii) Key parameters for automatic waste feed cut-off systems;
- (iii) Communications or alarm systems or both;
- (iv) Response to fires or explosions;
- (v) Response to groundwater contamination incidents; and
- (vi) Shutdown of operations.

(b) Facility personnel shall successfully complete the program required in R315-7-9.7(a) within six months after the effective date of these rules or six months after the date of employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these rules shall not work in unsupervised positions until they have completed the training requirements of R315-7-9.7(a).

(c) Facility personnel shall take part in an annual review of their initial training in R315-7-9.7(a).

(d) Owners or operators of facilities shall maintain the following documents and records at their facilities and make them available to the Board or its duly appointed representative upon request:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under R315-7-9.7(d)(1). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but shall

include the requisite skill, education, or other qualifications and duties of facility personnel assigned to each position;

(3) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under R315-7-9.7(d)(1); and

(4) Records that document that the training or job experience required under paragraphs R315-7-9.7(a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current personnel shall be maintained until closure of the facility; training records on former employees shall be maintained for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

9.8 GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

(a) The owner or operator shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks, static, electrical, or mechanical, spontaneous ignition, e.g., from heat-producing chemical reactions, and radiant heat. While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flames to specially designated locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) Where specifically required by R315-7, the treatment, storage, or disposal of ignitable or reactive waste and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, shall be conducted so that it does not:

- (1) Generate uncontrolled extreme heat or pressure, fire or explosion, or violent reaction;
- (2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
- (3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion;
- (4) Damage the structural integrity of the device or facility containing the waste; or
- (5) Through other like means threaten human health or the environment.

9.9 LOCATION STANDARDS

The placement of any hazardous waste in a salt dome, salt bed formation, underground mine or cave is prohibited, except for the Department of Energy Waste Isolation Pilot Project in New Mexico.

9.10 CONSTRUCTION QUALITY ASSURANCE PROGRAM

(a) CQA program. (1) A construction quality assurance, CQA, program is required for all surface impoundment, waste pile, and landfill units that are required to comply with R315-7-18.9(a), R315-7-19.9, and R315-7-21.10(a). The program shall ensure that the constructed unit meets or exceeds all design criteria and specifications in the permit. The program shall be developed and implemented under the direction of a CQA officer who is a registered professional engineer.

(2) The CQA program shall address the following physical components, where applicable:

- (i) Foundations;
- (ii) Dikes;

- (iii) Low-permeability soil liners;
- (iv) Geomembranes, flexible membrane liners;
- (v) Leachate collection and removal systems and leak detection systems; and
- (vi) Final cover systems.

(b) Written CQA plan. Before construction begins on a unit subject to the CQA program under R315-7-9.10(a), the owner or operator shall develop a written CQA plan. The plan shall identify steps that will be used to monitor and document the quality of materials and the condition and manner of their installation. The CQA plan shall include:

(1) Identification of applicable units, and a description of how they will be constructed.

(2) Identification of key personnel in the development and implementation of the CQA plan, and CQA officer qualifications.

(3) A description of inspection and sampling activities for all unit components identified in R315-7-9.10(a)(2), including observations and tests that will be used before, during, and after construction to ensure that the construction materials and the installed unit components meet the design specifications. The description shall cover: Sampling size and locations; frequency of testing; data evaluation procedures; acceptance and rejection criteria for construction materials; plans for implementing corrective measures; and data or other information to be recorded and retained in the operating record under R315-7-12.4.

(c) Contents of program. (1) The CQA program shall include observations, inspections, tests, and measurements sufficient to ensure:

(i) Structural stability and integrity of all components of the unit identified in R315-7-9.10(a)(2);

(ii) Proper construction of all components of the liners, leachate collection and removal system, leak detection system, and final cover system, according to permit specifications and good engineering practices, and proper installation of all components, e.g., pipes, according to design specifications;

(iii) Conformity of all materials used with design and other material specifications under R315-8-11.2, R315-8-12.2, and R315-8-14.2.

(2) The CQA program shall include test fills for compacted soil liners, using the same compaction methods as in the full-scale unit, to ensure that the liners are constructed to meet the hydraulic conductivity requirements of R315-8-11.2(c)(1), R315-8-12.2(c)(1), and R315-8-14.2(c)(1) in the field. Compliance with the hydraulic conductivity requirements shall be verified by using in-situ testing on the constructed test fill. The test fill requirement is waived where data are sufficient to show that a constructed soil liner meets the hydraulic conductivity requirements of R315-8-11.2(c)(1), R315-8-12.2(c)(1), and R315-8-14.2(c)(1) in the field.

(d) Certification. The owner or operator of units subject to R315-7-9.10 shall submit to the Executive Secretary by certified mail or hand delivery, at least 30 days prior to receiving waste, a certification signed by the CQA officer that the CQA plan has been successfully carried out and that the unit meets the requirements of R315-8-11.2(a), R315-8-12.2, or R315-8-14.2(a). The owner or operator may receive waste in the unit after 30 days from the Executive Secretary's receipt of the CQA certification unless the Executive Secretary determines in writing that the construction is not acceptable, or extends the review period for a maximum of 30 more days, or seeks

additional information from the owner or operator during this period. Documentation supporting the CQA officer's certification shall be furnished to the Executive Secretary upon request.

R315-7-10. Preparedness and Prevention.

10.1 APPLICABILITY

The rules in this section apply to the owners and operators of all hazardous waste management facilities, except as provided otherwise in R315-7-8.1.

10.2 MAINTENANCE AND OPERATION OF FACILITY

Facilities shall be maintained and operated to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

10.3 REQUIRED EQUIPMENT

All facilities shall be equipped with the following, unless there are no hazards posed by waste handled at the facility which could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction, voice or signal, to facility employees;

(b) A device capable of summoning external emergency assistance from law enforcement agencies, fire departments or state or local emergency response teams, such as a telephone, immediately available at the scene of operations, or a hand-held two way radio;

(c) Portable fire extinguishers, fire control equipment, including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, discharge control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

10.4 TESTING AND MAINTENANCE OF EQUIPMENT

All facility communications or alarm systems, fire protection equipment, safety equipment, discharge control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.

10.5 ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all employees involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless a device is not required under R315-7-10.3.

(b) If there is just one employee on the premises while the facility is operating, he shall have immediate access to a device capable of summoning external emergency assistance, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio, unless a device is not required under R315-7-10.3.

10.6 REQUIRED AISLE SPACE

The facility owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, discharge control equipment, and decontamination

equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

10.7 ARRANGEMENTS WITH LOCAL AUTHORITIES

(a) The owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize law enforcement agencies, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to the roads inside the facility, and possible evacuation routes;

(2) Where more than one law enforcement agency and fire department might respond to an emergency, agreements designating primary emergency authority to a specific law enforcement agency and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with state emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where state or local authorities decline to enter into these arrangements, the owner or operator shall document the refusal in the operating record.

R315-7-11. Contingency Plan and Emergency Procedures.

11.1 APPLICABILITY

The rules in this section apply to the owners and operators of all hazardous waste management facilities, except as provided otherwise in R315-7-8.1.

11.2 PURPOSE AND IMPLEMENTATION OF CONTINGENCY PLAN

(a) Each owner or operator shall have a contingency plan for his facility designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, or surface water.

(b) The provisions of the plan shall be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten the environment or human health.

11.3 CONTENT OF CONTINGENCY PLAN

(a) The contingency plan shall describe the actions facility personnel shall take to comply with R315-7-11.2 and R315-7-11.7 in response to fires, explosions, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

(b) If a facility owner or operator already has prepared a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR 112, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions sufficient to comply with the requirements of R315-7.

(c) The plan shall describe arrangements agreed to by local law enforcement agencies, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services, in accordance with R315-7-10.7.

(d) The plan shall list names, addresses, phone numbers, office and home, of all persons qualified to act as facility emergency coordinator, see R315-7-11.6, and this list shall be kept up-to-date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.

(e) The plan shall include a list of all emergency equipment at the facility, such as fire extinguishing systems, discharge control equipment, communications and alarm systems, internal and external, and decontamination equipment, where this equipment is required. This list shall be kept up-to-date. In addition, the plan shall include the location and physical description of each item on the list, and a brief outline of its capabilities.

(f) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes, in cases where the primary routes could be blocked by discharges of hazardous waste or fires.

11.4 COPIES OF CONTINGENCY PLAN

A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility;

(b) Made available to the Board or its duly appointed representative upon request; and

(c) Submitted to all local law enforcement agencies, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.

11.5 AMENDMENT OF CONTINGENCY PLAN

The contingency plan shall be reviewed, and immediately amended, if necessary, under any of the following circumstances:

(a) Revisions to applicable regulations;

(b) Failure of the plan in an emergency;

(c) Changes in the facility design, construction, operation, maintenance, or other circumstances that materially increase the potential for discharges of hazardous waste or hazardous waste constituents, or change the response necessary in an emergency;

(d) Changes in the list of emergency coordinators; or

(e) Changes in the list of emergency equipment.

11.6 EMERGENCY COORDINATOR

At all times, there shall be at least one employee either on the facility premises or on call, i.e., available to respond to an emergency by reaching the facility within a short period of time, with the responsibility for coordinating all emergency response measures. This facility emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan. The emergency coordinator's responsibilities are more fully spelled out in R315-7-11.7. Applicable responsibilities for the emergency coordinator vary depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.

11.7 EMERGENCY PROCEDURES

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator, or his designee when the emergency coordinator is on call, shall immediately:

(1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(2) Notify appropriate state or local agencies with designated response roles whenever their assistance is needed.

(b) In the event of a discharge, fire, or explosion, the facility's emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any discharged materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(c) Concurrently, the facility's emergency coordinator shall immediately assess possible hazards to the environment or human health that may result from the discharge, fire, or explosion. This assessment shall consider both direct and indirect effects of the discharge, fire, or explosion, e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions.

(d) If the emergency coordinator determines that the facility has had a discharge, fire, or explosion which could threaten human health or the environment, outside the facility, he shall report his findings as follows:

(1) If his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to assist appropriate officials in making the decision whether local areas should be evacuated; and

(2) He shall immediately notify both the Utah State Department of Environmental Quality as specified in R315-9 and the government officials designated as the on-scene coordinator for that geographical area, in the applicable regional contingency plan under 40 CFR 1510, or the National Response Center, 800/424-8802. The report shall include:

- (i) Name and telephone number of reporter;
- (ii) Name and address of facility;
- (iii) Time and type of incident, e.g., discharge, fire;
- (iv) Name and quantity of material(s) involved, to the extent available;
- (v) The extent of injuries, if any; and
- (vi) The possible hazards to human health, or the environment, outside the facility.

(e) During an emergency, the facility's emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and discharges do not occur, recur, or spread to other hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing discharged waste, and removing or isolating containers.

(f) If the facility stops operations in response to a discharge, fire, or explosion, the facility's emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the facility's emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a discharge, fire, or explosion at the facility.

Unless the owner or operator can demonstrate, in accordance with R315-2-3(c) or (d), that the recovered material is not a hazardous waste, the owner or operator becomes a

generator of hazardous waste and shall manage it in accordance with all applicable requirements in R315-4, R315-5, R315-7, and R315-8.

(h) The facility's emergency coordinator shall ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the discharged material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The facility owner or operator shall notify the Board and other appropriate state and local authorities, that the facility is in compliance with R315-7-11.7(h) before operations are resumed in the affected area(s) of the facility.

(j) The facility owner or operator shall record in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he shall submit a written report on the incident to the Board. The report shall include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident, e.g., fire, discharge;
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to the environment or human health, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

R315-7-12. Manifest System, Recordkeeping, and Reporting.

12.1 APPLICABILITY

The rules in R315-7-12 apply to owners and operators of both on-site and off-site facilities, except as provided otherwise in R315-7-8.1. R315-7-12.2, R315-7-12.3, and R315-7-12.7 do not apply to owners and operators of on-site facilities that do not receive any hazardous waste from off-site sources.

12.2 USE OF MANIFEST SYSTEM

(a) If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, shall:

(1) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(2) Note any significant discrepancies in the manifest, as defined in R315-7-12.3, on each copy of the manifest;

The Board does not intend that the owner or operator of a facility whose procedures under R315-7-9.4(c) include waste analysis shall perform that analysis before signing the manifest and giving it to the transporter. R315-7-12.3(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.

(3) Immediately give the transporter at least one copy of the signed manifest;

(4) Within 30 days after the delivery, send a copy of the manifest to the generator; and

(5) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

(b) If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers,

generator's certification, and signatures) the owner or operator, or his agent, shall:

(1) Sign and date each copy of the manifest or shipping paper, if the manifest has not been received, to certify that the hazardous waste covered by the manifest or shipping paper was received;

(2) Note any significant discrepancies, as defined in R315-7-12.3(a), in the manifest or shipping paper, if the manifest has not been received, on each copy of the manifest or shipping paper;

(3) Immediately give the rail or water, bulk shipment, transporter at least one copy of the manifest or shipping paper, if the manifest has not been received;

(4) Within 30 days after the delivery, send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within 30 days after delivery, the owner or operator, or his agent, shall send a copy of the signed and dated shipping paper to the generator; and

(5) Retain at the facility a copy of the manifest and shipping paper, if signed in lieu of the manifest at the time of delivery for at least three years from the date of delivery.

(c) Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility shall comply with the requirements of R315-5.

The provisions of R315-5-9.1 are applicable to the on-site accumulation of hazardous wastes by generators and only apply to owners or operators who are shipping hazardous waste which they generated at that facility.

(d) Within three working days of the receipt of a shipment subject to R315-5-15, which incorporates by reference 40 CFR 262 subpart H, the owner or operator of the facility shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Division of Solid and Hazardous Waste, P.O. Box 144880, Salt Lake City, Utah, 84114-4880; Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to competent authorities of all other concerned countries. The original copy of the tracking document shall be maintained at the facility for at least three years from the date of signature.

12.3 MANIFEST DISCREPANCIES

(a) Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are: (1) for bulk waste, variations greater than ten percent in weight, and (2) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest.

(b) Upon discovering a significant discrepancy, the owner or operator shall attempt to reconcile the discrepancy with the waste generator or transporter, e.g., with telephone conversations. If the discrepancy is not resolved within 15 days of receipt of the waste, the owner or operator shall immediately submit a letter describing the discrepancy, and attempts to reconcile it, including a copy of the manifest at issue, to the Board.

12.4 OPERATING RECORD

The requirements as found in 40 CFR 265.73, 1997 ed., as amended by 62 FR 64636, December 8, 1997, are adopted and incorporated by reference.

12.5 AVAILABILITY, RETENTION, AND DISPOSITION OF RECORDS

(a) All records, including plans, required under R315-7 shall be furnished upon written request, and made available at all reasonable times for inspection.

(b) The retention period for all records required under R315-7 is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Board.

(c) A copy of records of waste disposal locations required to be maintained under R315-7-12.4, which incorporates by reference 40 CFR 265.73, shall be turned over to the Board and the local land authority upon closure of the facility, see R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120.

12.6 BIENNIAL REPORT

Owners or operators of facilities that treat, store, or dispose of hazardous waste shall prepare and submit a single copy of a biennial report to the Board by March 1 of each even numbered year. The biennial report shall be submitted on EPA form 8700-13B. The biennial report shall cover facility activities during the previous calendar year and shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA identification number of each hazardous waste generator from which a hazardous waste was received during the year; for imported shipments, the name and address of the foreign generator shall be given;

(d) A description and the quantity of each hazardous waste received by the facility during the year. For off-site facilities, this information shall be listed by EPA identification number of each generator;

(e) The method(s) of treatment, storage, or disposal for each hazardous waste;

(f) Monitoring data, where required under R315-7-13.5(a)(2)(ii) and (iii) and (b)(2) where required;

(g) The most recent closure cost estimate under R315-7-15, which incorporates by reference 40 CFR 265.140 - 265.150;

(h) For generators who treat, store, or dispose of hazardous waste on-site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

(i) For generators who treat, store, or dispose of hazardous waste on-site, a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent the information is available for the years prior to 1984;

(j) The certification signed by the owner or operator of the facility or his authorized representative.

12.7 UNMAINFESTED WASTE REPORT

If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in R315-4-3(e)(2) of these rules, and if the waste is not excluded from the manifest requirements by R315-2-2, then the owner or operator shall prepare and submit a single copy of a report to the Board within 15 days after receiving the waste. These reports shall be designated "Unmanifested Waste Report" and include the following information:

- (a) The EPA identification number, name, and address of the facility;
- (b) The date the facility received the waste;
- (c) The EPA identification number, name, and address of the generator and the transporter, if available;
- (d) A description and the quantity of each unmanifested hazardous waste the facility received;
- (e) The method of treatment, storage, or disposal for each hazardous waste;
- (f) The certification signed by the owner or operator of the facility or his authorized representative; and
- (g) A brief explanation of why the waste was unmanifested, if known.

Small quantities of hazardous waste are excluded from regulation under R315-7 and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the owner or operator should obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the owner or operator should file an unmanifested waste report for the hazardous waste movement.

12.8 ADDITIONAL REPORTS

In addition to the biennial and unmanifested waste reporting requirements described in R315-7-12.6, and R315-7-12.7, a facility owner or operator shall also report to the Board:

- (a) Discharges, fires, and explosions as specified in R315-7-11.7(j);
- (b) Groundwater contamination and monitoring data as specified in R315-7-13.4 and R315-7-13.5;
- (c) Facility closure as specified in R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120;
- (d) Upon its request, all information as the Board may deem necessary to determine compliance with the requirements of R315-7;
- (e) As otherwise required by R315-7-26, which incorporates by reference 40 CFR 265.1030 - 265.1035, R315-7-27, which incorporates by reference 40 CFR 265.1050 - 265.1064 and R315-7-30, which incorporates by reference 40 CFR 265.1080 - 265.1091.

R315-7-13. Groundwater Monitoring.

13.1 APPLICABILITY

(a) The owner or operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste shall implement a groundwater monitoring program capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer underlying the facility, except as R315-7-8.1 and R315-7-13.1(c) provide otherwise.

(b) Except as R315-7-13.1(c) and (d) provide otherwise, the owner or operator shall install, operate, and maintain a groundwater monitoring system which meets the requirements of R315-7-13.2, and shall comply with R315-7-13.3 - R315-7-13.5. This groundwater monitoring program shall be carried out during the active life of the facility, and for disposal facilities, during the post-closure care period as well.

(c) All or part of the groundwater monitoring sampling and analysis requirements of this section may be waived if the owner or operator can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells, domestic, industrial, or agricultural, or to surface water. This demonstration shall be in writing, and shall be kept at the

facility. This demonstration shall be certified by a qualified geologist or geotechnical engineer and shall establish the following:

(1) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer, by an evaluation of:

(i) A water balance of precipitation, evapotranspiration, run-off, and infiltration; and

(ii) Unsaturated zone characteristics, i.e., geologic materials, physical properties, and depth to groundwater; and

(2) The potential for hazardous waste or hazardous waste constituents which enter the uppermost aquifer to migrate to a water supply well or surface water, by an evaluation of:

(i) Saturated zone characteristics, i.e., geologic materials, physical properties, and rate of groundwater flow; and

(ii) The proximity of the facility to water supply wells or surface water.

(d) If an owner or operator assumes, or knows, that groundwater monitoring of indicator parameters in accordance with R315-7-13.2 and R315-7-13.3 would show statistically significant increases, or decreases in the case of pH, when evaluated under R315-7-13.4(b), he may install, operate, and maintain an alternate groundwater monitoring system, other than the one described in R315-7-13.2 and R315-7-13.3. If the owner or operator decides to use an alternate groundwater monitoring system he shall:

(1) Submit to the Board a specific plan, certified by a qualified geologist or geotechnical engineer, which satisfies the requirements of R315-7-13.4(d)(3) for an alternate groundwater monitoring system;

(2) Initiate the determinations specified in R315-7-13.4(d)(4);

(3) Prepare and submit a written report in accordance with R315-7-13.4(d)(5);

(4) Continue to make the determinations specified in R315-7-13.4(d)(4) on a quarterly basis until final closure of the facility; and

(5) Comply with the recordkeeping and reporting requirements in R315-7-13.5(d).

(e) The groundwater monitoring requirements of this section may be waived with respect to any surface impoundment that (1) is used to neutralize wastes which are hazardous solely because they exhibit the corrosivity characteristics under R315-2-9 or are listed as hazardous wastes in R315-2-10 only for this reason, and (2) contains no other hazardous wastes, if the owner or operator can demonstrate that there is no potential for migration of hazardous wastes from the impoundment. The demonstration must be established, based upon consideration of the characteristics of the wastes and the impoundment, that the corrosive wastes will be neutralized to the extent that they no longer meet the corrosivity characteristic before they can migrate out of the impoundment. The demonstration must be in writing and must be certified by a qualified professional.

(f) The Executive Secretary may replace all or part of the requirements of R315-7-13 applying to a regulated unit, as defined in R315-8-6, with alternative requirements developed for groundwater monitoring set out in an approved closure or post-closure plan or in an enforceable document, as defined in R315-3-1.1(e)(7), where the Executive Secretary determines that:

(1) A regulated unit is situated among solid waste management units, or areas of concern, a release has occurred,

and both the regulated unit and one or more solid waste management unit(s), or areas of concern, are likely to have contributed to the release; and

(2) It is not necessary to apply the requirements of R315-7-13 because the alternative requirements will protect human health and the environment. The alternative standards for the regulated unit must meet the requirements of R315-8-6.12(a).

13.2 GROUNDWATER MONITORING SYSTEM

(a) A groundwater monitoring system shall be capable of yielding groundwater samples for analysis and shall consist of:

(1) Monitoring wells, at least one, installed hydraulically upgradient, i.e., in the direction of increasing static head from the limit of the waste management area. Their number, locations, and depths shall be sufficient to yield groundwater samples that are:

(i) Representative of background groundwater quality in the uppermost aquifer near the facility; and

(ii) Not affected by the facility.

(2) Monitoring wells, at least three, installed hydraulically downgradient, i.e., in the direction of decreasing static head, at the limit of the waste management area. Their number, locations, and depths shall ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer.

(3) The facility owner or operator may demonstrate that an alternate hydraulically downgradient monitoring well location will meet the criteria outlined below. The demonstration must be in writing and kept at the facility. The demonstration must be certified by a qualified ground-water scientist and establish that:

(i) An existing physical obstacle prevents monitoring well installation at the hydraulically downgradient limit of the waste management area; and

(ii) The selected alternate downgradient location is as close to the limit of the waste management area as practical; and

(iii) The location ensures detection that, given the alternate location, is as early as possible of any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer.

(iv) Lateral expansion, new, or replacement units are not eligible for an alternate downgradient location under this paragraph.

(b) Separate monitoring systems for each waste management component of the facility are not required provided that provisions for sampling upgradient and downgradient water quality will detect any discharge from the waste management area.

(1) In the case of a facility consisting of only one surface impoundment, landfill, or land treatment area, the waste management area is described by the waste boundary perimeter.

(2) In the case of a facility consisting of more than one surface impoundment, landfill, or land treatment area, the waste management area is described by an imaginary boundary line which circumscribes the several waste management components.

(c) All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated, and packed with gravel or sand where necessary to enable sample collection at depths where appropriate aquifer flow zones exist. The annular space, i.e., the space between the bore hole and well casing above the

sampling depth shall be sealed with a suitable material, e.g., cement grout or bentonite slurry, to prevent contamination of samples and the ground water.

13.3 SAMPLING AND ANALYSIS

(a) The owner or operator shall obtain and analyze samples from the installed groundwater monitoring system. The owner or operator shall develop and follow a groundwater sampling and analysis plan. He shall keep this plan at the facility. The plan shall include procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures; and

(4) Chain of custody control.

See "Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities," EPA-530/SW-611, August 1977 and "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1979 for discussions of sampling and analysis procedures.

(b) The owner or operator shall determine the concentration or value of the following parameters in groundwater samples in accordance with R315-7-13.3(c) and (d):

(1) Parameters characterizing the suitability of the groundwater as a drinking water supply, as specified in R315-50-3, which incorporates by reference 40 CFR 265, Appendix III.

(2) Parameters establishing groundwater quality:

(i) Chloride

(ii) Iron

(iii) Manganese

(iv) Phenols

(v) Sodium

(vi) Sulfate

These parameters are to be used as a basis for comparison in the event a groundwater quality assessment is required under R315-7-13.4(d).

(3) Parameters used as indicators of groundwater contamination:

(i) pH

(ii) Specific Conductance

(iii) Total Organic Carbon

(iv) Total Organic Halogen

(c)(1) For all monitoring wells, the owner or operator shall establish initial background concentrations or values of all parameters specified in R315-7-13.3(b). He shall do this quarterly for one year.

(2) For each of the indicator parameters specified in R315-7-13.3(b)(3), at least four replicate measurements shall be obtained for each sample and the initial background arithmetic mean and variance shall be determined by pooling the replicate measurements for the respective parameter concentrations or values in samples obtained from upgradient wells during the first year.

(d) After the first year, all monitoring wells shall be sampled and the samples analyzed with the following frequencies:

(1) Samples collected to establish groundwater quality shall be obtained and analyzed for the parameters specified in R315-7-13.3(b)(2) at least annually.

(2) Samples collected to indicate groundwater contamination shall be obtained and analyzed for the parameters specified in R315-7-13.3(b)(3) at least semiannually.

(e) Elevation of the groundwater surface at each monitoring well shall be determined each time a sample is obtained.

13.4 PREPARATION, EVALUATION, AND RESPONSE

(a) The owner or operator shall prepare an outline of a groundwater quality assessment program. The outline shall describe a more comprehensive groundwater monitoring program, than that described in R315-7-13.2 and R315-7-13.3, capable of determining:

(1) Whether hazardous waste or hazardous waste constituents have entered the groundwater;

(2) The rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater; and

(3) The concentrations of hazardous waste or hazardous waste constituents in the groundwater.

(b) For each indicator parameter specified in R315-7-13.3(b)(3), the owner or operator shall calculate the arithmetic mean and variance, based on at least four replicate measurements on each sample, for each well monitored in accordance with R315-7-13.3(d)(2) and compare these results with its initial background arithmetic mean. The comparison shall consider individually each of the wells in the monitoring system, and shall use the Student's t-test at the 0.01 level of significance, see R315-50-4, to determine statistically significant increases, and decreases, in the case of pH, over initial background.

(c)(1) If the comparisons for the upgradient wells made under R315-7-13.4(b) show a significant increase, or pH decrease, the owner or operator shall submit this information in accordance with R315-7-13.5(a)(2)(ii).

(2) If the comparisons for downgradient wells made under R315-7-13.4(b) show a significant increase, or pH decrease, the owner or operator shall then immediately obtain additional groundwater samples from those downgradient wells where a significant difference was detected, split the samples in two, and expeditiously obtain analyses of all additional samples to determine whether the significant difference was a result of laboratory error.

(d)(1) If the analyses performed under R315-7-13.4(c)(2) confirm the significant increase, or pH decrease, the owner or operator shall provide written notice to the Board--within seven days of the date of the confirmation--that the facility may be affecting groundwater quality.

(2) Within 15 days after the notification under R315-7-13.4(d)(1), the owner or operator shall develop and submit to the Board a specific plan, based on the outline required under R315-7-13.4(a) and certified by a qualified geologist or geotechnical engineer, for a groundwater quality assessment program at the facility.

(3) The plan to be submitted under R315-7-13.1(d)(1) or R315-7-13.4(d)(2) shall specify:

(i) The number, location, and depth of wells;

(ii) Sampling and analytical methods for those hazardous wastes or hazardous waste constituents in the facility;

(iii) Evaluation procedures, including any use of previously-gathered groundwater quality information; and

(iv) A schedule of implementation.

(4) The owner or operator shall implement the groundwater quality assessment plan which satisfies the requirements of R315-7-13.4(d)(3), and, at a minimum, determine:

(i) The rate and extent of migration of the hazardous waste or hazardous waste constituents in the groundwater; and

(ii) The concentrations of the hazardous waste or hazardous waste constituents in the groundwater.

(5) The owner or operator shall make his first determination under R315-7-13.4(d)(4) as soon as technically feasible, and, within 15 days after that determination submit to the Board a written report containing an assessment of the groundwater quality.

(6) If the owner or operator determines, based on the results of the first determination under R315-7-13.4(d)(4), that no hazardous waste or hazardous waste constituents from the facility have entered the groundwater, then he may reinstate the indicator evaluation program described in R315-7-13.3 and R315-7-13.4(b). If the owner or operator reinstates the indicator evaluation program, he shall so notify the Board in the report submitted under R315-7-13.4(d)(5).

(7) If the owner or operator determines, based on the first determination under R315-7-13.4(d)(4), that hazardous waste or hazardous waste constituents from the facility have entered the groundwater, then he:

(i) Must continue to make the determinations required under R315-7-13.4(d)(4) on a quarterly basis until final closure of the facility, if the groundwater quality assessment plan was implemented prior to final closure of the facility; or

(ii) May cease to make the determinations required under R315-7-13.4(d)(4), if the groundwater quality assessment plan was implemented during the post-closure care period.

(e) Notwithstanding any other provision of R315-7-13, any groundwater quality assessment to satisfy the requirements of R315-7-13.4(d)(4) which is initiated prior to final closure of the facility shall be completed and reported in accordance with R315-7-13.4(d)(5).

(f) Unless the groundwater is monitored to satisfy the requirements of R315-7-13.4(d)(4), at least annually the owner or operator shall evaluate the data on groundwater surface elevations obtained under R315-7-13.3(e) to determine whether the requirements under R315-7-13.2(a) for locating the monitoring wells continues to be satisfied. If the evaluation shows that R315-7-13.2(a) is no longer satisfied, the owner or operator shall immediately modify the number, location, or depth of the monitoring wells to bring the groundwater monitoring system into compliance with this requirement.

13.5 RECORDKEEPING AND REPORTING

(a) Unless the groundwater is monitored to satisfy the requirements of R315-7-13.4(d)(4), the owner or operator shall:

(1) Keep records of the analyses required in R315-7-13.3(c) and (d), the associated groundwater surface elevations required in R315-7-13.3(e), and the evaluations required in R315-7-13.4(b) throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(2) Report the following groundwater monitoring information to the Board:

(i) During the first year when initial background concentrations are being established for the facility: concentrations or values of the parameters listed in R315-7-13.3(b)(1) for each groundwater monitoring well within 15 days after completing each quarterly analysis. The owner or operator shall separately identify for each monitoring well any parameters whose concentration or value has been found to exceed the

maximum contaminant levels listed in 40 CFR 265, Appendix III.

(ii) Annually: concentrations or values of the parameters listed in R315-7-13.3(b)(3) for each groundwater monitoring well, along with the required evaluations for these parameters under R315-7-13.4(b). The owner or operator shall separately identify any significant differences from initial background found in the upgradient wells, in accordance with R315-7-13.4(c)(1). During the active life of the facility, this information shall be submitted no later than March 1 following each calendar year.

(iii) No later than March 1 following each calendar year: results of the evaluation of groundwater surface elevations under R315-7-13.4(f), and a description of the response to that evaluation, where applicable.

(b) If the groundwater is monitored to satisfy the requirements of R315-7-13.4(d)(4), the owner or operator shall:

(1) Keep records of the analyses and evaluations specified in the plan, which satisfies the requirements of R315-7-13.4(d)(3), throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(2) Annually, until final closure of the facility, submit to the Board a report containing the results of his groundwater quality assessment program which includes, but is not limited to, the calculated (or measured) rate of migration of hazardous waste or hazardous waste constituents in the groundwater during the reporting period. This report shall be submitted no later than March 1, following each calendar year.

R315-7-14. Closure and Post-Closure.

The requirements as found in 40 CFR 265 subpart G (265.110 - 265.121), 1998 ed., as amended by 63 FR 56710, October 22, 1998, are adopted and incorporated by reference with the following exceptions:

(a) Substitute "Board" for all references to "Administrator" or "Regional Administrator".

(b) Substitute the word "appointee" for "employee."

(c) Substitute "Board" for "Agency."

(d) Substitute 19-6 for references to RCRA.

R315-7-15. Financial Requirements.

The requirements as found in 40 CFR 265 subpart H (265.140 - 265.150), 1998 ed., as amended by 63 FR 56710, October 22, 1998, are adopted and incorporated by reference with the following exceptions:

(a) substitute "Executive Secretary" for all references to "Administrator" or "Regional Administrator."

(b) substitute "Board" for all references to "Agency" or "EPA".

(c) substitute "The Utah Solid and Hazardous Waste Act" for all references to "the Resource Conservation and Recovery Act" or "RCRA."

R315-7-16. Use and Management of Containers.

16.1 APPLICABILITY

The rules in this section apply to the owners or operators of all hazardous waste management facilities that store containers of hazardous waste, except as provided otherwise in R315-7-8.1.

16.2 CONDITION OF CONTAINERS

The container holding hazardous waste shall be in good condition and shall not leak. If a container is not in good

condition, or if it begins to leak, the owner or operator shall transfer the hazardous waste from the container to a storage container that is in good condition, or manage the waste in another fashion which complies with the requirements of R315-7.

16.3 COMPATIBILITY OF WASTE WITH CONTAINER

Owners or operators shall use containers made of or lined with materials which will not react with, and are otherwise compatible with, the waste to be stored, so that the ability of the container to contain the waste is not impaired.

16.4 MANAGEMENT OF CONTAINERS

(a) A container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste.

(b) A container holding hazardous waste shall not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

Reuse of containers is also governed by the U.S. Department of Transportation regulations, including those set forth in 49 CFR 173.28.

16.5 INSPECTIONS

In addition to the inspections required by R315-7-9.6, the owner or operator shall inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors. See R315-7-16.2 for remedial action required if deterioration or leaks are detected.

16.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Containers holding ignitable or reactive waste shall be located more than 15 meters, 50 feet, from the facility's property line.

See R315-7-9.8 for additional requirements.

16.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

(a) Incompatible wastes or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same container, unless R315-79.8(b) is complied with.

(b) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material, see 40 CFR 265, Appendix V for examples, unless R315-7-9.8(b) is complied with.

(c) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, open tanks, piles, or surface impoundments shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. The purpose of this is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous wastes or hazardous constituents which could result from the mixing of incompatible materials.

16.8 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a container in accordance with the applicable requirements of R315-7-26, which incorporates by reference 40 CFR subpart AA, R315-7-27, which incorporates by reference 40 CFR subpart BB, and R315-7-30, which incorporates by reference 40 CFR subpart CC.

R315-7-17. Tanks.

The requirements as found in 40 CFR 265 subpart J, 265.190-265.202, 1996 ed., as amended by 61 FR 59931, November 25, 1996, are adopted and incorporated by reference with the following exceptions:

(a) Substitute "Executive Secretary" for all references to "Regional Administrator" found in 40 CFR 265 subpart J with the exception of 40 CFR 265.193(g) and (h)(5), which will replace "Regional Administrator" with "Board".

(b) Add, following January 12, 1988, in 40 CFR 265.191(a), "or by December 16, 1988, for non-HSWA existing tank systems."

(c) Replace 40 CFR 265.193(a)(2) to (4) with the following corresponding paragraphs:

(1) For all HSWA existing tank systems used to store or treat EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027, within two years after January 12, 1987, or within two years after December 16, 1988, for non-HSWA existing tank systems;

(2) For those HSWA existing tank systems of known and documented age, within two years after January 12, 1987, or within two years after December 16, 1988, for non-HSWA existing tank systems, or when the tank system has reached 15 years of age, whichever comes later;

(3) For those HSWA existing tank systems for which the age cannot be documented, within eight years of January 12, 1987, or within eight years of December 16, 1988, for non-HSWA existing tank systems; but if the age of the facility is greater than seven years, secondary containment must be provided by the time the facility reaches 15 years of age, or within two years of January 12, 1987, or within two years of December 16, 1988, for non-HSWA existing tank systems, whichever comes later; and

(d) Add, following the last January 12, 1987, in 40 CFR 265.193(a)(5), "or December 16, 1988, for non-HSWA tank systems."

R315-7-18. Surface Impoundments.

18.1 APPLICABILITY

The rules in this section apply to the owners and operators of facilities that use surface impoundments for the treatment, storage, or disposal of hazardous waste, except as provided otherwise in R315-7-8.1.

18.2 ACTION LEAKAGE RATE

(a) The owner or operator of surface impoundment units subject to R315-7-18.9(a) must submit a proposed action leakage rate to the Executive Secretary when submitting the notice required under R315-7-18.9(b). Within 60 days of receipt of the notification, the Executive Secretary will: Establish an action leakage rate, either as proposed by the owner or operator or modified using the criteria in this section; or extend the review period for up to 30 days. If no action is taken by the Executive Secretary before the original 60 or extended 90 day review periods, the action leakage rate will be approved as proposed by the owner or operator.

(b) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-7-18.9(a). The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and

location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(c) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-7-18.5(b), to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and if the unit closes in accordance with R315-7-18.6, which incorporates by reference 40 CFR 265.228(a)(2), monthly during the post-closure care period when monthly monitoring is required under R315-7-18.5(b).

18.3 CONTAINMENT SYSTEM

All earthen dikes shall have a protective cover, such as grass, shale, or rock, to minimize wind and water erosion and to preserve their structural integrity.

18.4 WASTE ANALYSIS AND TRIAL TESTS

In addition to the waste analyses required by R315-7-9.4, which incorporates by reference 40 CFR 265.13, whenever a surface impoundment is used to:

(1) Chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment; or

(2) Chemically treat hazardous waste with a substantially different process than any previously used in that impoundment; the owner or operator shall, before treating the different waste or using the different process:

(i) Conduct waste analyses and trial treatment tests, e.g., bench scale or pilot plant scale tests; or

(ii) Obtain written, documented information on similar treatment of similar waste under similar operating conditions; to show that this treatment will comply with R315-7-9.8(b).

The owner or operator shall record the results from each waste analysis and trial test in the operating record of the facility, see R315-7-12.4, which incorporates by reference 40 CFR 265.73.

18.5 MONITORING AND INSPECTIONS

(a) The owner or operator shall inspect:

(1) The freeboard level at least once each operating day to ensure compliance with R315-7-18.2, and

(2) The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leads, deterioration, or failures in the impoundment.

(b)(1) An owner or operator required to have a leak detection system under R315-7-18.9(a) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(2) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps shall be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps shall be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual

recording schedules, the owner or operator shall return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump. The timing for submission and approval of the proposed "pump operating level" will be in accordance with R315-7-18.2(a).

The owner or operator shall remedy any deterioration or malfunction he finds.

18.6 CLOSURE AND POST-CLOSURE

The requirements as found in 40 CFR 265.228, 1992 ed., are adopted and incorporated by reference.

18.7 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Ignitable or reactive waste shall not be placed in a surface impoundment, unless the waste and impoundment satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f); and

(2) R315-7-9.8(b) is complied with; or

(b)(1) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; and

(2) Maintain and monitor the leak detection system in accordance with R315-8-11.2(c)(2)(iv) and (3) and R315-7-18.5(b) and comply with all other applicable leak detection system requirements of R315-7;

(3) The owner or operator obtains a certification from a qualified chemist or engineer that, to the best of his knowledge and opinion, the design features or operating plans of the facility will prevent ignition or reaction; and

(4) The certification and the basis for it are maintained at the facility; or

(c) The surface impoundment is used solely for emergencies.

18.8 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same surface impoundment, unless they will not generate heat, fumes, fires, or explosive reactions that could damage the structural integrity of the impoundment, or otherwise threaten human health or the environment.

18.9 DESIGN REQUIREMENTS

(a) The owner or operator of each new surface impoundment unit on which construction commences after January 29, 1992, each lateral expansion of a surface impoundment unit on which construction commences after July 29, 1992, and each replacement of an existing surface impoundment unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system between such liners, and operate the leachate collection and removal system, in accordance with R315-7-18.9(c), unless exempted under R315-7-18.9(d), (e), or (f).

"Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility."

(b) The owner or operator of each unit referred to in paragraph (a) of this section shall notify the Board at least 60 days prior to receiving waste. The owner or operator of each facility submitting notice must file a part B application within six months of the receipt of the notice.

(c) The owner or operator of any replacement surface impoundment unit is exempt from R315-7-18.9(a) if:

(1) The existing unit was constructed in compliance with the design standards of Section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(d) The double liner requirement set forth in R315-7-18.9(a) may be waived by the Board for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and these wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in R315-2-9(g) with EPA Hazardous Waste Numbers D004 through D017; and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the liner is leaking. For the purposes of this paragraph the term "liner" means a liner designed, constructed, installed, and operated to prevent hazardous waste from passing into the liner at any time during the active life of the facility, or a liner designed, constructed, installed, and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, groundwater, or surface water at any time during the active life of the facility. In the case of any surface impoundment which has been exempted from the requirements of R315-7-18.9(a) on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of the impoundment the owner or operator must remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable given the specific site conditions and the nature and extent of contamination. If all contaminated soil is not removed or decontaminated, the owner or operator of the impoundment must comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action.

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR; 144.3; and

(C) The monofill is in compliance with applicable groundwater monitoring requirements for facilities with permits; or

(ii) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into groundwater or surface water at any future time.

(e) In the case of any unit in which the liner and leachate collection system has been installed pursuant to the requirements of R315-7-18.9(a) and in good faith compliance with R315-7-18.9(a) and with guidance documents governing liners and leachate collection systems under R315-7-18.9(a), no liner or leachate collection system which is different from that which was so installed pursuant to R315-7-18.9(a) will be required for the unit by the Board when issuing the first permit to the facility,

except that the Board will not be precluded from requiring installation of a new liner when the Board has reason to believe that any liner installed pursuant to the requirements of R315-7-18.9(a) is leaking.

(f) A surface impoundment shall maintain enough freeboard to prevent overtopping of the dike by overfilling, wave action, or a storm. Except as provided in R315-7-18.2(b), there shall be at least 60 centimeters, two feet, of freeboard.

(g) A freeboard level less than 60 centimeters, two feet, shall be maintained if the owner or operator obtains certification by a qualified engineer that alternate design features or operating plans will, to the best of his knowledge and opinion, prevent overtopping of the dike. The certification, along with written identification of alternate design features or operating plans preventing overtopping, shall be maintained at the facility.

(h) Surface impoundments that are newly subject to R315-7-18 due to the promulgation of additional listings or characteristics for the identification of hazardous waste must be in compliance with R315-7-18.9(a), (c) and (d) not later than 48 months after the promulgation of the additional listing or characteristic. This compliance period shall not be cut short as the result of the promulgation of land disposal prohibitions under R315-13, which incorporates by Reference 40 CFR 268, or the granting of an extension to the effective date of a prohibition pursuant to 40 CFR 268.5, within this 48-month period.

18.10 RESPONSE ACTIONS

(a) The owner or operator of surface impoundment units subject to R315-7-18.9(a) shall submit a response action plan to the Executive Secretary when submitting the proposed action leakage rate under R315-7-18.2. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in R315-7-18.10(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedence within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-7-18.10(b)(3)-(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-7-18.10(b)(3)-(5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source,

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

18.11 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a surface impoundment in accordance with the applicable requirements of R315-7-27, which incorporates by reference 40 CFR subpart BB, and R315-7-30, which incorporates by reference 40 CFR subpart CC.

R315-7-19. Waste Piles.

19.1 APPLICABILITY

The rules in this section apply to the owners and operators of facilities that treat or store hazardous waste in piles, except as provided otherwise in R315-7-8.1. Alternatively, a pile of hazardous waste may be managed as a landfill under R315-7-21.

19.2 PROTECTION FROM WIND

The owners or operators of a pile containing hazardous waste which could be subject to dispersal by wind shall cover or otherwise manage the pile so that the wind dispersal is controlled.

19.3 WASTE ANALYSIS

In addition to the waste analyses required by R315-7-9.4, owners or operators shall analyze a representative sample from each incoming shipment of waste before adding the waste to any existing pile, unless the only wastes the facility receives which are amenable to piling are compatible with each other, or the waste received is compatible with the waste in the pile to which it is to be added. The analysis conducted shall be capable of differentiating between the types of hazardous waste which are placed in piles, so that mixing of incompatible waste does not inadvertently occur. The analysis shall include a visual comparison of color and texture. The results of these analyses shall be placed in the operating record.

19.4 CONTAINMENT

If leachate or run-off from a pile is a hazardous waste, then either:

(a)(1) The pile shall be placed on an impermeable base that is compatible with the waste under the conditions of treatment or storage;

(2) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm;

(3) The owner or operator shall design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm; and

(4) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously to maintain design capacity of the system; or

(b)(1) The pile shall be protected from precipitation and run-on by some other means; and

(2) No liquids or wastes containing free liquids may be placed in the pile.

19.5 SPECIAL REQUIREMENTS FOR IGNITABLE WASTE

Ignitable waste shall not be placed in a pile unless the waste and waste pile satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, and:

(a) Addition of the waste to an existing pile results in the waste or mixture no longer meeting the definition of ignitable waste under R315-2-9(d), and complies with R315-7-9.8; or

(b) The waste is managed in such a way that it is protected from any material or conditions which may cause it to react.

19.6 REQUIREMENTS FOR REACTIVE WASTE

Reactive waste shall not be placed in a pile unless the waste and pile satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, and:

(a) Addition of the waste to an existing pile results in the waste or mixture no longer meeting the definition of reactive waste under R315-2-9(f) and complies with R315-7-9.8; or

(b) The waste is managed in such a way that it is protected from any material or condition which may cause it to react.

19.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

(a) Incompatible waste, or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same pile unless, R315-7-9.8(b) is complied with.

(b) A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments shall be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device. The purpose of this is to prevent gaseous emissions, fires, explosions, leaching or other discharge of hazardous waste or hazardous waste constituents which could result from the contact or mixing of incompatible wastes or materials.

(c) Hazardous waste shall not be piled on the same area where incompatible wastes or materials were previously piled, unless that area has been decontaminated sufficiently to ensure compliance with R315-7-9.8(b).

19.8 CLOSURE AND POST-CLOSURE CARE

(a) At closure, the owner or operator shall remove or decontaminate all waste residues, contaminated containment system components, liners, etc., contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless R315-2-3(d) applies; or

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in R315-7-19.8(a), the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he shall close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills, R315-7-21.4.

19.9 DESIGN AND OPERATING REQUIREMENTS

The owner or operator of each new waste pile on which construction commences after January 29, 1992, each lateral expansion of a waste pile unit on which construction commences after July 29, 1992, and each such replacement of an existing waste pile unit that is to commence reuse after July 29, 1992 shall install two or more liners and a leachate collection and removal system above and between such liners, and operate the leachate collection and removal systems, in accordance with R315-8-12.2(c), unless exempted under R315-8-12.2(d), (e), or

(f); and must comply with the procedures of R315-7-18.9(b). "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility".

19.10 ACTION LEAKAGE RATES

(a) The owner or operator of waste pile units subject to R315-7-19.9 shall submit a proposed action leakage rate to the Executive Secretary when submitting the notice required under R315-7-19.9. Within 60 days of receipt of the notification, the Executive Secretary will: Establish an action leakage rate, either as proposed by the owner or operator or modified using the criteria in this section; or extend the review period for up to 30 days. If no action is taken by the Executive Secretary before the original 60 or extended 90 day review periods, the action leakage rate will be approved as proposed by the owner or operator.

(b) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-7-19.9. The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(c) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly flow rate from the monitoring data obtained under R315-7-19.12, to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period.

19.11 RESPONSE ACTIONS

(a) The owner or operator of waste pile units subject to R315-7-19.9 shall submit a response action plan to the Executive Secretary when submitting the proposed action leakage rate under R315-7-19.10. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-7-19.11(b).

(b) If the flow rate into the leak determination system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedence within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipts should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-7-19.11(b)(3)-(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-7-19.11(b)(3)-(5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source,

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

19.12 MONITORING AND INSPECTION

An owner or operator required to have a leak detection system under R315-7-19.9 shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

R315-7-20. Land Treatment.

20.1 APPLICABILITY

The rules in this section apply to owners and operators of hazardous waste land treatment facilities, except as provided otherwise in R315-7-8.1.

20.2 GENERAL OPERATING REQUIREMENTS

(a) Hazardous waste shall not be placed in or on a land treatment facility unless the waste can be made less hazardous or non-hazardous by degradation, transformation, or immobilization processes occurring in or on the soil.

(b) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portions of the facility during peak discharge from at least a 25-year storm.

(c) The owner or operator shall design, construct, operate, and maintain a run-off management system capable of collecting and controlling a water volume at least equivalent to a 24-hour, 25-year storm.

(d) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(e) If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator shall manage the unit to control wind dispersal.

20.3 WASTE ANALYSIS

In addition to the waste analyses required by R315-7-9.4, before placing a hazardous waste in or on a land treatment facility, the owner or operator shall:

(a) Determine the concentration in the waste of any substances which equal or exceed the maximum concentrations contained in Table 1 of 40 CFR 261.24, that cause a waste to exhibit the Toxicity Characteristic;

(b) For any waste listed in R315-2, determine the concentration of any substances which caused the waste to be listed as a hazardous waste; and

(c) If food chain crops are grown, determine the concentrations in the waste of each of the following constituents: arsenic, cadmium, lead, and mercury, unless the owner or operator has written documented data that show that the constituent is not present;

R315-50-9, which incorporates by reference 40 CFR 261, Appendix VII, specifies the substances for which a waste is listed as a hazardous waste. As required by R315-7-9.4, the waste analysis plan shall include analyses needed to comply with R315-7-20.8 and R315-7-20.9. As required by R315-7-12.4, the owner or operator shall place the results from each waste analysis, or the documented information, in the operating record of the facility.

20.4 FOOD CHAIN CROPS

(a) An owner or operator of a hazardous waste land treatment facility on which food chain crops are being grown, or have been grown and will be grown in the future, shall notify the Board. The growth of food chain crops at a facility which has never before been used for this purpose is a significant change in process under R315-3. Owners or operators of these land treatment facilities who propose to grow food chain crops shall comply with R315-3.

(b)(1) Food chain crops shall not be grown on the treated area of a hazardous waste land treatment facility unless the owner or operator can demonstrate, based on field testing, that any arsenic, lead, mercury, or other constituents identified under R315-7-20.3(b):

(i) Will not be transferred to the food portion of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals, e.g., by grazing; or

(ii) Will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils under similar conditions in the same region.

(2) The information necessary to make the demonstration required by R315-7-20.4(b)(1) shall be kept at the facility and shall, at a minimum:

(i) Be based on tests for the specific waste and application rates being used at the facility; and

(ii) Include descriptions of crop and soil characteristics, sample selection criteria, sample size determination, analytical methods and statistical procedures.

(c) Food chain crops shall not be grown on a land treatment facility receiving waste that contains cadmium unless all requirements of R315-7-20.4(c)(1)(i) through (iii) or all requirements of R315-7-20.4(c)(2)(i) through (iv) are met.

(1)(i) The pH of the waste and soil mixture is 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentration of 2. mg/kg, dry weight, or less.

(ii) The annual application of cadmium from waste does not exceed 0.5 kilograms per hectare (kg/ha) on land use for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food chain crops, the annual cadmium application rate does not exceed:

TABLE

Time Period	Annual Cd Application
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	Rate (kg/ha)
Present to June 30, 1984	2.0
July 1, 1984 to December 31, 1986	1.25
Beginning January 1, 1987	0.5

(iii) The cumulative application of cadmium from waste does not exceed the levels in either paragraph (A) or (B) below:
(A)

Soil cation exchange capacity (meq/100g)	MAXIMUM CUMULATIVE APPLICATION (kg/ha)	
	Background soil pH less than 6.5	Background soil pH greater than 6.5
Less than 5	5	5
5-15	5	10
Greater than 15	5	20

(B) For soils with a background pH of less than 6.5, the cumulative cadmium application rate does not exceed the levels below: Provided, that the pH of the waste and soil mixture is adjusted to and maintained at 6.5 or greater whenever food chain crops are grown.

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
Less than 5	5
5 to 15	10
Greater than 15	20

(2)(i) The only food chain crop produced is animal feed.
(ii) The pH of the waste and soil mixture is 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level is maintained whenever food chain crops are grown.

(iii) There is a facility operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The facility operating plan describes the measure to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses.

(iv) Future property owners are notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food chain crops shall not be grown, except in compliance with R315-7-20.7(c)(2).

As required by R315-7-12.4, which incorporates by reference 40 CFR 265.73, if an owner or operator grows food chain crops on his land treatment facility, he shall place the information developed in this section in the operating record of the facility.

20.5 UNSATURATED ZONE, ZONE OF AERATION, MONITORING

(a) The owner or operator shall have in writing, and shall implement, an unsaturated zone monitoring plan which is designed to:

(1) Detect the vertical migration of hazardous waste and hazardous waste constituents under the active portion of the land treatment facility; and

(2) Provide information on the background concentrations of the hazardous waste and hazardous waste constituents in similar but untreated soils nearby; this background monitoring shall be conducted before or in conjunction with the monitoring required under R315-7-20.5(a)(1).

(b) The unsaturated zone monitoring plan shall include, at a minimum:

(1) Soil monitoring using soil cores; and

(2) Soil-pore water monitoring using devices such as lysimeters.

(c) To comply with R315-7-20.5(a)(1), the owner or operator shall demonstrate in his unsaturated zone monitoring plan that:

(1) The depth at which soil and soil-pore water samples are to be taken is below the depth to which the waste is incorporated into the soil;

(2) The number of soil and soil-pore water samples to be taken is based on the variability of:

(i) The hazardous waste constituents, as identified in R315-7-20.3(a) and (b), in the waste and in the soil; and

(ii) The soil type(s); and

(3) The frequency and timing of soil and soil-pore water sampling is based on the frequency, time, and rate of waste application, proximity to groundwater, and soil permeability.

(d) The owner or operator shall keep at the facility his unsaturated zone monitoring plan, and the rationale used in developing this plan.

(e) The owner or operator shall analyze the soil and soil-pore water samples for the hazardous waste constituents that were found in the waste during the waste analysis under R315-7-20.3(a) and (b).

All data and information developed by the owner or operator under this section shall be placed in the operating record of the facility.

20.6 RECORDKEEPING

The owner or operator of a land treatment facility shall keep records of the application dates, application rates, quantities, and location of each hazardous waste placed in the facility, in the operating record required in R315-7-12.4, which incorporates by reference 40 CFR 265.73.

20.7 CLOSURE AND POST-CLOSURE CARE

(a) In the closure and post-closure plan under R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120, the owner or operator shall address the following objectives and indicate how they will be achieved:

(1) Control of the migration of hazardous waste and hazardous waste constituents from the treated area into the groundwater;

(2) Control of the release of contaminated run-off from the facility into surface water;

(3) Control of the release of airborne particulate contaminants caused by wind erosion; and

(4) Compliance with R315-7-20.4 concerning the growth of food-chain crops.

(b) The owner or operator shall consider at least the following factors in addressing the closure and post-closure care objectives of R315-7-20.7(a):

(1) Type and amount of hazardous waste and hazardous waste constituents applied to the land treatment facility;

(2) The mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(3) Site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration, e.g., proximity to groundwater, surface water and drinking water sources;

(4) Climate, including amount, frequency, and pH of precipitation;

(5) Geological and soil profiles and surface and subsurface hydrology of the site, and soil characteristics, including cation exchange capacity, total organic carbon, and pH;

(6) Unsaturated zone monitoring information obtained under R315-7-20.5; and

(7) Type, concentration, and depth of migration of hazardous waste constituents in the soil as compared to their background concentrations.

(c) The owner or operator shall consider at least the following methods in addressing the closure and post-closure care objectives of R315-7-20.7(a):

(1) Removal of contaminated soils;

(2) Placement of a final cover, considering:

(i) Functions of the cover, e.g., infiltration control, erosion and run-off control and wind erosion control; and

(ii) Characteristics of the cover, including material, final surface contours, thickness, porosity and permeability, slope, length of run of slope, and type of vegetation on the cover; and

(3) Monitoring of groundwater.

(d) In addition to the requirements of R315-7-14 which incorporates by reference 40 CFR 265.110 - 265.120, during the closure period the owner or operator of a land treatment facility shall:

(1) Continue unsaturated zone monitoring in a manner and frequency specified in the closure plan, except that soil pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone;

(2) Maintain the run-on control system required under R315-7-20.2(b);

(3) Maintain the run-off management system required under R315-7-20.2(c); and

(4) Control wind dispersal of particulate matter which may be subject to wind dispersal.

(e) For the purpose of complying with R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120, when closure is completed the owner or operator may submit to the Board, certification both by the owner or operator and by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specification in the approved closure plan.

(f) In addition to the requirement of R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120, during the post-closure care period the owner or operator of a land treatment unit shall:

(1) Continue soil-core monitoring by collecting and analyzing samples in a manner and frequency specified in the post-closure plan;

(2) Restrict access to the unit as appropriate for its post-closure use;

(3) Ensure that growth of food chain crops complies with R315-7-20.4; and

(4) Control wind dispersal of hazardous waste.

20.8 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

The owner or operator shall not apply ignitable or reactive waste to the treatment zone unless the waste and treatment zone meet all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, and:

(a) The waste is immediately incorporated into the soil so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f) and

(2) R315-7-9.8(b) is complied with; or

(b) That waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

20.9 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same land treatment area, unless R315-7-9.8(b) is complied with.

R315-7-21. Landfills.

21.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as R315-7-8.1 provides otherwise. A waste pile used as a disposal facility is a landfill and is governed by this section.

21.2 DESIGN AND OPERATING REQUIREMENTS

(a) The owner or operator of each new landfill unit on which construction commences after January 29, 1992, each lateral expansion of a landfill unit on which construction commences after July 29, 1992, and each replacement of an existing landfill unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system above and between such liners, and operate the leachate collection and removal systems, in accordance with R315-8-14.2(d), (e), or (f). "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility".

(b) The owner or operator of each unit referred to in R315-7-21.2(a) shall notify the Executive Secretary at least 60 days prior to receiving waste. The owner or operator of each facility submitting notice shall file a part B application within six months of the receipt of the notice.

(c) The owner or operator of any replacement landfill unit is exempt from R315-7-21.2(a) if:

(1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(d) The double liner requirement set forth in R315-7-21.2(a) may be waived by the Board for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and the waste does not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in R315-2-9(g), with EPA Hazardous Waste Number D004 through D017; and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the liner is leaking;

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR 144.3; and

(C) The monofill is in compliance with applicable groundwater monitoring requirements for facilities with permits; or

(ii) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituents into groundwater or surface water at any future time.

(e) In the case of any unit in which the liner and leachate collection system has been installed pursuant to the requirements of R315-7-21.2(a) and in good faith compliance with R315-7-21.2(a) and with guidance documents governing liners and leachate collection systems under R315-7-21.2(a), no liner or leachate collection system which is different from that which was so installed pursuant to R315-7-21.2(a) will be required for the unit by the Board when issuing the first permit to the facility, except that the Board will not be precluded from requiring installation of a new liner when the Board has reason to believe that any liner installed pursuant to the requirements of R315-7-21.10(a) is leaking.

(f) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.

(g) The owner or operator shall design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(h) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(i) The owner or operator of a landfill containing hazardous waste which is subject to dispersal by wind shall cover or otherwise manage the landfill so that wind dispersal of the hazardous waste is controlled.

As required by R315-7-9.4, which incorporates by reference 40 CFR 265.13, the waste analysis plan shall include analysis needed to comply with R315-7-21.5 and R315-7-21.6. As required by R315-7-12.4, which incorporates by reference 40 CFR 265.73, the owner or operator shall place the results of these analyses in the operating record.

21.3 SURVEYING AND RECORDKEEPING

The owner or operator of a landfill shall maintain the following items in the operating record required in R315-7-12.4, which incorporates by reference 40 CFR 265.73:

(a) On a map, the exact location and dimension, including depth, of each cell with respect to permanently surveyed benchmarks; and

(b) The contents of each cell and the approximate location of each hazardous waste type within each cell.

21.4 CLOSURE AND POST-CLOSURE CARE

(a) At final closure of the landfill or upon closure of any cell, the owner or operator shall cover the landfill or cell with a final cover designed and constructed to:

(1) Provide long-term minimization of migration of liquids through the closed landfill;

(2) Function with minimum maintenance;

(3) Promote drainage and minimize erosion or abrasion of the cover;

(4) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(5) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(b) After final closure, the owner or operator shall comply with all post-closure requirements contained in R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120, including maintenance and monitoring throughout the post-closure care period. The owner or operator shall:

(1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events.

(2) Maintain and monitor the leak detection system in accordance with R315-8-14.2(c)(3)(iv) and (4) and R315-7-21.12(b), and comply with all other applicable leak detection system requirements of R315-7;

(3) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of R315-7-13;

(4) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

(5) Protect and maintain surveyed benchmarks used in complying with R315-7-21.3.

21.5 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

(a) Except as provided in R315-7-21.5(b) and in 7.21.9, ignitable or reactive waste shall not be placed in a landfill, unless the waste and landfill meet all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, and:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f).

(2) Section R315-7-9.8 is complied with.

(b) Except for prohibited wastes which remain subject to treatment standards in R315-13, which incorporates by reference 40 CFR 268 subpart D, ignitable wastes in containers may be landfilled without meeting the requirements of R315-7-21.5(a), provided that the wastes are disposed of in a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes shall be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; shall be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and shall not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

21.6 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same landfill cell, unless R315-7-9.8(b) is complied with.

21.7 SPECIAL REQUIREMENTS FOR BULK AND CONTAINERIZED LIQUIDS

(a) Bulk or non-containerized liquid waste or waste containing free liquids may be placed in a landfill prior to May 8, 1985, only if;

(1) The landfill has a liner and leachate collection and removal system that meets the requirements of R315-8-14.2(a); or

(2) Before disposal, the liquid waste or waste containing free liquids is treated or stabilized chemically or physically, e.g., by mixing with a sorbent solid, so that free liquids are no longer present.

(b) Effective May 8, 1985, the placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids, whether or not sorbents have been added, in any landfill is prohibited.

(c) Containers holding free liquids must not be placed in a landfill unless:

- (1) All free-standing liquid
- (i) has been removed by decanting, or other methods,
- (ii) has been mixed with sorbent or solidified so that free-standing liquid is no longer observed; or
- (iii) had been otherwise eliminated; or
- (2) The container is very small, such as an ampule; or
- (3) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or
- (4) The container is a lab pack as defined in R315-7-21.8 and is disposed of in accordance with R315-7-21.9.

(d) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095, Paint Filter Liquids Test as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." EPA Publication No. SW-846, as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(e) The date of compliance with R315-7-21.7(a) is November 19, 1981. The date for compliance with R315-7-21.7(c) is March 22, 1982.

(f) Sorbents used to treat free liquids to be disposed of in landfills must be nonbiodegradable. Nonbiodegradable sorbents are: materials listed or described in R315-7-21.7(f)(1); materials that pass one of the tests in R315-7-21.7(f)(2); or materials that are determined by EPA to be nonbiodegradable through the R315-2-16, which incorporates by reference 40 CFR 260.22, petition process.

(1) Nonbiodegradable sorbents.

(i) Inorganic minerals, other inorganic materials, and elemental carbon, e.g., aluminosilicates, clays, smectites, Fuller's earth, bentonite, calcium bentonite, montmorillonite, calcined montmorillonite, kaolinite, micas (illite), vermiculites, zeolites; calcium carbonate (organic free limestone); oxides/hydroxides, alumina, lime, silica (sand), diatomaceous earth; perlite (volcanic glass); expanded volcanic rock; volcanic ash; cement kiln dust; fly ash; rice hull ash; activated charcoal/activated carbon; or

(ii) High molecular weight synthetic polymers, e.g., polyethylene, high density polyethylene (HDPE), polypropylene, polystyrene, polyurethane, polyacrylate, polynorbornene, polysobutylene, polyisobutylene, ground synthetic rubber, cross-linked allylstyrene and tertiary butyl copolymers. This does not include polymers derived from biological material or polymers specifically designed to be degradable; or

(iii) Mixtures of these nonbiodegradable materials.

(2) Tests for nonbiodegradable sorbents.

(i) The sorbent material is determined to be nonbiodegradable under ASTM Method G21-70 (1984a)-Standard Practice for Determining Resistance of Synthetic Polymer Materials to Fungi; or

(ii) The sorbent material is determined to be nonbiodegradable under ASTM Method G22-76 (1984b)-

Standard Practice for Determining Resistance of Plastics to Bacteria.

(iii) The sorbent material is determined to be non-biodegradable under OECD test 301B, CO₂ Evolution, Modified Sturm Test.

(g) Effective November 8, 1985, the placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator of the landfill demonstrates to the Board, or the Board determines that;

(1) The only reasonably available alternative to the placement in the landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains, or may reasonably be anticipated to contain hazardous waste; and

(2) Placement in such owner or operator's landfill will not present a risk of contamination of any underground source of drinking water, as that term is defined in 40 CFR 144.3.

21.8 SPECIAL REQUIREMENTS FOR CONTAINERS

Unless they are very small, such as an ampule, containers must be either:

(a) At least 90 percent full when placed in the landfill; or

(b) Crushed, shredded, or similarly reduced in volume to the maximum practical extent before burial in the landfill.

21.9 DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS, LAB PACKS

Small containers of hazardous waste in overpacked drums, lab packs may be placed in a landfill if the following requirements are met:

(a) Hazardous waste shall be packaged in non-leaking inside containers. The inside containers shall be of a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the waste held therein. Inside containers shall be tightly and securely sealed. The inside containers shall be of the size and type specified in the Department of Transportation (DOT) hazardous materials regulations, 49 CFR parts 173, 178, and 179, if those regulations specify particular inside container for the waste.

(b) The inside container shall be overpacked in an open head DOT specification metal shipping container, 49 CFR parts 178 and 179, of no more than 416-liter, 110 gallon, capacity and surrounded by, at a minimum, a sufficient quantity of sorbent material, determined to be nonbiodegradable in accordance with R315-7-21.7(f), to completely sorb all of the liquid contents of the inside containers. The metal outer container shall be full after it has been packed with inside containers and sorbent material.

(c) The sorbent material used shall not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers, in accordance with R315-7-9.8(b).

(d) Incompatible wastes, as defined in R315-1 shall not be placed in the same outside container.

(e) Reactive waste, other than cyanide or sulfide-bearing waste as defined in R315-2-9(f)(v) shall be treated or rendered non-reactive prior to packaging in accordance with R315-7-21.9(a) through (d). Cyanide and sulfide-bearing reactive waste may be packaged in accordance with R315-7-21.9(a) through (d) without first being treated or rendered non-reactive.

(f) Such disposal is in compliance with the requirements of R315-13, which incorporates by reference 40 CFR 268. Persons who incinerate lab packs according to the requirements in 40

CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. The fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in R315-7-21.9(b).

21.10 ACTION LEAKAGE RATE

(a) The owner or operator of landfill units subject to R315-7-21.2(a) shall submit a proposed action leakage rate to the Executive Secretary when submitting the notice required under R315-7-21.2(b). Within 60 days of receipt of the notification, the Executive Secretary will: Establish an action leakage rate, either as proposed by the owner or operator or modified using the criteria in this section; or extend the review period for up to 30 days. If no action is taken by the Executive Secretary before the original 60 or extended 90 day review periods, the action leakage rate will be approved as proposed by the owner or operator.

(b) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-7-21.2(a). The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(c) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-7-21.12 to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and monthly during the post-closure care period when monthly monitoring is required under R315-7-21.12(b).

21.11 RESPONSE ACTIONS

(a) The owner or operator of landfill units subject to R315-7-21.2(a) shall submit a response action plan to the Executive Secretary when submitting the proposed action leakage rate under R315-7-21.10. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-7-21.11(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedence within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-7-21.11(b)(3)-(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-7-21.11(b)(3)-(5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source,

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

21.12 MONITORING AND INSPECTION

(a) An owner or operator required to have a leak detection system under R315-7-21.2(a) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(b) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps shall be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps shall be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator shall return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(c) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump. The timing for submission and approval of the proposed "pump operating level" will be in accordance with R315-7-21.10(a).

R315-7-22. Incinerators.

22.1 INCINERATORS APPLICABILITY

(a) R315-7-22 applies to owners or operators of facilities that incinerate hazardous waste, except as R315-7-8.1 provides otherwise.

(b) Integration of the MACT standards.

(1) Except as provided by R315-7-22.1(b)(2) and (3), the standards of R315-7 no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE, by conducting a comprehensive performance test and submitting to the Executive Secretary a Notification of Compliance under R307-214-2, which incorporates by reference 40 CFR

63.1207(j) and 63.1210(b), documenting compliance with the requirements of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE.

(2) The following requirements continue to apply even where the owner or operator has demonstrated compliance with the MACT requirements of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE: R315-7-22.5 (closure) and the applicable requirements of R315-7-8 through R315-7-15, R315-7-27, and R315-7-30.

(3) R315-7-22.2 generally prohibiting burning of hazardous waste during startup and shutdown remains in effect if you elect to comply with R315-3-9(b)(1)(i) to minimize emissions of toxic compounds from startup and shutdown.

(c) Owners and operators of incinerators burning hazardous waste are exempt from all of the requirements of R315-7-22, except R315-7-22.5, Closure, provided that the owner or operator has documented, in writing, that the waste would not reasonably be expected to contain any of the hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII, and the documentation is retained at the facility, if the waste to be burned is:

(1) Listed as a hazardous waste in R315-2-10 and R315-2-11, solely because it is ignitable, Hazard Code I, corrosive, Hazard Code C, or both; or

(2) Listed as a hazardous waste in R315-2-10 and R315-2-11, solely because it is reactive, Hazard Code R, for characteristics other than those listed in R315-2-9(b), and will not be burned when other hazardous wastes are present in the combustion zone; or

(3) A hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous wastes under R315-2-9, or

(4) A hazardous waste solely because it possesses the reactivity characteristics described by R315-2-9(f)(i), (ii), (iii), (vi), (vii), or (viii), and will not be burned when other hazardous wastes are present in the combustion zone.

22.2 GENERAL OPERATING REQUIREMENTS

During start-up and shut-down of an incinerator, the owner or operator shall not feed hazardous waste unless the incinerator is at steady state, normal, conditions of operation, including steady state operating temperature and air flow.

22.3 WASTE ANALYSIS

In addition to the waste analyses required by R315-7-9.4, which incorporates by reference 40 CFR 265.13, the owner or operator shall sufficiently analyze any waste which he has not previously burned in his incinerator to enable him to establish steady state, normal, operating conditions, including waste and auxiliary fuel feed and air flow, and to determine the type of pollutants which might be emitted. At a minimum, the analysis shall determine:

(a) Heating value of the waste;

(b) Halogen content and sulfur content in the waste; and

(c) Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present.

As required by R315-7-12.4, which incorporates by reference 40 CFR 265.73, the owner or operator shall place the results from each waste analysis, or the documented information, in the operating record of the facility.

22.4 MONITORING AND INSPECTIONS

The owner or operator shall conduct, at a minimum, the following monitoring and inspections when incinerating hazardous waste:

(a) Existing instruments which relate to combustion and emission control shall be monitored at least every 15 minutes. Appropriate corrections to maintain steady state combustion conditions shall be made immediately either automatically or by the operator. Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH, and relevant level controls.

(b) The complete incinerator and associated equipment, pumps, valves, conveyors, pipes, etc., shall be inspected at least daily for leaks, spills and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

22.5 CLOSURE

At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues, including but not limited to ash, scrubber waters, and scrubber sludges from the incinerator. At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with R315-2-1, that any solid waste removed from his incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of these rules.

22.6 INTERIM STATUS INCINERATORS BURNING PARTICULAR HAZARDOUS WASTES

(a) Owners or operators of incinerators subject to R315-7-22 may burn EPA Hazardous Wastes F020, F021, F022, F023, F026, or F027 if they receive a certification from the Board that they can meet the performance standards of R315-8-15 when they burn these wastes.

(b) The following standards and procedures will be used in determining whether to certify an incinerator:

(1) The owner or operator will submit an application to the Board containing applicable information in R315-3 demonstrating that the incinerator can meet the performance standards in R315-8-15 when they burn these wastes.

(2) The Board will issue a tentative decision as to whether the incinerator can meet the performance standards in R315-8-15. Notification of this tentative decision will be provided by newspaper advertisement and radio broadcast in the jurisdiction where the incinerator is located. The Board will accept comment on the tentative decision for 60 days. The Board also may hold a public hearing upon request or at their discretion.

(3) After the close of the public comment period, the Board will issue a decision whether or not to certify the incinerator.

R315-7-23. Thermal Treatment.

23.1 THERMAL TREATMENT

The rules in this section apply to owners or operators of facilities that thermally treat hazardous waste in devices other than enclosed devices using controlled flame combustion, except as R315-7-8.1 provides otherwise. Thermal treatment in enclosed devices using controlled flame combustion is subject to the requirements of R315-7-22 if the unit is an incinerator, and R315-14-7, which incorporates by reference 40 CFR 266, subpart H, if the unit is a boiler or an industrial furnace as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10.

23.2 GENERAL OPERATING REQUIREMENTS

Before adding hazardous waste, the owner or operator shall bring his thermal treatment process to steady state, normal, conditions of operation--including steady state operating temperature--using auxiliary fuel or other means, unless the process is a non-continuous, batch, thermal treatment process which requires a complete thermal cycle to treat a discrete quantity of hazardous waste.

23.3 WASTE ANALYSIS

In addition to the waste analyses required by R315-7-9.4, which incorporates by reference 40 CFR 265.13, the owner or operator shall sufficiently analyze any waste which he has not previously treated in his thermal treatment process to enable him to establish steady state, normal, or in other appropriate, for a non-continuous process, operating conditions, including waste and auxiliary fuel feed, and to determine the type of pollutants which might be emitted. At a minimum, the analysis shall determine:

- (a) Heating value of the waste;
- (b) Halogen content and sulfur content in the waste; and
- (c) Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present. The owner or operator shall place the results from each waste analysis, or the documented information, in the operating record of the facility.

23.4 MONITORING AND INSPECTIONS

The owner or operator shall conduct, at a minimum, the following monitoring and inspections when thermally treating hazardous waste:

- (a) Existing instruments which relate to temperature and emission control, if an emission control device is present, shall be monitored at least every 15 minutes. Appropriate corrections to maintain steady state or other appropriate thermal treatment conditions shall be made immediately either automatically or by the operator. Instruments which relate to temperature and emission control would normally include those measuring waste feed, auxiliary fuel feed, treatment process temperature, and relevant process flow and level controls.
- (b) The stack plume, emissions, where present, shall be observed visually at least hourly for normal appearance, color and opacity. The operator shall immediately make any indicated operating corrections necessary to return any visible emissions to their normal appearance.
- (c) The complete thermal treatment process and associated equipment, pumps, valves, conveyor, pipes, etc., shall be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

23.5 CLOSURE

At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues, including, but not limited to, ash from thermal treatment process or equipment.

At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with R315-2-1, that any solid waste removed from his thermal treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of these rules.

23.6 OPEN BURNING; WASTE EXPLOSIVES

Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste

explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound, 0.33 kilometers/second at sea level. Owners or operators choosing to open burn or detonate waste explosives shall do so in accordance with the following table and in a manner that does not threaten human health or the environment:

TABLE

Pounds of Waste Explosives or Propellants	Minimum Distance from Open Burning or Detonation to the Property of Others
0 - 100	204 meters (670 feet)
101 - 1,000	380 meters (1,250 feet)
1,001 - 10,000	530 meters (1,730 feet)
10,001 - 30,000	690 meters (2,260 feet)

23.7 INTERIM STATUS THERMAL TREATMENT DEVICES BURNING PARTICULAR HAZARDOUS WASTE

(a) Owners or operators of thermal treatment devices subject to R315-23 may burn EPA Hazardous Wastes F020, F021, F022, F023, F026, or F027 if they receive a certification from the Board that they can meet the performance standards of R315-8-15 when they burn these wastes.

(b) The following standards and procedures will be used in determining whether to certify a thermal treatment unit:

- (1) The owner or operator will submit an application to the Board containing the applicable information in R315-3 demonstrating that the thermal treatment unit can meet the performance standard in R315-8-15 when they burn these wastes.
- (2) The Board will issue a tentative decision as to whether the thermal treatment unit can meet the performance standards in R315-8-15. Notification of this tentative decision will be provided by newspaper advertisement and radio broadcast in the jurisdiction where the thermal treatment device is located. The Board will accept comment on the tentative decision for 60 days. The Board also may hold a public hearing upon request or at their discretion.
- (3) After the close of the public comment period, the Board will issue a decision whether or not to certify the thermal treatment unit.

R315-7-24. Chemical, Physical, and Biological Treatment.

24.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities which treat hazardous wastes by chemical, physical, or biological methods in other than tanks, surface impoundments, and land treatment facilities, except as R315-7-8.1 provides otherwise. Chemical, physical, and biological treatment of hazardous waste in tanks, surface impoundments, and land treatment facilities shall be conducted in accordance with R315-7-17, which incorporates by reference 40 CFR 265.190 - 265.201, R315-7-18, and R315-7-20, respectively.

24.2 GENERAL OPERATING REQUIREMENTS

- (a) Chemical, physical, or biological treatment of hazardous waste shall comply with R315-7-9.8(b).
- (b) Hazardous wastes or treatment reagents shall not be placed in the treatment process or equipment if they could cause

the treatment process to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(c) Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment shall be equipped with a means to stop this inflow, e.g., a waste feed cut-off system or bypass system to a standby containment device. These systems are intended to be used in the event of a malfunction in the treatment process or equipment.

24.3 WASTE ANALYSIS AND TRIAL TESTS

(a) In addition to the waste analysis required by R315-7-9.4, which incorporates by reference 40 CFR 265.13, whenever:

(1) A hazardous waste which is substantially different from waste previously treated in a treatment process or equipment at the facility is to be treated in that process or equipment, or

(2) A substantially different process than any previously used at the facility is to be used to chemically treat hazardous waste;

The owner or operator shall, before treating the different waste or using the different process or equipment:

(i) Conduct waste analyses and trial treatment tests, e.g., bench scale or pilot plant scale tests; or

(ii) Obtain written, documented information on similar treatment of similar waste under similar operating conditions; to show that this proposed treatment will meet all applicable requirements of R315-7-24.2(a) and (b).

The owner or operator shall place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.

24.4 INSPECTIONS

The owner or operator of a treatment facility shall inspect, where present:

(a) Discharge control and safety equipment, e.g., waste feed cut-off systems, bypass systems, drainage systems, and pressure relief systems, at least once each operating day, to ensure that it is in good working order;

(b) Data gathered from monitoring equipment, e.g., pressure and temperature gauges, at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design.

(c) The construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams, and

(d) The construction materials of, and the area immediately surrounding, discharge confinement structures, e.g., dikes, at least weekly, to detect erosion or obvious signs of leakage, e.g., wet spots or dead vegetation.

24.5 CLOSURE

At closure, all hazardous waste and hazardous waste residues shall be removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures. At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with R315-2-1, that any solid waste removed from his treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of these rules.

24.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

(a) Ignitable or reactive waste shall not be placed in a treatment process or equipment unless:

(1) The waste is treated, rendered, or mixed before or immediately after placement in the treatment process or equipment so that;

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f), and

(ii) R315-7-9.8(b) is complied with; or

(2) The waste is treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react.

24.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

(a) Incompatible wastes, or incompatible wastes and materials, see 40 CFR 265, Appendix V for examples, shall not be placed in the same treatment process or equipment, unless R315-7-9.8(b) is complied with.

(b) Hazardous waste shall not be placed in unwashed treatment equipment which previously held an incompatible waste or material, unless R315-7-9.8(b) is complied with.

R315-7-25. Underground Injection.

25.1 APPLICABILITY

Except as R315-7-8.1 provides otherwise:

(a) The owner or operator of a facility which disposes of hazardous waste by underground injection is excluded from the requirements of R315-7-14, which incorporates by reference 40 CFR 265.110 - 265.120 and R315-7-15, which incorporates by reference 40 CFR 265.140 - 265.150.

(b) The requirements of this section apply to owners and operators of wells used to dispose of hazardous waste which are classified as Class I under 40 CFR 144.6(a) and which are classified as Class IV under 40 CFR 144.6(d).

R315-7-26. Air Emission Standards for Process Vents.

The requirements of 40 CFR subpart AA sections 265.1030 through 265.1035, 1997 ed., as amended by 62 FR 64636, December 8, 1997, are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator."

R315-7-27. Air Emission Standards for Equipment Leaks.

The requirements of 40 CFR subpart BB sections 265.1050 through 265.1064, 1997 ed., as amended by 62 FR 64636, December 8, 1997, are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator."

R315-7-28. Drip Pads.

The requirements of 40 CFR subpart W sections 265.440 through 265.445, 1996 ed., are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator".

(2) Add, following December 6, 1990, in 40 CFR 264.570(a), "for all HSWA drip pads or January 31, 1992 for all non-HSWA drip pads."

(3) Add, following December 24, 1992, in 40 CFR 570(a), "for all HSWA drip pads or July 30, 1993 for all non-HSWA drip pads."

R315-7-29. Containment Buildings.

The requirements of subpart DD sections 265.1100 through 265.1102, as found in 57 FR 37194, August 18, 1992, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

R315-7-30. Air Emission Standards for Tanks, Surface Impoundments, and Containers.

The requirements as found in 40 CFR subpart CC, sections 265.1080 through 265.1091, 1998 ed., as amended by as amended by 64 FR 3382, January 21, 1999, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

KEY: hazardous waste

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19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.
R315-8. Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

R315-8-1. Purpose, Scope and Applicability.

(a) The purpose of R315-8 is to establish minimum State of Utah standards which define the acceptable management of hazardous waste.

(b) The standards in R315-8 apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste, except as specifically provided otherwise in R315-8 or R315-2.

(c) The requirements of R315-8 apply to a person disposing of hazardous waste by means of underground injection subject to a permit issued under the Underground Injection Control (UIC) program approved or promulgated under the Safe Drinking Water Act only to the extent they are required by R315-3. R315-8 applies to the above-ground treatment or storage of hazardous waste before it is injected underground.

(d) The requirements of R315-8 apply to the owner or operator of a POTW which treats, stores, or disposes of hazardous waste only to the extent they are included in a RCRA permit by rule granted to such a person under R315-3.

(e) The requirements of R315-8 do not apply to:

(1) The owner or operator of a state approved facility managing municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under R315-2-5, conditionally exempt small quantity generator exemption;

(2) A generator accumulating waste on-site in compliance with R315-5-3.34, which incorporates by reference 40 CFR 262.34;

(3) A farmer disposing of waste pesticides from his own use in compliance with R315-5-7;

(4) The owner or operator of a totally enclosed treatment facility. A totally enclosed treatment facility is a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment;

(5) A transporter storing manifested shipments of hazardous waste in containers meeting the requirements of R315-5-3.30 at a transfer facility for a period of ten days or less;

(6)(i) Except as provided in R315-8-1(e)(6)(ii), a person engaged in treatment or containment activities during immediate response to any of the following situations:

(A) A discharge of a hazardous waste;

(B) An imminent and substantial threat of a discharge of hazardous waste; and

(C) A discharge of a material which, when discharged, becomes a hazardous waste.

(ii) An owner or operator of a facility otherwise regulated by R315-8 shall comply with all applicable requirements of R315-8-3 and R315-8-4.

(iii) Any person who is covered by R315-8-1(e)(6)(i), and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of R315-8 and R315-3 for those activities.

(7) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, provided that if the owner or operator is diluting hazardous ignitable (D001)

wastes, other than the D001 High TOC Subcategory defined in R315-13, which incorporates by reference 40 CFR 268.40, or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator shall comply with the requirements set out in R315-8-2.8(b);

(8) The addition of absorbent material to waste in a container, as defined in R315-1, or the addition of waste to absorbent material in a container, provided that these actions occur at the time waste is first placed in the container; and R315-8-2.8(b), R315-8-9.2, and R315-8-9.3 are complied with;

(9) The owner or operator of a facility managing recyclable materials described in R315-2-6, which incorporates by reference 40 CFR 261.6, except to the extent that they are referred to in R315-15 or R315-14-2, which incorporates by reference 40 CFR 266 subpart C, R315-14-5, which incorporates by reference 40 CFR 266 subpart F, and R315-14-6, which incorporates by reference 40 CFR 266 subpart G; and

(10) Universal waste handlers and universal waste transporters (as defined in R315-16-1.9), handling the wastes listed below. These handlers are subject to regulation under R315-16, when handling the below listed universal wastes:

(i) Batteries as described in R315-16-1.2;

(ii) Pesticides as described in R315-16-1.3;

(iii) Mercury thermostats as described in R315-16-1.4; and

(iv) Mercury lamps as described in R315-16-1.5.

(f) The requirements of this rule apply to owners or operators of all facilities which treat, store, or dispose of hazardous waste referred to in R315-13, which incorporates by reference 40 CFR 268.

(g) The requirements of R315-8-2 through 8-4 and R315-8-6.12 do not apply to remediation waste management sites. (However, some remediation waste management sites may be a part of a facility that is subject to a traditional hazardous waste permit because the facility is also treating, storing or disposing of hazardous wastes that are not remediation wastes. In these cases, R315-8-2 through 8-4 and R315-8-6.12 do apply to the facility subject to the traditional hazardous waste permit). Instead of the requirements of R315-8-2 through 8-4, owners or operators of remediation waste management sites must:

(1) Obtain an EPA identification number by applying to the Division of Solid and Hazardous Waste using EPA Form 8700-12;

(2) Obtain a detailed chemical and physical analysis of a representative sample of the hazardous remediation waste to be managed at the site. At a minimum, the analysis must contain all of the information which must be known to treat, store, or dispose of the waste according to R315-13, which incorporates by reference 40 CFR 268, and R315-8, and must be kept accurate and up to date;

(3) Prevent people who are unaware of the danger from entering, and minimize the possibility for unauthorized people or livestock to enter onto the active portion of the remediation waste management site, unless the owner or operator can demonstrate to the Executive Secretary that:

(i) Physical contact with the waste, structures, or equipment within the active portion of the remediation waste management site will not injure people or livestock who may enter the active portion of the remediation waste management site; and

(ii) Disturbance of the waste or equipment by people or livestock who enter onto the active portion of the remediation

waste management site, will not cause a violation of the requirements of R315-8;

(4) Inspect the remediation waste management site for malfunctions, deterioration, operator errors, and discharges that may be causing, or may lead to, a release of hazardous waste constituents to the environment, or a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment, and must remedy the problem before it leads to a human health or environmental hazard. Where a hazard is imminent or has already occurred, the owner/operator must take remedial action immediately;

(5) Provide personnel with classroom or on-the-job training on how to perform their duties in a way that ensures the remediation waste management site complies with the requirements of R315-8, and on how to respond effectively to emergencies;

(6) Take precautions to prevent accidental ignition or reaction of ignitable or reactive waste, and prevent threats to human health and the environment from ignitable, reactive and incompatible waste;

(7) For remediation waste management sites subject to regulation under R315-8-9 through 8-15, and R315-8-16, which incorporates by reference 40 CFR 264.600 - 603, the owner/operator must design, construct, operate, and maintain a unit within a 100-year floodplain to prevent washout of any hazardous waste by a 100-year flood, unless the owner/operator can meet the demonstration of R315-8-2.9(b);

(8) Not place any non-containerized or bulk liquid hazardous waste in any salt dome formation, salt bed formation, underground mine or cave;

(9) Develop and maintain a construction quality assurance program for all surface impoundments, waste piles and landfill units that are required to comply with R315-8-11.2(c) and (d), R315-8-12.2(c) and (d), and R315-8-14.2(c) and (d) at the remediation waste management site, according to the requirements of R315-8-2.10;

(10) Develop and maintain procedures to prevent accidents and a contingency and emergency plan to control accidents that occur. These procedures must address proper design, construction, maintenance, and operation of remediation waste management units at the site. The goal of the plan must be to minimize the possibility of, and the hazards from a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. The plan must explain specifically how to treat, store, and dispose of the hazardous remediation waste in question, and must be implemented immediately whenever a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment;

(11) Designate at least one employee, either on the facility premises or on call (that is, available to respond to an emergency by reaching the facility quickly), to coordinate all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan;

(12) Develop, maintain and implement a plan to meet the requirements in R315-8-1(g)(2) through (g)(6) and R315-8-1(g)(9) through (g)(10); and

(13) Maintain records documenting compliance with R315-8-1(g)(1) through (g)(12).

1.1 RELATIONSHIP TO INTERIM STATUS STANDARDS

A facility owner or operator who has fully complied with the requirements for interim status--as defined in section 3005(e) of the Federal RCRA Act and regulations under R315-3-7.1 shall comply with the regulations specified in R315-7 in lieu of R315-8, until final administrative disposition of his permit application is made, except as provided under R315-8-21, which incorporates by reference 40 CFR 264.552 and 264.553.

R315-8-2. General Facility Standards.

2.1 APPLICABILITY

(a) The rules in this section apply to the owners or operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1(e).

(b) R315-8-2.9(b) applies only to facilities subject to regulation under R315-8-9 through R315-8-15 and R315-8-16, which incorporates by reference 40 CFR 264.600 - 264.603.

2.2 IDENTIFICATION NUMBER

Every facility owner or operator shall obtain an EPA identification number by applying to the Executive Secretary using EPA form 8700-12. Information on obtaining this number can be acquired by contacting the Utah Division of Solid and Hazardous Waste.

2.3 REQUIRED NOTICES

(a)(1) An owner or operator of a facility that has arranged to receive hazardous waste from a foreign source shall notify the Board in writing at least four weeks in advance of the expected date of arrival of these shipments at the facility. A notice of subsequent shipments of the same waste from the same foreign source is not required.

(2) The owner or operator of a recovery facility that has arranged to receive hazardous waste subject to R315-5-8, which incorporates by reference 40 CFR 262, subpart H, shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Division of Solid and Hazardous Waste, P.O. Box 144880, Salt Lake City, Utah, 84114-4880; Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to the competent authorities of all other concerned countries within three working days of receipt of the shipment. The original of the signed tracking document shall be maintained at the facility for at least three years.

(b) An owner or operator of a facility that receives hazardous waste from off-site, except when the owner or operator is also the generator, shall inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. A copy of this written notice shall be retained by the owner or operator as part of the operating record of waste received.

(c) Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator shall notify the new owner or operator in writing of the requirements of R315-8 and R315-3. An owner's or operator's failure to notify the new owner or operator of the requirements of R315-8 in no way

relieves the new owner or operator of his obligation to comply with all applicable requirements.

2.4 GENERAL WASTE ANALYSIS

The requirements as found in 40 CFR 264.13, 1996 ed., are adopted and incorporated by reference.

2.5 SECURITY

(a) A facility owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, unless he can demonstrate to the Board that:

(1) Physical contact with the waste structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and

(2) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of R315-8-2.5.

An owner or operator who wishes to make the demonstration referred to above shall do so with the part B permit application.

(b) Unless the owner or operator has made a successful demonstration under R315-8-2.5(a)(1) and (a)(2), a facility shall have:

(1) A 24-hour surveillance system, e.g., television monitoring or surveillance by guards or facility personnel, which continuously monitors and controls entry onto the active portion of the facility; or

(2)(i) An artificial or natural barrier, e.g., a fence in good repair or a fence combined with a cliff, which completely surrounds the active portion of the facility; and

(ii) A means to control entry at all times, through gates or other entrances to the active portion of the facility, e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility. The requirements of R315-8-2.5(b) are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of R315-8-2.5(b)(1) or (2).

(c) Unless the owner or operator has made a successful demonstration under R315-8-2.5(a)(1) and (a)(2), a sign with the legend, "Danger - Unauthorized Personnel Keep Out", shall be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to the active portion. The legend shall be written in English and in any other language predominant in the area surrounding the facility and shall be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger - Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion is potentially dangerous. Owners or operators are encouraged to also describe in the sign the type of hazard, e.g., hazardous waste, flammable wastes, etc. contained within the active portion of the facility. See R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, for discussion of security requirements during the post-closure care period.

2.6 GENERAL INSPECTION REQUIREMENTS

(a) Facility owners or operators shall inspect their facilities for malfunctions and deterioration, operator errors, and discharges, which may be causing or may lead to release of

hazardous waste constituents to the environment or pose a threat to human health. These inspections shall be conducted frequently enough to identify problems in time to take corrective action before they harm human health or the environment.

(b)(1) Facility owners or operators shall develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment, such as dikes and sump pumps, that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) The schedule shall be kept at the facility.

(3) The schedule shall identify the types of problems, e.g., malfunctions or deterioration, which are to be looked for during the inspection, for example, inoperative sump pump, leaking fitting, eroding dike, etc.

(4) The frequency of the inspection may vary for the items on the schedule. However, the frequency should be based on the rate of deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, malfunction, or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when they are in use. At a minimum, the inspection schedule shall include the items and frequencies called for in R315-8-9.5, R315-8-10, which incorporates by reference 40 CFR 264.190 - 264.199, R315-8-11.3, R315-8-12.3, R315-8-13.6, R315-8-14.3, R315-8-15.7, R315-8-16, which incorporates by reference 40 CFR 264.600 - 264.603, R315-8-17, which incorporates by reference 40 CFR 264.1030 - 264.1036, R315-8-18, which incorporates by reference 40 CFR 264.1050 - 264.1065, and R315-8-22, which incorporates by reference 40 CFR 264.1083 through 264.1089.

(c) The owner or operator shall make any repairs, or take other remedial action, on a time schedule which ensures that any deterioration or malfunction discovered does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall keep records of inspections in an inspection log or summary. These records shall be retained for at least three years. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs made or remedial actions taken.

2.7 PERSONNEL TRAINING

(a)(1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this section and that includes all the elements described in the document required under R315-8-2.7(d)(3).

(2) This program shall be directed by a person trained in hazardous waste management procedures, and shall include instruction which teaches facility personnel hazardous waste management procedures, including contingency plan implementation relevant to the position in which they are employed.

(3) At a minimum, the training program shall be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, but not necessarily limited to, the following, where applicable:

(i) Procedures for inspection, use, repair, and replacement of facility emergency and monitoring equipment;

(ii) Communications or alarm systems;

(iii) Key parameters for automatic waste feed cut-off systems;

(iv) Response to fires or explosions;

(v) Response to groundwater contamination incidents; and

(vi) Shutdown of operations.

(b) Facility personnel shall successfully complete the program required in R315-8-2.7(a) within six months after the effective date of these rules or six months after the date of employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these rules shall not work in unsupervised positions until they have completed the training requirements of R315-8-2.7(a).

(c) Facility personnel shall take part in an annual review of their initial training in both contingency procedures and the hazardous waste management procedures relevant to the positions in which they are employed.

(d) Owners or operators of facilities shall maintain the following documents and records and make them available upon request:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under R315-8-2.7(d)(1). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but shall include the requisite skill, education, or other qualifications and duties of employees assigned to each position;

(3) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under R315-8-2.7(d)(1);

(4) Records that document that the training or job experience required under R315-8-2.7(a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current employees shall be maintained until closure of the facility; training records on former employees shall be retained for at least three years from the date the employee last worked at the facility. Employee training records may accompany personnel transferred within the same company.

2.8 GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

(a) The owner or operator shall take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes. These waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks, static, electrical, or mechanical, spontaneous ignition, e.g., from heat-producing chemical reactions, and radiant heat. While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flame to specially designated locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) Where specifically required by other sections of R315-8, the owner or operator of a facility that treats, stores or disposes ignitable or reactive waste, or mixes incompatible waste or incompatible wastes and other materials, shall take precautions to prevent reactions which:

(1) Generate extreme heat or pressure, fire or explosion, or violent reactions;

(2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) Damage the structural integrity of the device or facility;

(5) Through other like means threaten human health or the environment.

(c) When required to comply with R315-8-2.8, the owner or operator shall document that compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests, e.g., bench scale or pilot scale tests, waste analyses as specified in R315-8-2.4, which incorporates by reference 40 CFR 264.13, or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

2.9 LOCATION STANDARDS

(a) Seismic considerations.

(1) Portions of new facilities where treatment, storage, or disposal of hazardous waste will be conducted shall not be located within 61 meters (200 feet) of a fault which has had displacement in Holocene time. For definition of terms used in this section see R315-1. Procedures for demonstrating compliance with this standard in part B of the permit application are specified in R315-3 specifically in R315-3-2.5. Facilities which are located in political jurisdictions other than those listed in R315-50-11 are assumed to be in compliance with this requirement.

(b) Floodplains.

(1) A facility located in a 100-year floodplain shall be designed, constructed, operated and maintained to prevent washout of any hazardous waste by a 100-year flood, unless the owner or operator can demonstrate to the Executive Secretary's satisfaction that:

(i) Procedures are in effect which will cause the waste to be removed safely, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to flood waters; or

(ii) For existing surface impoundments, waste piles, land treatment units, landfills, and miscellaneous units, no adverse effects on human health or the environment will result if washout occurs, considering:

(A) The volume and physical and chemical characteristics of the waste in the facility;

(B) The concentration of hazardous constituents that would potentially affect surface waters as a result of washout;

(C) The impact of such concentrations on the current or potential uses of and water quality standards established for the affected surface waters; and

(D) The impact of hazardous constituents on the sediments of affected surface waters or the soils of the 100-year floodplain that could result from washout. The location where wastes are moved shall be a facility which is either permitted by EPA or has a permit in accordance with R315-3.

(2) As used in R315-8-2.9(b)(1):

(i) "100-year floodplain" means any land area which is subject to a one percent or greater chance of flooding in any given year from any source;

(ii) "Washout" means the movement of hazardous waste from the active portion of the facility as a result of flooding;

(iii) "100-year flood" means a flood that has a one percent chance of being equalled or exceeded in any given year.

(c) Salt dome formations, salt bed formations, underground mines and caves.

The placement of any non-containerized or bulk liquid hazardous wastes in any salt dome formation, salt bed formation, underground mine or cave is prohibited, except for the Department of Energy Waste Isolation Pilot Project in New Mexico.

2.10 CONSTRUCTION QUALITY ASSURANCE PROGRAM

(a) CQA program. (1) A construction quality assurance (CQA) program is required for all surface impoundment, waste pile, and landfill units that are required to comply with R315-8-11.2(c) and (d), R315-8-12.2(c) and (d), and R315-8-14.2(c) and (d). The program shall ensure that the constructed unit meets or exceeds all design criteria and specifications in the permit. The program shall be developed and implemented under the direction of a CQA officer who is a registered professional engineer.

(2) The CQA program shall address the following physical components, where applicable:

- (i) Foundations;
- (ii) Dikes;
- (iii) Low-permeability soil liners;
- (iv) Geomembranes, flexible membrane liners;
- (v) Leachate collection and removal systems and leak detection systems; and
- (vi) Final cover systems.

(b) Written CQA plan. The owner or operator of units subject to the CQA program under R315-8-2.10(a) shall develop and implement a written CQA plan. The plan must identify steps that will be used to monitor and document the quality of materials and the condition and manner of their installation. The CQA plan shall include:

(1) Identification of applicable units, and a description of how they will be constructed.

(2) Identification of key personnel in the development and implementation of the CQA plan, and CQA officer qualifications.

(3) A description of inspection and sampling activities for all unit components identified in R315-8-2.10(a)(2), including observations and tests that will be used before, during, and after construction to ensure that the construction materials and the installed unit components meet the design specifications. The description shall cover: Sampling size and locations; frequency of testing; data evaluation procedures; acceptance and rejection criteria for construction materials; plans for implementing corrective measures; and data or other information to be recorded and retained in the operating record under R315-8-5.3.

(c) Contents of program. (1) The CQA program shall include observations, inspections, tests, and measurements sufficient to ensure:

(i) Structural stability and integrity of all components of the unit identified in R315-8-2.10(a)(2);

(ii) Proper construction of all components of the liners, leachate collection and removal system, leak detection system, and final cover system, according to permit specifications and good engineering practices, and proper installation of all components, e.g., pipes, according to design specifications;

(iii) Conformity of all materials used with design and other material specifications under R315-8-11.2, R315-8-12.2, and R315-8-14.2.

(2) The CQA program shall include test fills for compacted soil liners, using the same compaction methods as in the full scale unit, to ensure that the liners are constructed to meet the hydraulic conductivity requirements of R315-8-11.2(c)(1)(i)(B), R315-8-12.2(c)(1)(i)(B), and R315-8-14.2(c)(1)(i)(B) in the field. Compliance with the hydraulic conductivity requirements shall be verified by using in-situ testing on the constructed test fill. The Executive Secretary may accept an alternative demonstration, in lieu of a test fill, where data are sufficient to show that a constructed soil liner will meet the hydraulic conductivity requirements of R315-8-11.2(c)(1)(i)(B), R315-8-12.2(c)(1)(i)(B), and R315-8-14.2(c)(1)(i)(B) in the field.

(d) Certification. Waste shall not be received in a unit subject to R315-8-2.10 until the owner or operator has submitted to the Executive Secretary by certified mail or hand delivery a certification signed by the CQA officer that the approved CQA plan has been successfully carried out and that the unit meets the requirements of R315-8-11.2(c) or (d), R315-8-12.2(c) or (d), or R315-8-14.2(c) or (d); and the procedure in R315-3-3.1(l)(2)(ii) has been completed. Documentation supporting the CQA officer's certification shall be furnished to the Executive Secretary upon request.

R315-8-3. Preparedness and Prevention.

3.1 APPLICABILITY

The regulations in this section apply to the owners or operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1.

3.2 DESIGN AND OPERATION OF FACILITY

Facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, groundwater, or surface water which could threaten the environment or human health.

3.3 REQUIRED EQUIPMENT

All facilities shall be equipped with the following, unless it can be demonstrated to the Board that there are no hazards at the facility which could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction, voice or signal, to facility employees;

(b) A device capable of summoning external emergency assistance from local law enforcement agencies, fire departments, or State or local emergency response teams, such as a telephone, immediately available at the scene of operations, or a hand-held two-way radio;

(c) Portable fire extinguishers, fire control equipment, including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, discharge control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems. This demonstration shall be made with the part B permit application.

3.4 TESTING AND MAINTENANCE OF EQUIPMENT

All facility communications or alarm systems, fire protection equipment, safety equipment, discharge control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.

3.5 ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all employees involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless the Board has ruled that this type of a device is not required under R315-8-3.3.

(b) If there is just one employee on the premises while the facility is operating, he shall have immediate access to a device capable of summoning external emergency assistance, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio, unless the Board has ruled that this type of a device is not required under R315-8-3.3.

3.6 REQUIRED AISLE SPACE

The facility owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, discharge control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the Board that aisle space is not needed for any of these purposes. This demonstration shall be made with the part B permit application.

3.7 ARRANGEMENTS WITH LOCAL AUTHORITIES

(a) The owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize law enforcement agencies, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

(2) Where more than one law enforcement agency and fire department might respond to an emergency, agreements designating primary emergency authority to a specific law enforcement agency and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where State or local authorities decline to enter into these arrangements, the owner or operator shall document the refusal in the operating record.

R315-8-4. Contingency Plan and Emergency Procedures.

4.1 APPLICABILITY

The regulations in this section apply to the owners and operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1(e).

4.2 PURPOSE AND IMPLEMENTATION OF CONTINGENCY PLAN

(a) Each owner or operator shall have a contingency plan for his facility. The contingency plan shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, groundwater, or surface water.

(b) The provisions of the plan shall be carried out immediately whenever there is a fire, explosion, or discharge of hazardous waste or hazardous waste constituents which could threaten the environment or human health.

4.3 CONTENT OF CONTINGENCY PLAN

(a) The plan shall describe the actions facility personnel shall take to comply with R315-8-4.2 and R315-8-4.7 in response to fires, explosions or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. If a facility owner or operator already has prepared a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR 112, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions sufficient to comply with the requirements of this section.

(b) The plan shall describe arrangements agreed to by local law enforcement agencies, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to R315-8-3.7.

(c) The plan shall list names, addresses and phone numbers, office and home, of all persons qualified to act as facility emergency coordinator, see R315-8-4.6, and this list shall be kept up-to-date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they assume responsibility as alternates. For new facilities, this information shall be supplied to the Board before operations begin rather than at the time of submission of the plan.

(d) The plan shall include a list of all emergency equipment at the facility, such as fire extinguishing systems, discharge control equipment, communications and alarm systems, internal and external, and decontamination equipment, where this equipment is required. This list shall be kept up-to-date. In addition, the plan shall include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(e) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes, in cases where the primary routes could be blocked by discharges of hazardous waste or fires.

4.4 COPIES OF A CONTINGENCY PLAN

A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility;

(b) Made available upon request; and

(c) Submitted to all local law enforcement agencies, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

The contingency plan shall be submitted to the Board with part B of the permit application under R315-3 and after modification or approval will become a condition of any permit issued.

4.5 AMENDMENT OF CONTINGENCY PLAN

The contingency plan shall be reviewed, and immediately amended, if necessary, under any of the following circumstances:

- (a) Revisions to the facility permit;
- (b) Failure of the plan in an emergency;
- (c) Changes in the facility design, construction, operation, maintenance, or other circumstances that materially increase the potential for fires, explosions, or discharges of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
- (d) Changes in the list of emergency coordinators; or
- (e) Changes in the list of emergency equipment.

4.6 EMERGENCY COORDINATOR

At all times there shall be at least one employee either present on the facility premises or on call, i.e., available to respond to an emergency by reaching the facility within a short time period, with the responsibility for coordinating all emergency response measures. This facility emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of manifests and all other records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan. The emergency coordinator's responsibilities are more fully spelled out in R315-8-4.7. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.

4.7 EMERGENCY PROCEDURES

(a) Whenever there is an imminent or actual emergency situation, the facility's emergency coordinator, or his designee when the emergency coordinator is on call, shall immediately:

- (1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and
- (2) Notify appropriate State or local agencies with designated response roles whenever their assistance is needed.

(b) In the event of a discharge, fire, or explosion, the facility's emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any discharged materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(c) Concurrently, the facility's emergency coordinator shall assess possible hazards to the environment or human health that may result from the discharge, fire, or explosion. This assessment shall consider both direct and indirect effects of the discharge, fire, or explosion, e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off or hazardous groundwater infiltration from water or chemical agents used to control fire and heat-induced explosions.

(d) The facility's emergency coordinator shall immediately report his assessment that the facility has had a discharge, fire, or explosion which could threaten human health, or the environment, outside the facility, as follows:

- (1) If his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to assist appropriate officials in making the decision whether local areas should be evacuated; and

(2) He shall immediately notify both the Utah State Department of Environmental Quality as specified in R315-9 and the government official designated as the on-scene coordinator for that geographical area, in the applicable regional contingency plan, or the National Response Center (800/424-8802). The report shall include:

- (i) Name and telephone number of reporter;
- (ii) Name and address of facility;
- (iii) Time and type of incident, e.g., discharge, fire;
- (iv) Name and quantity of material(s) involved, to the extent available;
- (v) The extent of injuries, if any; and
- (vi) The possible hazards to human health, or the environment, outside the facility.

(e) During an emergency, the facility's emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and discharges do not occur, recur, or spread to other hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing discharged waste, and removing or isolating containers.

(f) If the facility stops operations in response to a discharge, fire, or explosion, the facility's emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a discharge, fire, or explosion at the facility. The recovered material shall be handled and managed as a hazardous waste unless it is analyzed and determined not to be, using the procedures specified in R315-2.

(h) The facility's emergency coordinator shall ensure that, in the affected area(s) of the facility:

- (1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The facility owner or operator shall notify the Executive Secretary and other appropriate State and local authorities, that the facility is in compliance with R315-8-4.7(h) before operations are resumed in the affected area(s) of the facility.

(j) The facility owner or operator shall record in the operating record the time, date, and nature of any incident that requires implementing the contingency plan. Within 15 days after the incident, he shall submit a written report on the emergency to the Executive Secretary. The report shall include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident, e.g., fire, discharge;
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to the environment or human health, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

R315-8-5. Manifest System, Recordkeeping, and Reporting.

5.1 APPLICABILITY

The rules in this section apply to owners and operators of both on-site and off-site facilities, except as provided otherwise in R315-8-1. R315-8-5.2, R315-8-5.4, and R315-8-5.7 do not apply to owners and operators of on-site facilities that do not receive hazardous waste from off-site sources.

R315-8-5.3, incorporates by reference 40 CFR 264.73, July 1, 1992. However, 264.73(b) only applies to permittees who treat, store, or dispose of hazardous wastes on-site where the wastes were generated.

5.2 USE OF MANIFEST SYSTEM

(a) If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, shall:

(1) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(2) Note any significant discrepancies in the manifest, as defined in R315-8-5.4(c), on each copy of the manifest;

Comment: The Agency does not intend that the owner or operator of a facility whose procedures under R315-8-2.4, which incorporates by reference 40 CFR 264.13(c), include waste analysis shall perform that analysis before signing the manifest and giving it to the transporter. R315-8-5.4(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.

(3) Immediately give the transporter at least one copy of the signed manifest;

(4) Within 30 days after the delivery, send a copy of the manifest to the generator; and

(5) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

(b) If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generator's certification, and signatures), the owner or operator, or his agent, shall:

(1) Sign and date each copy of the manifest or shipping paper (if the manifest has not been received) to certify that the hazardous waste covered by the manifest or shipping paper was received;

(2) Note any significant discrepancies, as defined in R315-8-5.4(a), in the manifest or shipping paper (if the manifest has not been received) on each copy of the manifest or shipping paper.

Comment: The Agency does not intend that the owner or operator of a facility whose procedures under R315-8-2.4, which incorporates by reference 40 CFR 264.13(c), include waste analysis shall perform that analysis before signing the shipping paper and giving it to the transporter. R315-8-5.4(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.

(3) Immediately give the rail or water (bulk shipment) transporter at least one copy of the manifest or shipping paper (if the manifest has not been received);

(4) Within 30 days after the delivery, send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within 30 days after delivery, the owner or operator, or his agent, shall send a copy of the shipping paper signed and dated to the generator; and

Comment: R315-5-2.23(c) requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).

(5) Retain at the facility a copy of the manifest and shipping paper (if signed in lieu of the manifest at the time of delivery) for at least three years from the date of delivery.

(c) Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility shall comply with the requirements of R315-5.

Comment: The provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, are applicable to the on-site accumulation of hazardous wastes by generators. Therefore, the provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, only apply to owners or operators who are shipping hazardous waste which they generated at that facility.

(d) Within three working days of the receipt of a shipment subject to R315 -5-8, which incorporates by reference 40 CFR 262, subpart H, the owner or operator of the facility shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, and to competent authorities of all other concerned countries. The original copy of the tracking document shall be maintained at the facility for at least three years from the date of signature.

5.3 OPERATING RECORD

The requirements as found in 40 CFR 264.73, 2000 ed., are adopted and incorporated by reference.

5.4 MANIFEST DISCREPANCIES

(a) Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are: (1) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload, and (2) for bulk waste, variations greater than 10 percent in weight. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

(b) Upon discovering a significant discrepancy, the owner or operator shall attempt to reconcile the discrepancy with the waste generator or transporter, e.g., with telephone conversations. If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator shall immediately submit to the Executive Secretary a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue. The Executive Secretary does not intend that the owner or operator of a facility whose procedures under R315-8-2.4 which incorporates by reference 40 CFR 264.13, include waste analysis shall perform that analysis before signing the manifest and giving it to the transporter. However, unreconciled discrepancies discovered during later analysis shall be reported.

5.5 AVAILABILITY, RETENTION, AND DISPOSITION OF RECORDS

(a) Records of waste disposal locations and quantities required to be maintained under R315-8-5.3, which incorporates by reference 40 CFR 264.73(b)(2) shall be submitted to the Board and local land authority upon closure of the facility.

(b) The retention period for all records required under this section is extended automatically during the course of any

unresolved enforcement action regarding the facility or as requested by the Executive Secretary.

(c) All records, including plans, required under R315-8 shall be furnished upon request, and made available at all reasonable times for inspection.

5.6 BIENNIAL REPORT

Owners or operators of facilities that treat, store, or dispose of hazardous waste shall prepare and submit a single copy of an biennial report to the Board by March 1 of each even numbered year. The biennial report shall be submitted on EPA form 8700-13B. The biennial report shall cover facility activities during the previous calendar year and shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA identification number of each hazardous waste generator from which a hazardous waste was received during the year; for imported shipments, the name and address of the foreign generator shall be given in the report;

(d) A description and the quantity of each hazardous waste received by the facility during the year. For off-site facilities, this information shall be listed by EPA identification number of each generator;

(e) The method(s) of treatment, storage, or disposal for each hazardous waste; and

(f) The most recent closure cost estimate under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151, and for disposal facilities, the most recent post-closure cost estimate under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151; and

(g) For generators who treat, store, or dispose of hazardous waste on-site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

(h) For generators who treat, store, or dispose of hazardous waste on-site, a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent the information is available for the years prior to 1984;

(i) The certification signed by the owner or operator of the facility or his authorized representative.

5.7 UNMANIFESTED WASTE REPORT

If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest as described in R315-6-2.20(e)(2), except for shipments that do not require a manifest because of the exclusions in R315-2, the owner or operator shall prepare and submit a single copy of a report to the Board within 15 days of the receipt of the waste. The report shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The date of receipt of the waste;

(c) The word "unmanifested" under the comments section, or check appropriate box of the report form;

(d) The EPA identification number, name, and address of the generator and the transporter, if available;

(e) A description and the quantity of each unmanifested hazardous waste received by the facility;

(f) The method(s) of treatment, storage, or disposal for each hazardous waste;

(g) A certification signed by the owner or operator of the facility or his authorized representative; and

(h) A brief explanation of why the shipment was unmanifested, in the comments section of the report form. If a facility owner or operator accepts unmanifested hazardous waste, believing it to be excluded under R315-2, he should obtain from the generator a certification that the waste qualifies for exclusion, otherwise he should file an unmanifested waste report for the hazardous waste movement.

5.8 ADDITIONAL REPORTS

In addition to the biennial and unmanifested waste reporting requirements described in R315-8-5.6 and R315-8, a facility owner operator shall also report the following to the Board:

(a) Discharges, fires, and explosions as specified in R315-8-4.7(j);

(b) Upon its request, all information as the Board may deem necessary to determine compliance with the requirements of R315-8;

(c) Facility closure as specified in R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120; and

(d) As otherwise required in R315-8-6, R315-8-11, R315-8-12, R315-8-13, R315-8-14, R315-8-17, which incorporates by reference 40 CFR 264.1030 - 264.1036, R315-8-18, which incorporates by reference 40 CFR 264.1050 - 264.1065, and R315-8-22, which incorporates by reference 40 CFR 264.1080 - 264.1090.

R315-8-6. Groundwater Protection.

6.1 APPLICABILITY

(a)(1) Except as provided in R315-8-6.1(b), R315-8-6 applies to owners or operators of facilities that treat, store or dispose of hazardous waste. The owner or operator shall satisfy the requirements identified in R315-8-6.1(a)(2) for all wastes, or constituents thereof, contained in solid waste management units at the facility, regardless of the time at which waste was placed in the units.

(2) All solid waste management units shall comply with the requirements in R315-8-6.12. A surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982, hereinafter referred to as a "regulated unit", shall comply with the requirements of R315-8-6.2 through R315-8-6.11 in lieu of R315-8-6.12 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer. The financial responsibility requirements of R315-8-6.12 apply to regulated units.

(3) Groundwater monitoring shall be required at non-land disposal facilities as determined to be necessary and appropriate by the Executive Secretary.

(b) The owner or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under R315-8-6 if:

(1) The owner or operator is exempted under R315-8-1(e) or

(2) He operates a unit which the Board finds:

(i) Is an engineered structure.

(ii) Does not receive or contain liquid waste or waste containing free liquid.

(iii) Is designed and operated to exclude liquid, precipitation, and other run-on and run-off.

(iv) Has both inner and outer layers of containment enclosing the waste.

(v) Has a leak detection system built into each containment layer.

(vi) The owner or operator will provide continuing operation and maintenance of these leak detection systems during the active life of the unit and the closure and post-closure care periods, and

(vii) To a reasonable degree of certainty, will not allow hazardous constituents to migrate beyond the outer containment layer prior to the end of the post-closure care period.

(3) The Board finds pursuant to R315-8-13.11(d) that the treatment zone of a land treatment unit that qualifies as a regulated unit does not contain levels of hazardous constituents that are above background levels of those constituents by an amount that is statistically significant, and if an unsaturated zone monitoring program meeting the requirements of R315-8-13.9 has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under this paragraph can only relieve an owner or operator of responsibility to meet the requirements of this subpart during the post-closure care period; or

(4) The Board finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit, including the closure period and the post-closure care period specified under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. This demonstration shall be certified by a qualified geologist or geotechnical engineer. In order to provide an adequate margin of safety in the prediction of potential migration of liquid, the owner or operator shall base any predictions made under this paragraph on assumptions that maximize the rate of liquid migration.

(5) He designs and operates a waste pile in compliance with R315-8-12.1(c).

(c) The regulations under this section apply during the active life of the regulated unit, including the closure period. After closure of the regulated unit, the regulations in this section:

(1) Do not apply if the waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure;

(2) Apply during the post-closure care period under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, if the owner or operator is conducting a detection monitoring program under R315-8-6.9;

(3) Apply during the compliance period under R315-8-6.7 the owner is conducting a compliance monitoring program under R315-8-6.10 or a corrective action program under R315-8-6.11.

(d) Requirements in this section may apply to miscellaneous units when necessary to comply with R315-8-24, which incorporates by reference 40 CFR 264.601 - 264.603.

(e) The regulations of R315-8-6 apply to all owners and operators subject to the requirements of R315-3-1.1(e)(7), when the Executive Secretary issues either a post-closure permit or an enforceable document, as defined in R315-3-1.1(e)(7), at the facility. When the Executive Secretary issues an enforceable document, references in R315-8-6 to "in the permit" mean "in the enforceable document."

(f) The Executive Secretary may replace all or part of the requirements of R315-8-6.2 through R315-8-6.11 applying to a regulated unit with alternative requirements for groundwater monitoring and corrective action for releases to groundwater set out in the permit, or in an enforceable document, as defined in R315-3-1.1(e)(7) where the Executive Secretary determines that:

(1) The regulated unit is situated among solid waste management units, or areas of concern, a release has occurred, and both the regulated unit and one or more solid waste management unit(s), or areas of concern, are likely to have contributed to the release; and

(2) It is not necessary to apply the groundwater monitoring and corrective action requirements of R315-8-6.2 through R315-8-6.11 because alternative requirements will protect human health and the environment.

6.2 REQUIRED PROGRAMS

(a) Owners and operators subject to this section shall conduct a monitoring and response program as follows:

(1) Whenever hazardous constituents under R315-8-6.4, from a regulated unit are detected at the compliance point under R315-8-6.6, the owner or operator shall institute a compliance monitoring program under R315-8-6.10. Detected is defined as statistically significant evidence of contamination as described in R315-8-6.9(f);

(2) Whenever the groundwater protection standard under R315-8-6.3, is exceeded, the owner or operator shall institute a corrective action program under R315-8-6.11. "Exceeded" is defined as statistically significant evidence of increased contamination as described in R315-8-6.10(d);

(3) Whenever hazardous constituents under R315-8-6.4, from a regulated unit exceed concentration limits under R315-8-6.5 in groundwater between the compliance point under R315-8-6.6 and the downgradient facility property boundary, the owner or operator shall institute a corrective action program under R315-8-6.11; or

(4) In all other cases, the owner or operator shall institute a detection monitoring program under R315-8-6.9.

(b) The Executive Secretary will specify in the facility permit the specific elements of the monitoring and response program. The Executive Secretary may include one or more of the programs identified in R315-8-6.2(a) in the facility permit as may be necessary to protect human health and the environment and will specify the circumstances under which each of the programs will be required. In deciding whether to require the owner or operator to be prepared to institute a particular program, the Executive Secretary will consider the potential adverse effects on human health and the environment that might occur before final administrative action on a permit modification application to incorporate this type of a program could be taken.

6.3 GROUNDWATER PROTECTION STANDARD

The owner or operator shall comply with conditions specified in the facility permit that are designed to ensure that hazardous constituents under R315-8-6.4 that are detected in the groundwater from a regulated unit do not exceed the concentration limits under R315-8-6.5 in the uppermost aquifer underlying the waste management area beyond the point of compliance under R315-8-6.6 during the compliance period under R315-8-6.7. The Executive Secretary will establish this groundwater protection standard in the facility permit when hazardous constituents have been detected in the groundwater.

6.4 HAZARDOUS CONSTITUENTS

(a) The Executive Secretary will specify in the facility permit the hazardous constituents to which the groundwater protection standard of R315-8-6.3 applies. Hazardous constituents are constituents identified in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII, that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to

be in or derived from waste contained in a regulated unit, unless the Executive Secretary has excluded them under paragraph 8.6.4(b).

(b) The Executive Secretary will exclude an R315-50-10 constituent from the list of hazardous constituents specified in the facility permit if he finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to grant an exemption, the Executive Secretary will consider the following:

(1) Potential adverse effects on groundwater quality, considering:

(i) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

(ii) The hydrogeological characteristics of the facility and surrounding land;

(iii) The quantity of groundwater and the direction of groundwater flow;

(iv) The proximity and withdrawal rates of groundwater users;

(v) The current and future uses of groundwater in the area;

(vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

(vii) The potential for health risks caused by human exposure to waste constituents;

(viii) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

(ix) The persistence and permanence of the potential adverse effects; and

(2) Potential adverse effects on hydraulically-connected surface water quality, considering:

(i) The volume and physical and chemical characteristics of the waste in the regulated unit;

(ii) The hydrogeological characteristics of the facility and surrounding land;

(iii) The quantity and quality of groundwater and the direction of groundwater flow;

(iv) The patterns of rainfall in the region;

(v) The proximity of the regulated unit to surface waters;

(vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(vii) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(viii) The potential for health risks caused by human exposure to waste constituents;

(ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(x) The persistence and permanence of the potential adverse effects.

(c) In making any determination under R315-8-6.4(b) about the use of groundwater in the area around the facility, the Executive Secretary will consider any identification of underground sources of drinking water.

6.5 CONCENTRATION LIMITS

(a) The Executive Secretary will specify in the facility permit concentration limits in the groundwater for hazardous constituents established under R315-8-6.4. The concentration of a hazardous constituent:

(1) Shall not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or

(2) For any of the constituents listed in Table 1, shall not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or

TABLE 1
Maximum Concentration of Constituents for Groundwater Protection

CONSTITUENT	MAXIMUM CONCENTRATION(1)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin	(1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,9a-octahydro-1,4-endo,endo-5,8-dimethano naphthalene) 0.0002
Lindane	(1,2,3,4,5,6,-hexachlorocyclohexane, gamma isomer) 0.004
Methoxychlor	(1,1,1-Trichloro-2,2-bis (p-methoxyphenylethane) 0.1
Toxaphene	(C10H10Cl8, Technical chlorinated camphene, 67-69 percent chlorine) 0.005
2,4-D	(2,4-Dichlorophenoxyacetic acid) 0.1
2,4,5-TP Silvex	(2,4,5-Trichlorophenoxypropionic acid) 0.01

(1) Milligrams per liter

(3) Shall not exceed an alternate limit established by the Executive Secretary under R315-8-6.5(b).

(b) The Executive Secretary will establish an alternate concentration limit for a hazardous constituent if they find that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the Executive Secretary will consider the following factors:

(1) Potential adverse effects on groundwater quality, considering:

(i) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

(ii) The hydrogeological characteristics of the facility and surrounding land;

(iii) The quantity of groundwater and the direction of groundwater flow;

(iv) The proximity and withdrawal rates of groundwater users;

(v) The current and future uses of groundwater in the area;

(vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

(vii) The potential for health risks caused by human exposure to waste constituents;

(viii) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

(ix) The persistence and permanence of the potential adverse effects; and

(2) Potential adverse effects on hydraulically connected surface water quality, considering:

(i) The volume and physical and chemical characteristics of the waste in the regulated unit;

(ii) The hydrogeological characteristics of the facility and surrounding land;

(iii) The quantity and quality of groundwater, and the direction of groundwater flow;

(iv) The patterns of rainfall in the region;

(v) The proximity of the regulated unit to surface waters;

(vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(vii) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(viii) The potential for health risks caused by human exposure to waste constituents;

(ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(x) The persistence and permanence of the potential adverse effects.

(c) In making any determination under R315-8-6.5(b) about the use of groundwater in the area around the facility the Board will consider any identification of underground sources of drinking water.

6.6 POINT OF COMPLIANCE

(a) The Executive Secretary will specify in the facility permit the point of compliance at which the groundwater protection standard of R315-8-6.3 applies and at which monitoring shall be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.

(b) The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit.

(1) The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

(2) If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

6.7 COMPLIANCE PERIOD

(a) The Executive Secretary will specify in the facility permit the compliance period during which the groundwater protection standard of R315-8-6.3 applies. The compliance period is the number of years equal to the active life of the waste

management area, including any waste management activity prior to permit and the closure period.

(b) The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of R315-8-6.9.

(c) If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in R315-8-6.7(a), the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standard of R315-8-6.3 has not been exceeded for a period of three consecutive years.

6.8 GENERAL GROUNDWATER MONITORING REQUIREMENTS

The owner or operator shall comply with the following requirements for any groundwater monitoring program developed to satisfy R315-8-6.9, R315-8-6.10, or R315-8-6.11:

(a) The groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that:

(1) Represent the quality of background water that has not been affected by leakage from a regulated unit;

(i) A determination of background quality may include sampling of wells that are not hydraulically upgradient of the waste management area where:

(A) hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

(B) Sampling at other wells will provide an indication of background groundwater quality that is representative or more representative than that provided by the upgradient wells;

(2) represent the quality of groundwater passing the point of compliance; and

(3) allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.

(b) If a facility contains more than one regulated unit, separate groundwater monitoring systems are not required for each regulated unit provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the compliance point of hazardous constituents from the regulated units that have entered the groundwater in the uppermost aquifer.

(c) All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space, i.e., the space between the bore hole and well casing, above the sampling depth shall be sealed to prevent contamination of samples and the groundwater.

(d) The groundwater monitoring program shall include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of groundwater quality below the waste management area. At a minimum the program shall include procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures; and

(4) Chain of custody control.

(e) The groundwater monitoring program shall include sampling and analytical methods that are appropriate for

groundwater sampling and that accurately measure hazardous constituents in groundwater samples.

(f) The groundwater monitoring program shall include a determination of the groundwater surface elevation each time groundwater is sampled.

(g) In detection monitoring or where appropriate in compliance monitoring, data on each hazardous constituent specified in the permit will be collected from background wells and wells at the compliance point. The number and kinds of samples collected to establish background shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size should be as large as necessary to ensure with reasonable confidence that a contaminant release to groundwater from a facility will be detected. The owner or operator will determine an appropriate sampling procedure and interval for each hazardous constituent listed in the facility permit which shall be specified in the unit permit upon approval by the Executive Secretary. This sampling procedure should be:

(1) a sequence of at least four samples, taken at an interval that assures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants; or

(2) an alternate sampling procedure proposed by the owner or operator and approved by the Executive Secretary.

(h) The owner or operator will specify one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent, upon approval by the Executive Secretary, will be specified in the unit permit. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. Where practical quantification limits, pql's, are used in any of the following statistical procedures to comply with R315-8-6.8(i)(5), the pql shall be proposed by the owner or operator and approved by the Executive Secretary. Use of any of the following statistical methods shall be protective of human health and the environment and shall comply with the performance standards outlined in R315-8-6.8(i).

(1) a parametric analysis of variance, ANOVA, followed by multiple comparisons procedures to identify statistical significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent;

(2) an analysis of variance, ANOVA, based on ranks followed by multiple comparisons procedures to identify statistical significant evidence of contamination. The method shall include estimation and testing of the contrasts between compliance well's median and the background median levels for each constituent;

(3) a tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

(4) a control chart approach that gives control limits for each constituent;

(5) another statistical test method submitted by the owner or operator and approved by the Executive Secretary.

(i) Any statistical method chosen under R315-8-6.8(h) for specification in the unit permit shall comply with the following performance standards, as appropriate:

(1) The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I experimentwise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons shall be maintained. This performance standard does not apply to tolerance intervals, predictions intervals or control charts.

(3) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be proposed by the owner or operator and approved by the Executive Secretary if he finds it to be protective of human health and the environment.

(4) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval shall contain, shall be proposed by the owner or operator and approved by the Executive Secretary if he finds these parameters to be protective of human health and the environment. These parameters will be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(5) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantification limit, pql, approved by the Executive Secretary under R315-8-6.8(h) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(6) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(j) Groundwater monitoring data collected in accordance with R315-8-6.8(g) including actual levels of constituents shall be maintained in the facility operating record. The Executive Secretary will specify in the permit when the data shall be submitted for review.

6.9 DETECTION MONITORING PROGRAM

An owner or operator required to establish a detection monitoring program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall monitor for indicator parameters, e.g., specific conductance, pH, total organic carbon, or total organic halogen, waste constituents, or reaction products that provide a reliable indication of the presence of hazardous

constituents in groundwater. The Executive Secretary will specify the parameters or constituents to be monitored in the facility permit after considering the following factors:

(1) The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

(2) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

(3) The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and

(4) The concentrations or values and coefficients of variation of proposed monitoring parameters or constituents in the groundwater background.

(b) The owner or operator shall install a groundwater monitoring system at the compliance point as specified under R315-8-6.6. The groundwater monitoring system shall comply with R315-8-6.8(a)(2), (b), and (c).

(c) The owner or operator shall conduct a groundwater monitoring program for each chemical parameter and hazardous constituent specified in the permit pursuant to R315-8-6.9(a) in accordance with R315-8-6.9(g). The owner or operator shall maintain a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under R315-8-6.8(h).

(d) The Executive Secretary will specify the frequencies for collecting samples and conducting statistical tests to determine whether there is statistically significant evidence of contamination for any parameter or hazardous constituent specified in the permit under R315-8-6.9(a) in accordance with R315-8-6.8(g). A sequence of at least four samples from each well, background and compliance wells, shall be collected at least semiannually during detection monitoring.

(e) The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The owner or operator shall determine whether there is statistically significant evidence of contamination for any chemical parameter of hazardous constituent specified in the permit pursuant to R315-8-6.9(a) at a frequency specified under R315-8-6.9(d).

(1) In determining whether statistically significant evidence of contamination exists, the owner or operator shall use the method specified in the permit under R315-8-6.8(h). This method shall compare data collected at the compliance point to the background groundwater quality data.

(2) The owner or operator shall determine whether there is statistically significant evidence of contamination at each monitoring well as the compliance point within a reasonable period of time after completion of sampling. The Executive Secretary will specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(g) If the owner or operator determines pursuant to R315-8-6.9(f) that there is statistically significant evidence of contamination for chemical parameters of hazardous constituents specified pursuant to R315-8-6.9(a) at any monitoring well at the compliance point, he shall:

(1) notify the Executive Secretary of this finding in writing within seven days. The notification shall indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;

(2) immediately sample the groundwater in all monitoring wells and determine whether constituents in the list of R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, are present, and if so, in what concentration;

(3) for any R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, compounds found in the analysis pursuant to R315-8-6.9(g)(2), the owner or operator may resample within one month and repeat the analysis for these compounds detected. If the results for the second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the owner or operator does not resample for the compounds found pursuant to R315-8-6.9(g)(2), the hazardous constituents found during this initial R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, analysis will form the basis for compliance monitoring;

(4) within 90 days, submit to the Executive Secretary an application for a permit modification to establish a compliance monitoring program meeting the requirements of R315-8-6.10. The application shall include the following information;

(i) an identification of the concentration of any R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, constituent detected in the groundwater at each monitoring well at the compliance point;

(ii) any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of R315-8-6.10;

(iii) any proposed additions or changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical methods used at the facility necessary to meet the requirements of R315-8-6.10;

(iv) for each hazardous constituent detected at the compliance point, a proposed concentration limit under R315-8-6.10(a)(1) or (2), or a notice of intent to seek an alternate concentration limit under R315-8-6.5(b); and

(5) within 180 days, submit to the Executive Secretary:

(i) all data necessary to justify an alternate concentration limit sought under R315-8-6.5(b); and

(ii) an engineering feasibility plan for a corrective action program necessary to meet the requirement of R315-8-6.11, unless:

(A) all hazardous constituents identified under R315-8-6.9(g)(2) are listed in R315-8-6.5, Table 1 and their concentrations do not exceed their respective values given in that table; or

(B) the owner or operator has sought an alternate concentration limit under R315-8-6.5(b) for every hazardous constituent identified under R315-8-6.9(g)(2).

(6) If the owner or operator determines, pursuant to R315-8-6.9(f), that there is a statistically significant difference for chemical parameters or hazardous constituents specified pursuant to R315-8-6.9(a) at any monitoring well at the compliance point, he may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. The owner or operator may make a demonstration under R315-8-6.9(g)(6) in addition to, or in lieu of, submitting a permit modification application under R315-8-6.9(g)(4); however, the owner or operator is not relieved of the requirement to submit a permit modification application within the time specified in R315-8-6.9(g)(4) unless the demonstration made under R315-8-6.9(g)(6)

successfully shows that a source other than the regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under R315-8-6.9(g)(6), the owner or operator shall:

(i) notify the Executive Secretary in writing within seven days of determining statistically significant evidence of contamination at the compliance point that he intends to make a demonstration under this paragraph;

(ii) within 90 days, submit a report to the Executive Secretary which demonstrates that a source other than a regulated unit caused the contamination or that the contamination resulted from error in sampling, analysis, or evaluation;

(iii) within 90 days, submit to the Executive Secretary an application for a permit modification to make any appropriate changes to the detection monitoring program facility; and

(iv) continue to monitor in accordance with the detection monitoring program established under R315-8-6.9.

(h) If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this section, he shall, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

6.10 COMPLIANCE MONITORING PROGRAM

An owner or operator required to establish a compliance monitoring program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall monitor the groundwater to determine whether regulated units are in compliance with the groundwater protection standard under R315-8-6.3. The Executive Secretary will specify the groundwater protection standard in the facility permit including:

(1) A list of the hazardous constituents identified under R315-8-6.4;

(2) Concentration limits under R315-8-6.5 for each of those hazardous constituents;

(3) The compliance point under R315-8-6.6;

(4) The compliance period under R315-8-6.7.

(b) The owner or operator shall install a groundwater monitoring system at the compliance point as specified under R315-8-6.6. The groundwater monitoring system shall comply with R315-8-6.8(a)(2), (b) and (c).

(c) The Executive Secretary will specify the sampling procedures and statistical methods appropriate for the constituents and the facility, consistent with R315-8-6.8(g) and (h).

(1) The owner or operator shall conduct a sampling program for each chemical parameter or hazardous waste constituent in accordance with R315-8-6.8(g).

(2) The owner or operator shall record groundwater analytical data as measured and in form necessary for the determination of statistical significance under R315-8-6.8(h) for the compliance period of the facility.

(d) The owner or operator shall determine whether there is statistically significant evidence of increased contamination for any chemical parameter or hazardous constituent specified in the permit, pursuant to R315-8-6.10(a), at a frequency specified under R315-8-6.10(f).

(1) In determining whether statistically significant evidence of increased contamination exists, the owner or operator shall use the method specified in the permit under R315-8-6.5. The method shall compare data collected at the

compliance point to a concentration limit developed in accordance with R315-8-6.8(h).

(2) The owner or operator shall determine whether there is statistically significant evidence of increase contamination at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The Executive Secretary will specify that time period in the facility permit, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(e) The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The Executive Secretary will specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with R315-8-6.8(g). A sequence of at least four samples from each well, background and compliance wells, shall be collected at least semi-annually during the compliance period of the facility.

(g) The owner or operator shall analyze samples from all monitoring wells at the compliance point for all constituents contained in R315-50-14, which incorporates by reference 40 CFR, Appendix IX, at least annually to determine whether additional hazardous constituents are present in the uppermost aquifer and, if so, at what concentration, pursuant to procedures in R315-8-6.9(f). If the owner or operator finds R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, constituents in the groundwater that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month and repeat the R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, analysis. If the second analysis confirms the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Executive Secretary within seven days after the completion of the second analysis and add them to the monitoring list. If the owner or operator chooses not to resample, then he shall report the concentrations of these additional constituents to the Executive Secretary within seven days after completion of the initial analysis and add them to the monitoring list.

(h) If the owner or operator determines pursuant to R315-8-6.10(d) that any concentration limits under R315-8-6.5 are being exceeded at any monitoring well at the point of compliance he shall:

(1) Notify the Executive Secretary of this finding in writing within seven days. The notification shall indicate which concentration limits have been exceeded;

(2) Submit to the Executive Secretary an application for a permit modification to establish a corrective action program meeting the requirements of R315-8-6.11, within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the Executive Secretary under R315-8-6.9(h)(5). The application shall at a minimum include the following information:

(i) A detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit under R315-8-6.10(a); and

(ii) A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. The groundwater monitoring program may be based on a compliance

monitoring program developed to meet the requirements of this section.

(i) If the owner or operator determines, pursuant to R315-8-6.10(d), that the groundwater concentration limits under R315-8-6.10 are being exceeded at any monitoring well at the point of compliance, he may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. In making a demonstration under R315-8-6.10(i), the owner or operator shall:

(1) Notify the Executive Secretary in writing within seven days that he intends to make a demonstration under R315-8-6.10(i);

(2) Within 90 days, submit a report to the Executive Secretary which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

(3) Within 90 days, submit to the Executive Secretary an application for a permit modification to make any appropriate changes to the compliance monitoring program at the facility; and

(4) Continue to monitor in accord with the compliance monitoring program established under this section.

(j) If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this section, he shall within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

6.11 CORRECTIVE ACTION PROGRAM

An owner or operator required to establish a corrective action program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall take corrective action to ensure that regulated units are in compliance with the groundwater protection standard under R315-8-6.3. The Executive Secretary will specify the groundwater protection standard in the facility permit, including:

(1) A list of hazardous constituents identified under R315-8-6.4;

(2) Concentration limits under R315-8-6.5 for each of those hazardous constituents;

(3) The compliance point under R315-8-6.6; and

(4) The compliance period under R315-8-6.7.

(b) The owner or operator shall implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. The permit will specify the specific measures that will be taken.

(c) The owner or operator shall begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The Executive Secretary will specify that time period in the facility permit. If a facility permit includes a corrective action program in addition to a compliance monitoring program, the permit will specify when the corrective action will begin and the requirement will operate in lieu of R315-8-6.10(i)(2).

(d) In conjunction with a corrective action program, the owner or operator shall establish and implement a groundwater monitoring program to demonstrate the effectiveness of the

corrective action program. The monitoring program may be based on the requirements for a compliance monitoring program under R315-8-6.10 and shall be as effective as that program in determining compliance with the groundwater protection standard under R315-8-6.3 and in determining the success of a corrective action program under R315-8-6.11(e), where appropriate.

(e) In addition to the other requirements of this section, the owner or operator shall conduct a corrective action program to remove or treat in place any hazardous constituents under R315-8-6.4 that exceed concentration limits under R315-8-6.5 in groundwater:

(1) between the compliance point under R315-8-6.6 and the downgradient facility property boundary; and

(2) beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Executive Secretary that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake the action. The owner or operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address the releases will be determined on a case-by-case basis.

(3) Corrective action measures under R315-8-6.11(e) shall be initiated and completed within a reasonable period of time considering the extent of contamination.

(4) Corrective action measures under this paragraph may be terminated once the concentration of hazardous constituents under R315-8-6.4 is reduced to levels below their respective concentration limits under R315-8-6.5.

(f) The owner or operator shall continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he shall continue that corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the waste management area, including the closure period if he can demonstrate, based on data from the groundwater monitoring program under R315-8-6.11(d), that the groundwater protection standard of R315-8-6.3 has not been exceeded for a period of three consecutive years.

(g) The owner or operator shall report in writing to the Executive Secretary on the effectiveness of the corrective action program. The owner or operator shall submit these reports semi-annually.

(h) If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, he shall within 90 days, submit an application for a permit modification to the program.

6.12 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

(a) The owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste shall institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in the unit.

(b) Corrective action will be specified in the permit in accordance with R315-8-6-12 and R315-8-21, which incorporates by reference 40 CFR 264.552 and 264.553. The permit will contain schedules of compliance for the corrective action, where such corrective action cannot be completed prior to issuance of the permit, and assurances of financial responsibility for completing the corrective action.

(c) The owner or operator shall implement corrective actions beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Executive Secretary that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake the actions. The owner or operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address the releases will be determined on a case-by-case basis. Assurances of financial responsibility for corrective action shall be provided.

(d) This does not apply to remediation waste management sites unless they are part of a facility subject to a permit for treating, storing, or disposing of hazardous wastes that are not remediation wastes.

R315-8-7. Closure and Post Closure.

The requirements as found in 40 CFR subpart G, 264.110 - 264.120, 1998 ed., as amended by 63 FR 56710, October 22, 1998, are incorporated by reference with the following exceptions:

(a) substitute "Board" for all references made to "Regional Administrator" except in 264.112 where "Regional Administrator" and "Director" means "Executive Secretary".

(b) substitute R315-3 for all general reference made to 40 CFR 124 and 270.

(c) substitute "The Utah Solid and Hazardous Waste Act" for all references made to the "Resource Conservation and Recovery Act" or "RCRA."

R315-8-8. Financial Requirements.

The requirements as found in 40 CFR subpart H, 264.140 - 264.151, 1998 ed., as amended by 63 FR 56710, October 22, 1998, are incorporated by reference with the following exceptions:

(a) substitute "Executive Secretary" for all references to "Administrator" or "Regional Administrator".

(b) substitute "Board" for all references to "Agency" or "EPA."

(c) substitute "The Utah Solid and Hazardous Waste Act" for all references to the "Resource Conservation and Recovery Act" or "RCRA."

R315-8-9. Use and Management of Containers.

9.1 APPLICABILITY

The rules in this section apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as provided otherwise in R315-8-1.

Under R315-2-7 and R315-2-11, if a hazardous waste is emptied from a container the residue remaining in the container is not considered a hazardous waste if the container is "empty" as defined in R315-2-7. In that event, management of the container is exempt from the requirements of this section.

9.2 CONDITION OF CONTAINERS

If a container holding hazardous waste is not in good condition, e.g., severe rusting, apparent structural defects, or if it begins to leak, the owner or operator shall transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements of this section.

9.3 COMPATIBILITY OF WASTE WITH CONTAINERS

The owner or operator shall use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

9.4 MANAGEMENT OF CONTAINERS

(a) A container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste.

(b) A container holding hazardous waste shall not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

Reuse of containers in transportation is governed by U.S. Department of Transportation regulations including those set forth in 49 CFR 173.28.

9.5 INSPECTIONS

At least weekly, the owner or operator shall inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors. See R315-8-2.6(c) and R315-8-9.2 for remedial action required if deterioration or leaks are detected.

9.6 CONTAINMENT

(a) Container storage areas shall have a containment system that is designed and operated in accordance with R315-8-9.6(b), except as otherwise provided by R315-8-9.6(c).

(b) A containment system shall be designed and operated as follows:

(1) A base shall underlay the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;

(2) The base shall be sloped or the containment system shall be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;

(3) The containment system shall have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination;

(4) Run-on into the containment system shall be prevented unless the collection system has sufficient excess capacity in addition to that required in R315-8-9.6(b)(3) to contain any run-on which might enter the system; and

(5) Spilled or leaked waste and accumulated precipitation shall be removed from the sump or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

If the collected material is a hazardous waste under R315-2, it shall be managed as a hazardous waste in accordance with all applicable requirements of these rules. If the collected material is discharged through a point source to waters of the United States, it is subject to the requirements of section 402 of the Clean Water Act, as amended.

(c) Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by R315-8-9.6(b), except as provided by R315-8-9.6(d) or provided that:

(1) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or

(2) The containers are elevated or are otherwise protected from contact with accumulated liquid.

(d) Storage areas that store containers holding the wastes listed below that do not contain free liquids shall have a containment system defined by R315-8-9.6(b):

(1) F020, F021, F022, F023, F026, and F027.

9.7 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Containers holding ignitable or reactive waste shall be located at least 15 meters, 50 feet, from the facility's property line. See R315-8-2.8(a) for additional requirements.

9.8 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

(a) Incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, shall not be placed in the same container, unless R315-8-2.8(b) is complied with.

(b) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. As required by R315-8-2.4, which incorporates by reference 40 CFR 264.13, the waste analysis plan shall include analyses needed to comply with R315-8-9.8(b). Also R315-8-2.8(c) requires waste analyses, trial tests or other documentation to assure compliance with R315-8-2.8(b). As required by R315-8-5.3, which incorporates by reference 40 CFR 264.73, the owner or operator shall place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

(c) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. The purpose of this section is to prevent fires, explosions, gaseous emission, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible wastes or materials if containers break or leak.

9.9 CLOSURE

At closure, all hazardous waste and hazardous waste residues shall be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed.

At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with R315-2-3(d) that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of these rules.

9.10 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a container in accordance with the applicable requirements of R315-8-17, which incorporates by reference 40 CFR subpart AA, R315-8-18, which incorporates by reference

40 CFR subpart BB, and R315-8-22, which incorporates by reference 40 CFR subpart CC.

R315-8-10. Tanks.

The requirements as found in 40 CFR 264, subpart J, 264.190 - 264.200, 1996 ed., as amended by 61 FR 59931, November 25, 1996, are adopted and incorporated by reference with the following exceptions:

(a) Substitute "Executive Secretary" for all references to "Administrator" or "Regional Administrator" found in subpart J except paragraph 264.193(g) which should have "Regional Administrator" replaced by "Board".

(b) Add, following January 12, 1988, in 40 CFR 265.191(a), "or by December 16, 1988 for non-HSWA existing tank systems."

(c) Replace 40 CFR 265.193(a)(2) to (4) with the following corresponding paragraphs:

(1) For all HSWA existing tank systems used to store or treat EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027, within two years after January 12, 1987, or within two years after December 16, 1988 for non-HSWA existing tank systems;

(2) For those HSWA existing tank systems of known and documented age, within two years after January 12, 1987, or within two years after December 16, 1988 for non-HSWA existing tank systems, or when the tank system has reached 15 years of age, whichever comes later;

(3) For those HSWA existing tank systems for which the age cannot be documented, within eight years of January 12, 1987, or within eight years of December 16, 1988 for non-HSWA existing tank systems; but if the age of the facility is greater than seven years, secondary containment shall be provided by the time the facility reaches 15 years of age, or within two years of January 12, 1987, or within two years of December 16, 1988 for non-HSWA existing tank systems, whichever comes later; and

(d) Add, following the last January 12, 1987, in 40 CFR 265-193(a)(5), "or December 16, 1988 for non-HSWA tank systems."

R315-8-11. Surface Impoundments.

11.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste except as provided otherwise in R315-8-1.

11.2 DESIGN AND OPERATING REQUIREMENTS

(a) Any surface impoundment that is not covered by R315-8-11.2(f) or R315-7-18.9 shall have a liner for all portions of the impoundment, except for existing portions of such impoundments. The liner shall be designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the closure period, of the impoundment. The liner may be constructed of materials that may allow wastes to migrate into the liner, but not into the adjacent subsurface soil or groundwater or surface water, during the active life of the facility, provided that the impoundment is closed in accordance with R315-8-11.9(a)(1). For impoundments that will be closed in accordance with R315-8-11.5(a)(2), the liner shall be constructed of

materials that can prevent wastes from migrating into the liner during the active life of the facility. The liner shall be:

(1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients, including static head and external hydrogeologic forces, physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(2) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(3) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(b) The owner or operator will be exempted from the requirements of R315-8-11.2(a) if the Executive Secretary finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents, see R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Executive Secretary will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and groundwater or surface water; and

(4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) The owner or operator of each new surface impoundment unit on which construction commences after January 29, 1992, each lateral expansion of a surface impoundment unit on which construction commences after July 29, 1992 and each replacement of an existing surface impoundment unit that is to commence reuse after July 29, 1992 shall install two or more liners and a leachate collection and removal system between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility".

(1)(i) The liner system shall include:

(A) A top liner designed and constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

(B) A composite bottom liner, consisting of at least two components. The upper component shall be designed and constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component shall be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} /cm/sec.

(ii) The liners shall comply with R315-8-11.2(a)(1)-(3).

(2) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system shall be

capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:

(i) Constructed with a bottom slope of one percent or more;

(ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-1} /cm/sec or more and a thickness of 12 inches, 30.5 cm, or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-4} /m²/sec or more;

(iii) Constructed of materials that are chemically resistant to the waste managed in the surface impoundment and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes and any waste cover materials or equipment used at the surface impoundment;

(iv) Designed and operated to minimize clogging during the active life and post-closure care period; and

(v) Constructed with sumps and liquid removal methods, e.g., pumps, of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(3) The owner or operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner.

(4) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-11.2(c) if the owner or operator demonstrates to the Executive Secretary that such design and operating practices, together with location characteristics:

(1) Will prevent the migration of any hazardous constituent into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system specified in R315-8-11.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) The double liner requirement set forth in R315-8-11.2(f) may be waived by the Executive Secretary for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and the wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics, and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the liner is leaking. For the purposes of this paragraph, the term "liner" means a liner designed, constructed, installed and operated to prevent hazardous waste from passing into the liner at any time during the active life of the facility, or a liner designed, constructed, installed, and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, groundwater, or surface water at any time during

the active life of the facility. In the case of any surface impoundment which has been exempted from the requirements of R315-8-11.2(c) on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of the impoundment, the owner or operator shall remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable given the specific site conditions and the nature and extent of contamination. If all contaminated soil is not removed or decontaminated, the owner or operator of the impoundment will comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action:

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR 144.3; and

(C) The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with a permit; or

(ii) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into groundwater or surface water at any future time.

(f) The owner or operator of any replacement surface impoundment unit is exempt from R315-8-11.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of sections 3004 (o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) A surface impoundment shall be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.

(h) A surface impoundment shall have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure to the dikes. In ensuring structural integrity, it shall not be presumed that the liner system will function without leakage during the active life of the unit.

(i) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

11.3 MONITORING AND INSPECTION

(a) During construction and installation, liners, except in the case of existing portions of surface impoundments exempt from R315-8-11.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

(b) While a surface impoundment is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of overtopping control systems;

(2) Sudden drops in the level of the impoundment's contents; and

(3) Severe erosion or other signs of deterioration in dikes or other containment devices.

(c) Prior to the issuance of a permit and after any extended period of time, at least six months, during which the impoundment was not in service, the owner or operator shall obtain a certification from a qualified engineer that the impoundment's dike, including that portion of any dike which provides freeboard, has structural integrity. The certification shall establish, in particular, that the dike:

(1) Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and

(2) Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.

(d)(1) An owner or operator required to have a leak detection system under R315-8-11.2(c) or (d) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(2) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps shall be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps shall be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator shall return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

11.4 EMERGENCY REPAIRS; CONTINGENCY PLANS

(a) A surface impoundment shall be removed from service in accordance with R315-8-11.4(b) when:

(1) The level of liquids in the impoundment suddenly drops and the drop is not known to be caused by changes in the flows into or out of the impoundment; or

(2) The dike leaks.

(b) When a surface impoundment shall be removed from service as required by R315-8-11.4(a), the owner or operator shall:

(1) Immediately shut off the flow or stop the addition of wastes into the impoundment;

(2) Immediately contain any surface leakage which has occurred or is occurring;

(3) Immediately stop the leak;

(4) Take any necessary steps to stop or prevent catastrophic failure;

(5) If a leak cannot be stopped by any other means, empty the impoundment; and

(6) Notify the Executive Secretary of the problem in writing within seven days after detecting the problem.

(c) As part of the contingency plan required in R315-8-4, the owner or operator shall specify a procedure for complying with the requirements of R315-8-11.4(b).

(d) No surface impoundment that has been removed from service in accordance with the requirements of this section may be restored to service unless the portion of the impoundment which was failing is repaired and the following steps are taken:

(1) If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity shall be recertified in accordance with R315-8-11.3(c).

(2) If the impoundment was removed from service as the result of a sudden drop in the liquid level, then:

(i) For any existing portion of the impoundment, a liner shall be installed in compliance with R315-8-11.2(a), and

(ii) For any other portion of the impoundment, the repaired liner system shall be certified by a qualified engineer as meeting the design specifications approved in the permit.

(e) A surface impoundment that has been removed from service in accordance with the requirements in this section and that is not being repaired shall be closed in accordance with the provisions of R315-8-11.5.

11.5 CLOSURE AND POST-CLOSURE CARE

(a) At closure, the owner or operator shall:

(1) Remove or decontaminate all waste residues, contaminated containment system components, liners, etc., contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous wastes unless R315-2-3(d) applies; or

(2)(i) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes and waste residues;

(ii) Stabilize remaining wastes to a bearing capacity sufficient to support final cover; and

(iii) Cover the surface impoundment with a final cover designed and constructed to:

(A) Provide long-term minimization of the migration of liquids through the closed impoundment;

(B) Function with minimum maintenance;

(C) Promote drainage and minimize erosion or abrasion of the final cover;

(D) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(E) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(b) If some waste residues or contaminated materials are left in place at final closure, the owner or operator shall comply with all post-closure requirements contained in R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, including maintenance and monitoring throughout the post-closure care period, specified in the permit under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. The owner or operator shall:

(1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;

(2) Maintain and monitor the leak detection system in accordance with R315-8-11.2(c)(2)(iv) and (3) and R315-8-11.3(d), and comply with all other applicable leak detection system requirements of this part;

(3) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of R315-8-6; and

(4) Prevent run-on and run-off from eroding or otherwise damaging the final cover.

(c)(1) If an owner or operator plans to close a surface impoundment in accordance with R315-8-11.5(a)(1), and the impoundment does not comply with the liner requirements of R315-8-11.2(a) and is not exempt from them in accordance with R315-8-11.2(b), then:

(i) The closure plan for the impoundment under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, shall include both a plan for complying with R315-8-11.5(a)(1) and a contingent plan for complying with R315-8-11.5(a)(2) in case not all contaminated subsoils can be practicably removed at closure; and

(ii) The owner or operator shall prepare a contingent post-closure plan under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, for complying with R315-8-11.5(b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151, for closure and post-closure care of an impoundment subject to this paragraph shall include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under R315-8-11.5(a)(1).

11.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Ignitable or reactive waste shall not be placed in a surface impoundment unless the waste and impoundment satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, R315-50-12, which incorporates by reference 40 CFR 268 Appendix I, and R315-50-13, which incorporates by reference 40 CFR 268 Appendix II, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f), and

(2) R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or conditions which may cause it to ignite or react; or

(c) The surface impoundment is used solely for emergencies.

11.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, shall not be placed in the same surface impoundment, unless R315-8-2.8(b) is complied with.

11.8 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall not be placed in a surface impoundment unless the owner or operator operates the surface impoundment in accordance with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Executive Secretary may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

11.9 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-11.2(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-8-11.3(d) to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and if the unit is closed in accordance with R315-8-11.5(b), monthly during the post-closure care period when monthly monitoring is required under R315-8-11.3(d).

11.10 RESPONSE ACTIONS

(a) The owner or operator of surface impoundment units subject to R315-8-11.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-11.10(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedance within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit

for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-11.10(b)(3)-(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and remediation determinations in R315-8-11.10(b)(3)-(5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source;

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

11.11 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a surface impoundment in accordance with the applicable requirements of R315-8-18, which incorporates by reference 40 CFR subpart BB, and R315-8-22, which incorporates by reference 40 CFR subpart CC.

R315-8-12. Waste Piles.

12.1 APPLICABILITY

(a) The rules in this section apply to owners and operators of facilities that store or treat hazardous waste in piles, except as provided otherwise in R315-8-1.

(b) The rules in this section do not apply to owners or operators of waste piles that are closed with wastes left in place. These waste piles are subject to the rules under R315-8-14, Landfills.

(c) The owner or operator of any waste pile that is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated is not subject to regulation under R315-8-12.2 or R315-8-6, provided that:

(1) Liquids or materials containing free liquids are not placed in the pile;

(2) The pile is protected from surface water run-on or groundwater run-on by the structure or in some other manner;

(3) The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and

(4) The pile will not generate leachate through decomposition or other reactions.

12.2 DESIGN AND OPERATING REQUIREMENTS

(a) A waste pile, except for an existing portion of a waste pile, shall have:

(1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the pile into the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the closure period, of the waste pile. The liner may be constructed of materials that may allow waste to migrate into the liner itself, but not into the adjacent

subsurface soil or groundwater or surface water, during the active life of the facility. The liner shall be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients, including static head and external hydrogeologic forces, physical contact with waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

(2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile. The Executive Secretary will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm, one foot. The leachate collection and removal system shall be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

(B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying wastes, waste cover materials, and by any equipment used at the pile; and

(ii) Designed and operated to function without clogging through the scheduled closure of the waste pile.

(b) The owner or operator will be exempted from the requirements of R315-8-12.2(a) if the Executive Secretary finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents, see R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Executive Secretary will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including attenuative capacity and thickness of the liners and soils present between the pile and groundwater or surface water; and

(4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) The owner or operator of each new waste pile unit on which construction commences after January 29, 1992, each lateral expansion of a waste pile unit on which construction commences after July 29, 1992, and each replacement of an existing waste pile unit that is to commence reuse after July 29, 1992 shall install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10 under "existing facility".

(1)(i) The liner system shall include:

(A) A top liner designed and constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

(B) A composite bottom liner, consisting of at least two components. The upper component shall be designed and

constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component shall be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(ii) The liners shall comply with R315-8-12.2(a)(1)(i), (ii), and (iii).

(2) The leachate collection and removal system immediately above the top liner shall be designed, constructed, operated, and maintained to collect and remove leachate from the waste pile during the active life and post-closure care period. The Executive Secretary will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm, one foot. The leachate collection and removal system shall comply with R315-8-12.2(c)(3)(iii) and (iv).

(3) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system shall be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:

(i) Constructed with a bottom slope of one percent or more;

(ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches, 30.5 cm, or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more;

(iii) Constructed of materials that are chemically resistant to the waste managed in the waste pile and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the waste pile;

(iv) Designed and operated to minimize clogging during the active life and post-closure care period; and

(v) Constructed with sumps and liquid removal methods, e.g., pumps, of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of groundwater.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-12.2(c) if the owner or operator demonstrates to the Executive

Secretary that such design and operating practices, together with location characteristics:

(1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in R315-8-12.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) R315-8-12.2(c) does not apply to monofills that are granted a waiver by the Executive Secretary in accordance with R315-8-11.2(h).

(f) The owner or operator of any replacement waste pile unit is exempt from R315-8-12.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm.

(h) The owner or operator shall design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(i) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(j) If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator shall cover or otherwise manage the pile to control wind dispersal.

(k) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

12.3 MONITORING AND INSPECTION

(a) During construction or installation, liners, except in the case of existing portions of piles exempt from R315-8-12.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections, e.g., holes, cracks, thin spots, or foreign materials. Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

(b) While a waste pile is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

(2) Proper functioning of wind dispersal control systems, where present; and

(3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(c) An owner or operator required to have a leak detection system under R315-8-12.2(c) shall record the amount of liquids

removed from each leak detection system sump at least once each week during the active life and closure period.

12.4 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Ignitable or reactive waste shall not be placed in a waste pile unless the waste and waste pile satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, R315-50-12, which incorporates by reference 40 CFR 268 Appendix I, and R315-50-13, which incorporates by reference 40 CFR 268 Appendix II, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the pile so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or condition which may cause it to ignite or react.

12.5 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

(a) Incompatible wastes, or incompatible wastes and materials shall not be placed in the same pile, unless R315-8-2.8(b) is complied with.

(b) A pile of hazardous waste that is incompatible with any waste or other material stored nearby in containers, other piles, open tanks, or surface impoundments shall be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

(c) Hazardous waste shall not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with R315-8-2.8(b).

12.6 CLOSURE AND POST-CLOSURE CARE

(a) At closure, the owner or operator shall remove or decontaminate all waste residues, contaminated containment system compoundments, liners, etc., contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless R315-2-3(d) applies.

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in R315-8-12.6(a), the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he shall close the facility and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills, R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120.

(c)(1) The owner or operator of a waste pile that does not comply with the liner requirements of R315-8-12.2(a)(1), and is not exempt from them in accordance with R315-8-12.1(c) or R315-8-12.2(b) shall:

(i) Include in the closure plan for the pile under R315-8-7.3 both a plan for complying with R315-8-12.6(a) and a contingency plan for complying with R315-8-12.6(b) in case not all contaminated subsoils can be practicably removed at closure; and

(ii) Prepare a contingent post-closure plan under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, for complying with R315-8-12.6(b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151, for closure and post-closure care of a pile subject to this paragraph shall include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under R315-8-12.6(a).

12.7 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026 and F027 shall not be placed in waste piles that are not enclosed, as defined in R315-8-12.1(c), unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Executive Secretary may determine that additional design, operating, and monitoring requirements are necessary for piles managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

12.8 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-12.2(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly flow rate from the monitoring data obtained under R315-8-12.3(c), to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period.

12.9 RESPONSE ACTIONS

(a) The owner or operator of waste pile units subject to R315-8-12.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-12.9(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedance within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and long-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-12.9(b)(3), (4), and (5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-8-12.9(b)(3), (4), and (5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source;

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

R315-8-13. Land Treatment.

13.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except as provided otherwise in R315-8-1.

13.2 TREATMENT PROGRAM

(a) An owner or operator subject to this section shall establish a land treatment program that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed, or immobilized within the treatment zone. The Executive Secretary will specify in the facility permit the elements of the treatment program, including:

(1) The wastes that are capable of being treated at the unit based on demonstration under R315-8-13.3;

(2) Design measures and operating practices necessary to maximize the success of degradation, transformation, and immobilization processes in the treatment zone in accordance with R315-8-13.4(a); and

(3) Unsaturated zone monitoring provisions meeting the requirements of R315-8-13.6.

(b) The Executive Secretary will specify in the facility permit the hazardous constituents that shall be degraded, transformed, or immobilized under this section. Hazardous constituents are constituents identified in R315-50-10, which

incorporates by reference 40 CFR 261 Appendix VIII, that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(c) The Executive Secretary will specify the vertical and horizontal dimensions of the treatment zone in the facility permit. The treatment zone is the portion of the unsaturated zone below and including the land surface in which the owner or operator intends to maintain the conditions necessary for effective degradation, transformation, or immobilization of hazardous constituents. The maximum depth of the treatment zone shall be:

- (1) No more than 1.5 meters, five feet, from the initial soil surface; and
- (2) More than 1 meter, three feet, above the seasonal high water table.

13.3 TREATMENT DEMONSTRATION

(a) For each waste that will be applied to the treatment zone, the owner or operator shall demonstrate, prior to application of the waste, that hazardous constituents in the waste can be completely degraded, transformed, or immobilized in the treatment zone.

(b) In making this demonstration, the owner or operator may use field tests, laboratory analyses, available data, or, in the case of existing units, operating data. If the owner or operator intends to conduct field tests or laboratory analyses in order to make the demonstration required under R315-8-13.3(a), he shall obtain a treatment or disposal permit under R315-3-6.4. The Executive Secretary will specify in this plan the testing, analytical, design, and operating requirements, including the duration of the tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, closure and clean-up activities necessary to meet the requirements in R315-8-13.3(c).

(c) Any field test or laboratory analysis conducted in order to make a demonstration under R315-8-13.3(a) shall:

(1) Accurately simulate the characteristics and operating conditions for the proposed land treatment unit including:

- (i) The characteristics of the waste, including the presence of R315-50-10 constituents, which incorporates by reference 40 CFR 261, Appendix VIII;
- (ii) The climate in the area;
- (iii) The topography of the surrounding area;
- (iv) The characteristics of the soil in the treatment zone, including depth; and
- (v) The operating practices to be used at the unit.

(2) Be able to show that hazardous constituents in the waste to be tested will be completely degraded, transformed, or immobilized in the treatment zone of the proposed land treatment unit; and

(3) Be conducted in a manner that protects human health and the environment considering:

- (i) The characteristics of the waste to be tested;
- (ii) The operating and monitoring measures taken during the course of the test;
- (iii) The duration of the test;
- (iv) The volume of the waste used in the test;
- (v) In the case of field tests, the potential for migration of hazardous constituents to groundwater or surface water.

13.4 DESIGN AND OPERATING REQUIREMENTS

The Executive Secretary will specify in the facility permit how the owner or operator will design, construct, operate, and maintain the land treatment unit in compliance with this section.

(a) The owner or operator shall design, construct, operate, and maintain the unit to maximize the degradation, transformation, and immobilization of hazardous constituents in the treatment zone. The owner or operator shall design, construct, operate, and maintain the unit in accord with all design and operating conditions that were used in the treatment demonstration under R315-8-13.3. At a minimum, the Executive Secretary will specify the following in the facility plan:

(1) The rate and method of waste application to the treatment zone;

(2) Measures to control soil pH;

(3) Measures to enhance microbial or chemical reactions, e.g., fertilization, tilling; and

(4) Measures to control the moisture content of the treatment zone.

(b) The owner or operator shall design, construct, operate, and maintain the treatment zone to minimize run-off of hazardous constituents during the active life of the land treatment unit.

(c) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the treatment zone during peak discharge from at least a 25-year storm.

(d) The owner or operator shall design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(e) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system.

(f) If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator shall manage the unit to control wind dispersal.

(g) The owner or operator shall inspect the unit weekly and after storms to detect evidence of:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems; and

(2) Improper functioning of wind dispersal control measures.

13.5 FOOD-CHAIN CROPS

The Executive Secretary may allow the growth of food-chain crops in or on the treatment zone only if the owner or operator satisfies the conditions of this section. The Executive Secretary will specify in the facility plan the specific food-chain crops which may be grown.

(a)(1) The owner or operator shall demonstrate that there is no substantial risk to human health caused by the growth of the crops in or on the treatment zone by demonstrating, prior to the planting of the crops, that hazardous constituents other than cadmium:

(i) Will not be transferred to the food or feed portions of the crop by plant uptake or direct contact, and will not otherwise be ingested by food-chain animals, e.g., by grazing; or

(ii) Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or on identical portions of the same crops grown on untreated soils under similar conditions in the same region.

(2) The owner or operator shall make the demonstration required under this paragraph prior to the planting of crops at the facility for all constituents identified in R315-50-10, which

incorporates by reference 40 CFR 261 Appendix VIII, that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(3) In making a demonstration under this paragraph, the owner or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and shall:

(i) Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics, e.g., pH, cation exchange capacity, specific wastes, application rates, application methods, and crops to be grown; and

(ii) Describe the procedures used in conducting any tests, including the sample selection criteria, sample size, analytical methods, and statistical procedures.

(4) If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration required under this paragraph, he shall obtain a permit for conducting these activities.

(b) The owner or operator shall comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

(1)(i) The pH of the waste and soil mixture shall be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of two mg/kg, dry weight, or less;

(ii) The annual application of cadmium from waste shall not exceed 0.5 kilograms per hectare, kg/ha, on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food-chain crops, and annual cadmium application rate shall not exceed:

Time Period	TABLE	Annual Cd Application Rate (kilograms per hectare)
Present to June 30, 1984		2.0
July 1, 1984 to December 31, 1986		1.25
Beginning January 1, 1987		0.5

(iii) The cumulative application of cadmium from waste shall not exceed five kg/ha if the waste and soil mixture has a pH less than 6.5; and

(iv) If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste shall not exceed: five kg/ha if soil cation exchange capacity (CEC) is less than five meq/100g; 10 kg/ha if soil CEC is 5-15 meq/100g; and 20 kg/ha if soil CEC is greater than 15 meq/100g; or

(2)(i) Animal feed shall be the only food-chain crop produced;

(ii) The pH of the waste and soil mixture shall be 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level shall be maintained whenever food-chain crops are grown;

(iii) There shall be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan shall describe the measures to be taken to safeguard against possible health hazards from cadmium entering the food-chain, which may result from alternative land uses; and

(iv) Future property owners shall be notified by a stipulation in the land record or property deed which states that

the property has received waste at high cadmium application rates and that food-chain crops shall not be grown except in compliance with R315-8-13.5(b)(2).

13.6 UNSATURATED ZONE MONITORING

An owner or operator subject to this section shall establish an unsaturated zone monitoring program to discharge the following responsibilities:

(a) The owner or operator shall monitor the soil and soil-pore liquid to determine whether hazardous constituents migrate out of the treatment zone.

(1) The Executive Secretary will specify the hazardous constituents to be monitored in the facility plan. The hazardous constituents to be monitored are those specified under R315-8-13.2(b).

(2) The Executive Secretary may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified under R315-8-13.2(b). PHCs are hazardous constituents contained in the wastes to be applied at the unit that are the most difficult to treat, considering the combined effects of degradation, transformation, and immobilization. The Board will establish PHCs if they find, based on the waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment to at least equivalent levels for the other hazardous constituents in the waste.

(b) The owner or operator shall install an unsaturated zone monitoring system that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters. The unsaturated zone monitoring system shall consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that;

(1) Represent the quality of background soil-pore liquid and the chemical make-up of soil that has not been affected by leakage from the treatment zone; and

(2) Indicate the quality of soil-pore liquid and the chemical make-up of the soil below the treatment zone.

(c) The owner or operator shall establish a background value for each hazardous constituent to be monitored under R315-8-13.6(a). The permit will specify the background values for each constituent or specify the procedures to be used to calculate the background values.

(1) Background soil values may be based on a one-time sampling at a background plot having characteristics similar to those of the treatment zone.

(2) Background soil-pore liquid values shall be based on at least quarterly sampling for one year at a background plot having characteristics similar to those of the treatment zone.

(3) The owner or operator shall express all background values in a form necessary for the determination of statistically significant increases under R315-8-13.6(f).

(4) In taking samples used in the determination of all background values, the owner or operator shall use an unsaturated zone monitoring system that complies with R315-8-13.6(b)(1).

(d) The owner or operator shall conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The Executive Secretary will specify the frequency and timing of soil and soil-pore liquid monitoring in the facility permit after considering the frequency, timing, and rate of waste application, and the soil permeability. The owner or operator shall express the results of soil and soil-pore liquid monitoring in

a form necessary for the determination of statistically significant increases under R315-8-13.6(f).

(e) The owner or operator shall use consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore liquid quality and the chemical make-up of the soil below the treatment zone. At a minimum, the owner or operator shall implement procedures and techniques for:

- (1) Sample collection;
- (2) Sample preservation and shipment;
- (3) Analytical procedures; and
- (4) Chain of custody control.

(f) The owner or operator shall determine whether there is a statistically significant change over background values for any hazardous constituent to be monitored under R315-8-13.6(a) below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under R315-8-13.6(d).

(1) In determining whether a statistically significant increase has occurred, the owner or operator shall compare the value of each constituent, as determined under R315-8-13.6(d), to the background value for that constituent according to the statistical procedure specified in the facility plan under this paragraph.

(2) The owner or operator shall determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The Executive Secretary will specify that time period in the facility plan after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.

(3) The owner or operator shall determine whether there is a statistically significant increase below the treatment zone using a statistical procedure that provides reasonable confidence that migration from the treatment zone will be identified. The Executive Secretary will specify a statistical procedure in the facility plan that he finds:

- (i) Is appropriate for the distribution of the data used to establish background values; and
- (ii) Provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.

(g) If the owner or operator determines, pursuant to R315-8-13.6(f), that there is a statistically significant increase of hazardous constituents below the treatment zone he shall:

(1) Notify the Board of this finding in writing within seven days. The notification shall indicate what constituents have shown statistically significant increases.

(2) Within 90 days, submit to the Executive Secretary an application for permit modification to modify the operating practices at the facility in order to maximize the success of degradation, transformation, or immobilization processes in the treatment zone.

(h) If the owner or operator determines, pursuant to R315-8-13.6(f), that there is a statistically significant increase of hazardous constituents below the treatment zone, he may demonstrate that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis or evaluation. While the owner or operator may make a demonstration under this paragraph in addition to, or in lieu of, submitting a permit modification application under R315-8-13.6(g)(2), he is not relieved of the requirement to submit a plan

modification application within the time specified in R315-8-13.6(g)(2) unless the demonstration made under this paragraph successfully shows that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this paragraph, the owner or operator shall:

(1) Notify the Board or its duly authorized representative in writing within seven days of determining a statistically significant increase below the treatment zone that he intends to make a determination under this paragraph;

(2) Within 90 days, submit a report to the Board demonstrating that a source other than the regulated units caused the increase or that the increase resulted from error in sampling, analysis, or evaluation;

(3) Within 90 days, submit to the Executive Secretary an application for a permit modification to make any appropriate changes to the unsaturated zone monitoring program at the facility; and

(4) Continue to monitor in accordance with the unsaturated zone monitoring program established under this section.

13.7 RECORDKEEPING

The owner or operator shall include hazardous waste application dates, rates, and amounts in the operating record required under R315-8-5.3, which incorporates by reference 40 CFR 264.73.

13.8 CLOSURE AND POST-CLOSURE CARE

(a) During the closure period the owner or operator shall:

(1) Continue all operations, including pH control, necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under R315-8-13.4(a), except to the extent such measures are inconsistent with R315-8-13.8(a)(8);

(2) Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under R315-8-13.4(b);

(3) Maintain the run-on control system required under R315-8-13.4(c);

(4) Maintain the run-off management system required under R315-8-13.4(d);

(5) Control wind dispersal of hazardous waste if required under R315-8-13.4(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under R315-8-13.5;

(7) Continue unsaturated zone monitoring in compliance with R315-8-13.6 except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone; and

(8) Establish a vegetative cover on the portion of the facility being closed at a time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone. The vegetative cover shall be capable of maintaining growth without extensive maintenance.

(b) For the purpose of complying with R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, when closure is completed the owner or operator may submit to the Board certification by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

(c) During the post-closure care period the owner or operator shall:

(1) Continue all operations, including pH control necessary to enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that these measures are consistent with other post-closure care activities;

(2) Maintain a vegetative cover over closed portions of the facility;

(3) Maintain the run-on control system required under R315-8-13.4(c);

(4) Maintain the run-off management system required under R315-8-13.4(d);

(5) Control wind dispersal of hazardous waste if required under R315-8-13.4(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under R315-8-13.5; and

(7) Continue unsaturated zone monitoring in compliance with R315-8-13.6, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.

(d) The owner or operator is not subject to regulation under R315-8-13.8(a)(8) and (c) if the Board finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in R315-8-13.8(d)(3). The owner or operator may submit such a demonstration to the Board at any time during the closure or post-closure care periods. For the purposes of this paragraph:

(1) The owner or operator shall establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility plan under R315-8-13.2(b).

(i) Background soil values may be based on a one-time sampling of a background plot having characteristics similar to those of the treatment zone.

(ii) The owner or operator shall express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under R315-8-13.8(d)(3).

(2) In taking samples used in the determination of background and treatment zone values, the owner or operator shall take samples at a sufficient number of sampling points and at appropriate locations and depths to yield samples that represent the chemical make-up of soil that has not been affected by leakage from the treatment zone and the soil within the treatment zone, respectively.

(3) In determining whether a statistically significant increase has occurred, the owner or operator shall compare the value of each constituent in the treatment zone to the background value for that constituent using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The owner or operator shall use a statistical procedure that:

(i) Is appropriate for the distribution of the data used to establish background values; and

(ii) Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the treatment zone and the probability of failing to identify real presence in the treatment zone.

(e) The owner or operator is not subject to regulation under section R315-8-6 if the Board finds that the owner or operator satisfies R315-8-13.8(d) and if unsaturated zone monitoring under R315-8-13.6 indicates that hazardous constituents have

not migrated beyond the treatment zone during the active life of the land treatment unit.

13.9 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

The owner or operator shall not apply ignitable or reactive waste to the treatment zone unless the waste and the treatment zone meet all applicable requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by reference 40 CFR 268, and:

(a) The waste is immediately incorporated into the soil so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) Section R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or conditions which may cause it to ignite or react.

13.10 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

The owner or operator shall not place incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, in or on the same treatment zone, unless R315-8-2.8(b) is complied with.

13.11 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall not be placed in a land treatment unit unless the owner or operator operates the facility in accordance with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Board may determine that additional design, operating, and monitoring requirements are necessary for land treatment facilities managing hazardous waste F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

R315-8-14. Landfills.

14.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as R315-8-1 provides otherwise.

14.2 DESIGN AND OPERATING REQUIREMENTS

(a) Any landfill that is not covered by R315-8-14.2(c) or R315-7-21.2(a) shall have a liner system for all portions of the landfill, except for existing portions of the landfill. The liner system shall have:

(1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the landfill to the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the closure period, of the

landfill. The liner shall be constructed of material that prevents wastes from passing into the liner during the active life of the facility. The liner shall be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients, including static head and external hydrogeologic forces, physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

(2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The Executive Secretary will specify design and operating conditions in the permit to ensure that the leachate depth at any point on the liner system, does not exceed 30 cm, one foot. The leachate collection and removal system shall be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and

(B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

(ii) Designed and operated to function without clogging through the scheduled closure of the landfill.

(b) The owner or operator will be exempted from the requirements of R315-8-14.2(a) if the Board finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents, see R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Board will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the landfill and groundwater or surface water; and

(4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) The owner or operator of each new landfill unit on which construction commences after January 29, 1992, each lateral expansion of a landfill unit on which construction commences after July 29, 1992, and each replacement of an existing landfill unit that is to commence reuse after July 29, 1992 shall install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility."

(1)(i) The liner system shall include:

(A) A top liner designed and constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

(B) A composite bottom liner, consisting of at least two components. The upper component shall be designed and constructed of materials, e.g., a geomembrane, to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component shall be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(ii) The liners shall comply with R315-8-14.2(a)(1)(i), (ii), and (iii).

(2) The leachate collection and removal system immediately above the top liner shall be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. The Executive Secretary will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm, one foot. The leachate collection and removal system shall comply with R315-8-14.2(c)(3)(iii) and (iv).

(3) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system shall be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:

(i) Constructed with a bottom slope of one percent or more;

(ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches, 30.5 cm, or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more;

(iii) Constructed of materials that are chemically resistant to the waste managed in the landfill and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the landfill;

(iv) Designed and operated to minimize clogging during the active life and post-closure care period; and

(v) Constructed with sumps and liquid removal methods, e.g., pumps, of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-

14.2(c) if the owner or operator demonstrates to the Executive Secretary that such design and operating practices, together with location characteristics:

(1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in R315-8-14.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) The double liner requirement set forth in R315-8-14.2(h) may be waived by the Board for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and the wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristics in R315-2-9(g) and EPA Hazardous Waste Numbers D004 through D017; and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the liner is leaking:

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR 144.3; and

(C) The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with permit; or

(ii) The owner or operator demonstrates that the monofill is located, designed, and operated so as to assure that there will be no migration of any hazardous constituent into groundwater or surface water at any future time.

(f) The owner or operator of any replacement landfill unit is exempt from R315-8-14.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) The owner or operator shall design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.

(h) The owner or operator shall design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(i) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(j) If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator shall cover or otherwise manage the landfill to control wind dispersal.

(k) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

14.3 MONITORING AND INSPECTION

(a) During construction or installation, liners, except in the case of existing portions of landfills exempt from R315-8-14.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections, e.g., holes, cracks, thin spots, or foreign materials. Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

(b) While a landfill is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

(2) Proper functioning of wind dispersal control systems, where present; and

(3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(c)(1) An owner or operator required to have a leak detection system under R315-8-14.2(c) or (d) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(2) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps shall be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps shall be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator shall return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

14.4 SURVEYING AND RECORDKEEPING

The owner or operator of a landfill shall maintain the following items in the operating record required under R315-8-5.3, which incorporates by reference 40 CFR 264.73:

(a) On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed bench marks; and

(b) The contents of each cell and the approximate location of each hazardous waste type within each cell.

14.5 CLOSURE AND POST-CLOSURE CARE

(a) At final closure of the landfill or upon closure of any cell, the owner or operator shall cover the landfill or cell with a final cover designed and constructed to:

(1) Provide long-term minimization of migration of liquids through the closed landfill;

(2) Function with minimum maintenance;

(3) Promote drainage and minimize erosion or abrasion of the cover;

(4) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(5) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(b) After final closure, the owner or operator shall comply with all post-closure requirements contained under R315-8-9.8 and R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, including maintenance and monitoring throughout the post-closure care period, specified in the permit, under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. The owner or operator shall:

(1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;

(2) Continue to operate the leachate collection and removal system until leachate is no longer detected;

(3) Maintain and monitor the leak detection system in accordance with R315-8-14.2(c)(3)(iv) and (4) and R315-8-14.3(c), and comply with all other applicable leak detection system requirements of R315-8;

(4) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of these rules;

(5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

(6) Protect and maintain surveyed bench marks used in complying with R315-8-14.4.

14.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

(a) Except as provided in R315-8-14.6(b), and in R315-8-14.10, ignitable or reactive waste shall not be placed in a landfill, unless the waste and landfill meet all applicable requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by reference 40 CFR 268, and:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) R315-8-2.8(b) is complied with.

(b) Except for prohibited wastes which remain subject to treatment standards in R315-13, which incorporates by reference 40 CFR 268 subpart D, ignitable wastes in containers may be landfilled without meeting the requirements of R315-8-14.6(a), provided that the wastes are disposed of in a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes shall be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; shall be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and shall not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

14.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials shall not be placed in the same landfill cell, unless R315-8-2.8(b) is complied with.

14.8 SPECIAL REQUIREMENTS FOR LIQUID WASTE

(a) Bulk or non-containerized liquid waste or waste containing free liquids may be placed in a landfill, prior to May 8, 1985, if:

(1) The landfill has a liner and leachate collection and removal system that meet the requirements of R315-8-14.2(a); or

(2) Before disposal, the liquid waste or waste containing free liquids is treated or stabilized, chemically or physically, e.g., by mixing with a sorbent solid, so that free liquids are no longer present.

(b) Effective May 8, 1985, the placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids, whether or not sorbents have been added, in any landfill is prohibited.

(c) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test shall be used: Method 9095, Paint Filter Liquids Test, as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." EPA Publication No. SW-846 as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(d) Containers holding free liquids shall not be placed in a landfill unless:

(1) All free-standing liquid:

(i) Has been removed by decanting, or other methods;

(ii) Has been mixed with sorbent or solidified so that free-standing liquid is no longer observed; or

(iii) Has been otherwise eliminated; or

(2) The container is very small, such as an ampule; or

(3) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

(4) The container is a lab pack as defined in R315-8-14.10, and is disposed of in accordance with R315-8-14.10.

(e) Sorbents used to treat free liquids to be disposed of in landfills shall be nonbiodegradable. Nonbiodegradable sorbents are: materials listed or described in R315-8-14.8(e)(1); materials that pass one of the tests in R315-8-14.8(e)(2); or materials that are determined by EPA to be nonbiodegradable through the R315-2-16, which incorporates by reference 40 CFR 260.22, petition process.

(1) Nonbiodegradable sorbents.

(i) Inorganic minerals, other inorganic materials, and elemental carbon, e.g., aluminosilicates, clays, smectites, Fuller's earth, bentonite, calcium bentonite, montmorillonite, calcined montmorillonite, kaolinite, micas (illite), vermiculites, zeolites; calcium carbonate (organic free limestone); oxides/hydroxides, alumina, lime, silica (sand), diatomaceous earth; perlite (volcanic glass); expanded volcanic rock; volcanic ash; cement kiln dust; fly ash; rice hull ash; activated charcoal/activated carbon; or

(ii) High molecular weight synthetic polymers (e.g., polyethylene, high density polyethylene (HDPE), polypropylene, polystyrene, polyurethane, polyacrylate, polynorborene, polyisobutylene, ground synthetic rubber, cross-linked allylstylene and tertiary butyl copolymers). This does not include polymers derived from biological material or polymers specifically designed to be degradable; or

(iii) Mixtures of these nonbiodegradable materials.

(2) Tests for nonbiodegradable sorbents.

(i) The sorbent material is determined to be nonbiodegradable under ASTM Method G21-70 (1984a)-Standard Practice for Determining Resistance of Synthetic Polymer Materials to Fungi; or

(ii) The sorbent material is determined to be nonbiodegradable under ASTM Method G22-76 (1984b)-

Standard Practice for Determining Resistance of Plastics to Bacteria; or

(iii) The sorbent material is determined to be non-biodegradable under the Organization for Economic Cooperation and Development (OECD) test 301B, CO₂ Evolution, Modified Sturm Test.

(f) Effective November 8, 1985, the landfill placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator of the landfill demonstrates to the Board, or the Board determines that;

(1) The only reasonably available alternative to the placement in the landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains or may reasonably be anticipated to contain, hazardous waste; and

(2) Placement in the owner or operator's landfill will not present a risk of contamination of any underground source of drinking water, as that term is defined in 40 CFR 144.3.

14.9 SPECIAL REQUIREMENTS FOR CONTAINERS

Unless they are very small, such as an ampule, containers shall be either:

(a) At least 90 percent full when placed in the landfill; or

(b) Crushed, shredded, or similarly reduced in volume to the maximum practical extent before burial in the landfill.

14.10 DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS, LAB PACKS

Small containers of hazardous waste in overpacked drums, lab packs, may be placed in a landfill if the following requirements are met:

(a) Hazardous waste shall be packaged in non-leaking inside containers. The inside containers shall be of a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the contained waste. Inside containers shall be tightly and securely sealed. The inside containers shall be of the size and type specified in the Department of Transportation (DOT) hazardous materials regulations, 49 CFR parts 173, 178, and 179, if those regulations specify a particular inside container for the waste.

(b) The inside containers shall be overpacked in an open head DOT - specification metal shipping container, 49 CFR parts 178 and 179, of no more than 416-liter, 110 gallon, capacity and surrounded by, at a minimum, a sufficient quantity of sorbent material, determined to be nonbiodegradable in accordance with R315-8-14.8(e), to completely sorb all of the liquid contents of the inside containers. The metal outer container shall be full after it has been packed with inside containers and sorbent material.

(c) The sorbent material used shall not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers in accordance with R315-8-2.8(b).

(d) Incompatible wastes, as defined in R315-1 shall not be placed in the same outside container.

(e) Reactive wastes, other than cyanide or sulfide bearing wastes as defined in R315-2-9(f)(v) shall be treated or rendered non-reactive prior to packaging in accordance with R315-8-14.10(a) through (d). Cyanide and sulfide bearing reactive waste may be packed in accordance with R315-8-14.10(a) through (d) without first being treated or rendered non-reactive.

(f) The disposal is in compliance with the requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by

reference 40 CFR 268. Persons who incinerate lab packs according to the requirements in R315-13, which incorporates by reference 40 CFR 268.42(c)(1), may use fiber drums in place of metal outer containers. Such fiber drums shall meet the DOT specification in 49 CFR 173.12 and be overpacked according to the requirements in R315-8-14.10(b).

14.11 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall not be placed in a landfill unless the owner or operator operates the landfill in accord with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements. The factors to be considered are:

(1) The volume, physical and chemical characteristics of the wastes, including their potential to migrate through the soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring requirements.

(b) The Board may determine that additional design, operating and monitoring requirements are necessary for landfills managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

14.12 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-14.2(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system, LDS, can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate shall include an adequate safety margin to allow for uncertainties in the design, e.g., slope, hydraulic conductivity, thickness of drainage material, construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions, e.g., the action leakage rate shall consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-8-14.3(c), to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and monthly during the post-closure care period when monthly monitoring is required under R315-8-14.3(c).

14.13 RESPONSE ACTIONS

(a) The owner or operator of landfill units subject to R315-8-14.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-14.13(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedence within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-14.13(b)(3)-(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-8-14.13(b)(3)-(5), the owner or operator shall:

(1)(i) Assess the source of liquids and amounts of liquids by source;

(ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(2) Document why such assessments are not needed.

R315-8-15. Incinerators.

15.1 APPLICABILITY

(a) The rules in this section apply to owners or operators of facilities that incinerate hazardous waste, as defined in 40 CFR 260.10, except as R315-8-1 provides otherwise.

(b) Integration of the MACT standards.

(1) Except as provided by R315-8-15.1(b)(2), (3), and (4) the standards of R315-8 no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE, by conducting a comprehensive performance test and submitting to the Executive Secretary a Notification of Compliance under R307-214-2, which incorporates by reference 40 CFR 63.1207(j) and 63.1210(b), documenting compliance with the requirements of 307-214-2, which incorporates by reference 40 CFR 63, subpart EEE. Nevertheless, even after this demonstration of compliance with the MACT standards, hazardous waste permit conditions that were based on the standards of R315-8 will continue to be in effect until they are removed from the permit or the permit is terminated or revoked, unless the permit expressly provides otherwise.

(2) The MACT standards do not replace the closure requirements of R315-8-15.8 or the applicable requirements of R315-8-1 through R315-8-8, R315-8-18, which incorporates by

reference 40 CFR 264 subpart BB, and R315-8-22, which incorporates by reference 40 CFR 264 subpart CC.

(3) The particulate matter standard of R315-8-15.4(b) remains in effect for incinerators that elect to comply with the alternative to the particulate matter standard of R307-214-2, which incorporates by reference to CFR 63.1206(b)(14).

(4) The following requirements remain in effect for startup, shutdown, and malfunction events if you elect to comply with R315-3-9(a)(1)(i) to minimize emissions of toxic compounds from these events:

(i) R315-8-15.6(a) requiring that an incinerator operate in accordance with operating requirements specified in the permit; and

(ii) R315-8-15.6(c) requiring compliance with the emission standards and operating requirements during startup and shutdown if hazardous waste is in the combustion chamber, except for particular hazardous wastes.

(c) After consideration of the waste analysis included with part B of the permit application, the Executive Secretary, in establishing the permit conditions, shall exempt the applicant from all requirements of this section except R315-8-15.2, Waste Analysis and R315-8-15.8, Closure,

(1) If the Executive Secretary finds that the waste to be burned is:

(i) Listed as a hazardous waste in R315-2-10 or R315-2-11 solely because it is ignitable, Hazard Code I, corrosive Hazard Code C, or both; or

(ii) Listed as a hazardous waste in R315-2-10 or R315-2-11 solely because it is reactive, Hazard Code R, for characteristics other than those listed in R315-2-9(f)(1)(iv) and (v), and will not be burned when other hazardous wastes are present in the combustion zone; or

(iii) A hazardous waste solely because it possesses the characteristics of ignitability, corrosivity, or both, as determined by the test for characteristics of hazardous wastes under R315-2-9, or

(iv) A hazardous waste solely because it possesses any of the reactivity characteristics described by R315-2-9(f)(1)(i), (ii), (iii), (vi), (vii), and (viii) and will not be burned when other hazardous wastes are present in the combustion zone; and

(2) If the waste analysis shows that the waste contains none of the hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, which could reasonably be expected to be in the waste.

(d) If the waste to be burned is one which is described by R315-8-15.1(c)(1)(i), (ii), (iii), or (iv) and contains insignificant concentrations of the hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, then the Executive Secretary may, in establishing permit conditions, exempt the applicant from all requirements of this section except R315-8-15.2, Waste analysis and R315-8-15.8, Closure, after consideration of the waste analysis included with part B of the permit application, unless the Executive Secretary finds that the waste will pose a threat to human health and the environment when burned in an incinerator.

(e) The owner or operator of an incinerator may conduct trial burns subject only to the requirements of R315-3-6.3.

15.2 WASTE ANALYSIS

(a) As a portion of the trial burn plan required by R315-3-6.3 or with part B of the permit the owner or operator shall have included an analysis of the waste feed sufficient to provide all information required by R315-3-6.3(b) or R315-3-2.10. Owners

or operators of new hazardous waste incinerators shall provide the information required by R315-3-6.3(c) or R315-3-2.10 to the greatest extent possible.

(b) Throughout normal operation the owner or operator shall conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in his permit, R315-8-15.6.

15.3 PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (POHCS)

(a) Principal Organic Hazardous Constituents (POHCs) in the waste feed shall be treated to the extent required by the performance standard of R315-8-15.4.

(b)(1) One or more POHCs will be specified in the facility's permit, from among these constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, for each waste feed to be burned. This specification will be based on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses and trial burns or alternative data submitted with part B of the permit. Organic constituents which represent the greatest degree of difficulty of incineration will be those most likely to be designated as POHCs. Constituents are more likely to be designated as POHCs if they are present in large quantities or concentrations in the waste.

(2) Trial POHCs will be designated for performance of trial burns in accordance with the procedure specified R315-3-6.3 for obtaining trial burn permits.

15.4 PERFORMANCE STANDARDS

An incinerator burning hazardous waste shall be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under R315-8-15.6, it will meet the following performance standards:

(a)(1) An incinerator burning hazardous waste shall achieve a destruction and removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated, R315-8-15.3, in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = (W_{in} - W_{out}) / W_{in} \times 100\%$$

Where:

W_{in} = Mass feed rate of one principal organic hazardous constituent (POHC) in the waste stream feeding the incinerator, and

W_{out} = Mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour, 4 pounds per hour, of hydrogen chloride (HC1) shall control HC1 emissions so that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or one percent of the HC1 in the stack gas prior to entering any pollution control equipment.

(b) An incinerator burning hazardous waste shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter, 0.08 grains per dry standard cubic foot, when corrected for the amount of oxygen in the stack gas according to the formula:

$$P_c = P_m \times 14 / (21 - Y)$$

When P_c is correct concentration of particulate matter, P_m is the measured concentration of particulate matter, and Y is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas, as presented in

40 CFR 60 Appendix A Method 3. This correction procedure is to be used by all hazardous waste incinerators except those operating under conditions of oxygen enrichment. For these facilities, the Executive Secretary will select an appropriate correction procedure, to be specified in the facility permit.

(c) For purposes of permit enforcement, compliance with the operating requirements specified in the permit under R315-8-15.6 will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this section may be "information" justifying modification, revocation, or reissuance of a permit under R315-3-4.2.

(d) An incinerator burning hazardous wastes F020, F021, F022, F023, F026, or F027 shall achieve a destruction and removal efficiency (DRE) of 99.9999% for each principal organic hazardous constituent (POHC) designated, under R315-8-15.3, in its permit. This performance shall be demonstrated on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in R315-8-15.4(a)(1). In addition, the owner or operator of the incinerator shall notify the Executive Secretary of his intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

15.5 HAZARDOUS WASTE INCINERATOR PERMITS

(a) The owner or operator of a hazardous waste incinerator may burn only wastes specified in his permit and only under operating conditions specified for those wastes under 8.15.6., except:

(1) In approved trial burns, R315-3-6.3, or

(2) Under exemptions created by R315-8-15.1.

(b) Other hazardous wastes may be burned after operating conditions have been specified in a new permit or a permit modification, as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with part B of a permit under R315-3-2.10.

(c) The permit for a new hazardous waste incinerator shall establish appropriate conditions for each of the applicable requirements of this section including but not limited to allowable waste feeds and operating conditions necessary to meet the requirements of R315-8-15.6, sufficient to comply with the following standards:

(1) For the period beginning with initial introduction of hazardous waste to the incinerator and ending with initiation of the trial burn, and only for the minimum time required to establish operating conditions required in R315-8-15.5(c)(2), not to exceed a duration of 720 hours operating time for treatment of hazardous waste, the operating requirements shall be those most likely to ensure compliance with the performance standards in R315-8-15.4 based on the Executive Secretary's engineering judgement. The Executive Secretary may extend the duration of this period once for up to 720 additional hours when good cause for the extension is demonstrated by the applicant;

(2) For the duration of the trial burn, the operating requirements shall be sufficient to demonstrate compliance with the performance standards of R315-8-15.4 and shall be in accordance with the approved trial burn plan;

(3) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial burn results by the applicant, and review of the trial burn results and modification of the facility permit by the Executive

Secretary, the operating requirements shall be those most likely to ensure compliance with the performance standards of R315-8-15.4 based on the Executive Secretary's engineering judgement.

(4) For the remaining duration of the permit, the operating requirements shall be those demonstrated, in a trial burn or by alternative data specified in R315-3-2.10(c), as sufficient to ensure compliance with the performance standards of R315-8-15.4.

15.6 OPERATING REQUIREMENTS

(a) An incinerator shall be operated in accordance with operating requirements specified in the permit. These will be specified on a case-by-case basis as those demonstrated, in a trial burn or in alternative data as specified in R315-8-15.5(b), and included with part B of a facility's permit to be sufficient to comply with the performance standards of R315-8-15.4.

(b) Each set of operating requirements will specify the composition of the waste feed, including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirements of R315-8-15.4, to which the operating requirements apply. For each such waste feed, the permit will specify acceptable operating limits including the following conditions:

(1) Carbon monoxide (CO) level in the stack exhaust gas;
(2) Waste feed rate;
(3) Combustion temperature;
(4) An appropriate indicator of combustion gas velocity;
(5) Allowable variations in incinerator system design or operating procedures; and

(6) Any other operating requirements as are necessary to ensure that the performance standards of R315-8-15.4 are met.

(c) During start-up and shut-down of an incinerator, hazardous waste, except wastes exempted in accordance with R315-8-15.1, shall not be fed into the incinerator unless the incinerator is operating within the conditions of operation, temperature, air feed rate, etc., specified in the permit.

(d) Fugitive emissions from the combustion zone shall be controlled by:

(1) Keeping the combustion zone totally sealed against fugitive emissions; or
(2) Maintaining a combustion zone pressure lower than atmospheric pressure; or
(3) An alternative means of control demonstrated, with part B of the permit to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(e) An incinerator shall be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established under R315-8-15.6(a).

(f) An incinerator shall cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its permit.

15.7 MONITORING AND INSPECTIONS

(a) The owner or operator shall conduct, as a minimum, the following monitoring while incinerating hazardous waste:

(1) Combustion temperature, waste feed rate, and the indicator of combustion gas velocity specified in the facility permit shall be monitored on a continuous basis.

(2) Carbon monoxide (CO) shall be monitored on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.

(3) Upon request by the Board, sampling and analysis of the waste and exhaust emissions shall be conducted to verify that the operating requirements established in the permit achieve the performance standards of R315-8-15.4.

(b) The incinerator and associated equipment, pumps, valves, conveyors, pipes, etc., shall be subjected to thorough visual inspection, at least daily, for leaks, spills, fugitive emissions, and signs of tampering.

(c) The emergency waste feed cutoff system and associated alarms shall be tested at least weekly to verify operability, unless the applicant demonstrates to the Board that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate. At a minimum, operational testing shall be conducted at least monthly.

(d) This monitoring and inspection data shall be recorded and the records shall be placed in the operating record required by R315-8-5.3, which incorporates by reference 264.73.

15.8 CLOSURE

At closure the owner or operator shall remove all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters, and scrubber sludges, from the incinerator site.

At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with R315-2-3(d), that the residue removed from the incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with applicable requirements. R315-4 - R315-9.

R315-8-16. Miscellaneous Units.

The requirements as found in 40 CFR 264, subpart X, which includes sections 264.600 through 264.603, 2000 ed., are adopted and incorporated by reference.

R315-8-17. Air Emission Standards for Process Vents.

The requirements as found in 40 CFR subpart AA sections 264.1030 through 264.1036, 1998 ed., as amended by 64 FR 3382, January 21, 1999, are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator".

R315-8-18. Air Emission Standards for Equipment Leaks.

The requirements as found in 40 CFR subpart BB sections 264.1050 through 264.1065, 1997 ed., as amended by 62 FR 64636, December 8, 1997, are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator."

R315-8-19. Drip Pads.

The requirements as found in 40 CFR subpart W sections 264.570 through 264.575, 1996 ed., are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator".

(2) Add, following December 6, 1990, in 40 CFR 264.570(a), "for all HSWA drip pads or January 31, 1992 for all non-HSWA drip pads."

(3) Add, following December 24, 1992, in 40 CFR 570(a), "for all HSWA drip pads or July 30, 1993 for all non-HSWA drip pads."

R315-8-20. Containment Buildings.

The requirements of subpart DD sections 264.1100 through 264.1110, as found in 57 FR 37194, August 18, 1992, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

R315-8-21. Corrective Action for Solid Waste Management Units.

The requirements of 40 CFR 264, subpart S, which includes sections 264.550 through 264.555, 2000 ed., as amended by 67 FR 2962, January 22, 2002, are adopted and incorporated by reference with the following exception:

substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

R315-8-22. Air Emission Standards for Tanks, Surface Impoundments, and Containers.

The requirements as found in 40 CFR subpart CC, sections 264.1080 through 264.1091, 1998 ed., as amended by 64 FR 3382, January 21, 1999, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

KEY: hazardous waste

September 15, 2003

Notice of Continuation October 18, 2001

19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.

R315-9. Emergency Controls.

R315-9-1. Immediate Action.

In the event of a spill of hazardous waste or material which, when spilled, becomes hazardous waste, the person responsible for the material at the time of the spill shall immediately:

(a) Take appropriate action to minimize the threat to human health and the environment.

(b) Notify the Utah State Department of Environmental Quality, 24-hour Answering Service, 801-536-4123 if the following spill quantities are exceeded:

(1) One kilogram of material listed in paragraph R315-2-10(e), which includes F999 and incorporates by reference 40 CFR 261.31, and which is an acute hazardous waste identified with a hazard code of (H), or in R315-2-11(e), which incorporates by reference 40 CFR 261.33(e). Notify for a spill of a lesser quantity if there is a potential threat to human health or the environment; or

(2) One hundred kilograms of hazardous waste or material which, when spilled, becomes hazardous waste, other than that listed in R315-2-11(e), which incorporates by reference 40 CFR 261.33(e). Notify for a spill of a lesser quantity if there is a potential threat to human health or the environment.

(c) Provide the following information when reporting the spill:

(1) Name, phone number, and address of person responsible for the spill.

(2) Name, title, and phone number of individual reporting.

(3) Time and date of spill.

(4) Location of spill - as specific as possible including nearest town, city, highway or waterway.

(5) Description contained on the manifest and the amount of material spilled.

(6) Cause of spill.

(7) Emergency action taken to minimize the threat to human health and the environment.

(d) An air, rail, highway, or water transporter who has discharged hazardous waste shall:

(1) Give notice, if required by 49 CFR 171.15 to the National Response Center, 800-424-8802 or 202-426-2675; and

(2) Report in writing as required by 49 CFR 171.16 to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590.

(e) A water, bulk shipment, transporter who has discharged hazardous waste must give the same notice as required by 33 CFR 153.203 for oil and hazardous substances.

R315-9-2. Emergency Control Variance.

If a spill of hazardous waste requires immediate removal to protect human health or the environment, as determined by the Executive Secretary, a variance may be granted by the Executive Secretary to the manifest and recordkeeping requirements of these rules until the spilled material and any residue or contaminated soil, water or other material resulting from the spill no longer presents an immediate hazard to human health or the environment, as determined by the Executive Secretary.

R315-9-3. Spill Clean-up.

The person responsible for the material at the time of the spill shall clean up all the spilled material and any residue or contaminated media or other material resulting from the spill or

take action as may be required by the Executive Secretary so that the spilled material, residue, or contaminated media no longer presents a hazard to human health or the environment as defined in R315-101. The cleanup or other required actions shall be at the expense of the person responsible for the spill. If the person responsible for the spill fails to take the required action, the Department may take action and bill the responsible person.

R315-9-4. Reporting.

Within 15 days after any spill of hazardous waste or material which, when spilled, becomes hazardous waste, and is reported under R315-9-1(b), the person responsible for the material at the time of the spill shall submit to the Board or the Executive Secretary a written report which contains the following information:

(a) The person's name, address, and telephone number;

(b) Date, time, location, and nature of the incident;

(c) Name and quantity of material(s) involved;

(d) The extent of injuries, if any;

(e) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(f) The estimated quantity and disposition of recovered material that resulted from the incident.

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December 15, 1995

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19-6-105

19-6-106

**R315. Environmental Quality, Solid and Hazardous Waste.
R315-12. Administrative Procedures.**

R315-12-1. Application of Rule.

(a) This rule applies to proceedings under Title 19, Chapter 6, Part 1 (Solid and Hazardous Waste Act), Title 19, Chapter 6, Part 5 (Solid Waste Management Act), Title 19, Chapter 6, Part 6 (Lead Acid Battery Disposal), Title 19, Chapter 6, Part 7 (Used Oil Management Act), and Title 26, Chapter 32a (Waste Tire Recycling).

(b) For purposes of these rules, an appeal under the Used Oil Management Act shall mean the process of agency decision making under the Utah Administrative Procedures Act (UAPA), Section 63-46b-0.5 through 63-46b-11, and the standards, deadlines, procedures, and other requirements for an appeal shall be same as the standards, deadlines, procedures, and other requirements for contesting the validity of an initial order or violation under R315-12.

R315-12-2. Orders, NOVs, and Other Decisions by the Executive Secretary.

2.1 INITIAL PROCEEDINGS EXEMPT FROM UAPA

Proceedings that culminate in the issuance of an initial order or a notice of violation under the Utah Solid and Hazardous Waste Act are not governed by the provisions of the Utah Administrative Procedures Act (UAPA) as specified in Section 63-46b-1(2)(k). This includes initial proceedings regarding: approval, modification, denial, termination, transfer, revocation, or reissuance of permits; approval for equivalent testing or analytical methods; notices of violation and orders associated with notices of violation; orders for corrective action; and consent orders.

2.2 INITIAL ORDERS AND NOTICES OF VIOLATION ISSUED BY EXECUTIVE SECRETARY

(a) The initial orders and notices described in R315-12-2.1 shall be issued by the Executive Secretary.

(b) An initial order or notice shall become final in 30 days if not contested as described in R315-12-3. Failure to contest an initial order or notice waives any right of administrative review or judicial appeal.

R315-12-3. Contesting the Validity of an Initial Order or Notice of Violation Issued by the Executive Secretary.

3.1 CONTESTING THE VALIDITY OF AN INITIAL ORDER OR NOTICE OF VIOLATION -- REQUEST FOR AGENCY ACTION

(a) The validity of initial orders or notices of violation described in R315-12-2 may be contested by filing a written Request for Agency Action with the Board:

Solid and Hazardous Waste Control Board
Division of Solid and Hazardous Waste
288 North 1460 West
PO Box 144880
Salt Lake City, Utah 84114-4880.

(b) Any such request is governed by and shall comply with the requirements of Section 63-46b-3(3) of UAPA, and shall be received for filing within 30 days of the issuance of the Executive Secretary's order or notice of violation.

3.2 RESPONSE TO REQUEST FOR AGENCY ACTION

Notice of the time and place for a hearing shall be provided in the response to a request for agency action, or shall be provided promptly after the hearing is scheduled.

3.3 UAPA GOVERNS SUBSEQUENT PROCEEDINGS

A Request for Agency Action, and all subsequent proceedings acting on that request, are governed by UAPA. Section 63-46b-1(2)(k) of UAPA.

R315-12-4. Parties and Intervention.

4.1 WHO IS A PARTY?

(a) The following persons are Parties to a proceeding governed by this Rule:

(1) The person to whom an initial order or notice of violation is directed, such as a person who submitted a permit application that was approved or disapproved by order of the Executive Secretary;

(2) The Executive Secretary; and

(3) All persons whose legal rights or interests are substantially affected by the proceeding, who have standing to participate in the proceeding, and to whom intervention rights have been granted under R315-12-4.2.

(b) In a proceeding requested by the person to whom an initial order or notice of violation is directed, that person shall be the Petitioner and the Executive Secretary shall be the Respondent.

(c) In a proceeding requested by a person requesting intervention, the Intervenor shall be the Petitioner, provided that Intervention is granted, and the Executive Secretary and the person to whom an initial order or notice of violation is directed shall be the Respondents.

4.2 INTERVENTION

(a) A person who is not a party to a proceeding may request intervention under Section 63-46b-9 of UAPA for the purpose of filing a Request for Agency Action, and may simultaneously file that Request. Any such Requests for Intervention and Agency Action must be received by the Board for filing as provided in R315-12-3.1 within 30 days of the date of the challenged order or notice of violation.

(b) Any Party may, within 20 days or such earlier time as established by the Presiding Officer(s), respond to a Request for Intervention. The Chair of the Board may act as Presiding Officer for purposes of this paragraph.

4.3 Amicus curiae (Friend of the Court)

Persons may be permitted by the Presiding Officer(s) to enter an appearance as Amicus Curiae (Friend of the Court), subject to conditions established by the Presiding Officer(s).

4.4 APPEARANCES AND REPRESENTATION

(a) An individual who is a participant to a proceeding, or an officer designated by a partnership, corporation, association, or governmental entity which is a participant to a proceeding, may represent his or its interest in the proceeding.

(b) Any participant may be represented by an attorney at law.

R315-12-5. Conduct of Proceedings.

5.1 ROLE OF BOARD

(a) The Board is the "agency head" as that term is used in UAPA. The Board is also the "presiding officer," as that term is used in UAPA, except:

(1) The Chair of the Board shall be considered the Presiding Officer to the extent that these rules allow; and

(2) The Board may by order appoint a Presiding Officer to preside over all or a portion of the proceedings.

(b) The Chair of the Board may delegate his/her authority as specified in this Rule to another Board member.

5.2 APPOINTED PRESIDING OFFICERS

Unless otherwise explicitly provided in an order of appointment, any appointment of a Presiding Officer or Presiding Officers shall be for the purpose of conducting all aspects of an adjudicative proceeding, except issuance of the final order. See also R315-12-7.2 regarding orders of Presiding Officers.

5.3 DESIGNATION OF PROCEEDINGS AS FORMAL OR INFORMAL

(a) Proceedings pursuant to a Request for Agency Action shall be conducted formally if the Request for Agency Action is made to contest the validity of the following:

(1) An order regarding approval, modification, denial, termination, transfer, revocation, or reissuance of a permit;

(2) An order regarding approval, denial, or modification of a corrective action, clean-up, or closure plan;

(3) A notice of violation or order associated with a notice of violation; or

(4) A consent order.

(b) The Board may convert proceedings which are designated to be formal to informal, and proceedings which are designated as informal to formal if conversion is in the public interest and rights of all parties are not unfairly prejudiced. See Section 63-46b-4(3) of UAPA.

5.4 PRE-HEARING CONFERENCES

The Presiding Officer(s) may direct the Parties to appear at a specified time and place for a pre-hearing conference(s) for the purposes of clarifying the issues, simplifying the evidence, facilitating discovery, expediting proceedings, or encouraging settlement.

5.5 BRIEFS

(a) Unless otherwise directed by the Presiding Officer(s), parties to the proceeding may submit a pre-hearing brief at least five business days before the hearing. Post-hearing briefs will be allowed only as authorized by the Board. Parties are not required to submit pre-hearing or post-hearing briefs unless directed to do so by the Presiding Officer(s). Pre-hearing and post-hearing briefs shall not exceed 15 pages unless otherwise provided by the Presiding Officer for all Parties.

(b) Response briefs may not be filed unless permitted by the Presiding Officer(s).

5.6 PARTIES MAY PROPOSE SCHEDULE

Parties to a proceeding are encouraged to prepare a joint proposed schedule addressing the matters specified in R315-12-5.7. If the parties cannot agree on a joint proposed schedule, the Presiding Officer(s) may consider proposals by any party.

5.7 PRESIDING OFFICER(S) SHALL ESTABLISH SCHEDULES

The Presiding Officer(s) shall establish schedules for discovery and other pre-hearing proceedings, for the hearing, and for any post-hearing proceedings.

5.8 EXTENSIONS OF TIME

Except as otherwise provided by statute, the Presiding Officer(s) may approve extensions of time limits established by this rule, and may extend time limits adopted in schedules established under R315-12-5.7. The Presiding Officer(s) may also postpone hearings. The Chair of the Board may act as Presiding Officer for purposes of this paragraph.

5.9 COMPUTATION OF TIME

Time shall be computed as provided in Rule 6(a) of the Utah Rules of Civil Procedure. No additional time shall be allowed for service by mail.

5.10 MOTIONS

All motions shall be filed a minimum of ten days before a scheduled hearing, unless otherwise allowed or required by the Presiding Officer(s). A memorandum in opposition to a motion may be filed within eight days of the filing of the motion, or at least one day before any scheduled hearing, whichever is earlier. Memoranda in support of or in opposition to motions may not exceed 15 pages unless otherwise provided by the Presiding Officer.

5.11 FILING AND COPIES OF SUBMISSIONS

The original of any motion, brief, request for intervention, or other submission shall be filed with the Executive Secretary. In addition, the submitter shall provide a copy to each Presiding Officer and, through counsel of record if applicable, to each party.

R315-12-6. Hearings.

6.1 CONDUCT OF HEARING

The Presiding Officer(s) shall govern the conduct of a hearing, and may establish reasonable limits on the length of witness testimony and cross-examination, and on the length of argument.

6.2 ORDER OF PRESENTATION

Unless otherwise directed by the Presiding Officer(s), the Petitioner shall present its case first, followed by the Executive Secretary, unless the Executive Secretary is the petitioner, and any other Parties. Rebuttal, if any, shall follow the same order.

R315-12-7. Orders.

7.1 PROPOSED ORDERS BY PARTIES

Unless otherwise directed by the Presiding Officer(s), each party may provide proposed orders for the Presiding Officer(s) within three days of the conclusion of the hearing.

7.2 DRAFT ORDERS OF APPOINTED PRESIDING OFFICERS

(a) A Presiding Officer or Presiding Officers appointed for the purpose of conducting all aspects of an adjudicative proceeding, except issuance of the final order, shall prepare a draft order. A copy of the draft order shall be provided to all Parties.

(b) Any Party may, within 10 days of the date the draft order is mailed, delivered, or published, comment on the draft order. Such comments shall be limited to 15 pages, and shall cite to specific parts of the record which support the comments.

(c) The Board shall review the draft order, comments on the draft order, and those specific parts of the record cited by the Parties in any comments. The Board shall then determine whether to accept or modify the draft order, to remand the matter to an appointed Presiding Officer or Presiding Officers for further proceedings, or to act as Presiding Officers for further proceedings.

(d) The Board may modify this procedure with notice to all Parties.

7.3 CONTENT OF ORDERS

An order shall include the information required by Sections 63-46b-10 or 63-46b-5(1)(i) of UAPA.

R315-12-8. Stays of Orders.

8.1 STAY OF THE ORDER OF THE EXECUTIVE SECRETARY

(a) A Party seeking a Stay of the Order of the Executive Secretary shall file a motion with the Presiding Officer(s). A

Stay, if granted, would suspend the effect of the challenged Order.

(b) The Presiding Officer(s) may order a stay of the Executive Secretary's Order if the Party seeking the Stay demonstrates that:

(1) The Party seeking the Stay will suffer irreparable harm unless the stay issues;

(2) The threatened injury to the Party seeking the Stay outweighs whatever damage the proposed stay is likely to cause the Party restrained or enjoined;

(3) The Stay, if issued, would not be adverse to the public interest; and

(4) There is substantial likelihood that the Party seeking the Stay will prevail on the merits of the underlying claim, or the case presents serious issues on the merits which should be the subject of further evaluation by the Presiding Officer(s).

8.2 STAY OF THE ORDER OF THE PRESIDING OFFICER(S)

The Board as Presiding Officer may grant a stay of its order (or the Order of its appointed Presiding Officer) during the pendency of judicial review if the standards of 8.1(b) are met.

R315-12-9. Reconsideration.

No agency review under Section 63-46b-12 of UAPA is available. A Party may request reconsideration of an order of the Presiding Officer(s) as provided in Section 63-46b-13 of UAPA.

R315-12-10. Disqualification of Presiding Officer(s).

10.1 DISQUALIFICATION OF PRESIDING OFFICER

A member of the Board or other Presiding Officer shall disqualify him/herself from performing the functions of the Presiding Officer regarding any matter in which:

(a) He/she, or his/her spouse, or a person within the third degree of relationship to either of them, or the spouse of such person:

(1) Is a party to the proceeding, or an officer, director, or trustee of a Party;

(2) Has acted as an attorney in the proceeding or served as an attorney for, or otherwise represented a Party concerning the matter in controversy;

(3) Knows that he/she has a financial interest, either individually or as a fiduciary, in the subject matter in controversy or in a Party to the proceeding;

(4) Knows that he/she has any other interest that could be substantially affected by the outcome of the proceeding; or

(5) Is likely to be a material witness in the proceeding.

(b) The Presiding Officer is subject to disqualification under principles of due process and administrative law.

10.2 MOTIONS FOR DISQUALIFICATION

A motion for disqualification shall be made first to the Presiding Officer or Presiding Officers. If the Presiding Officer is or Presiding Officers are appointed, any determination of the Presiding Officer or Presiding Officers upon a motion for disqualification may be appealed to the Board.

R315-12-11. Other Forms of Address.

Nothing in these rules shall prevent any person from requesting an opportunity to address the Board as a member of the public, rather than as a party. An opportunity to address the Board shall be granted at the discretion of the Board. However,

addressing the Board in this manner does not constitute a request for agency action under R315-12-3.

R315-12-12. Requests for Records.

Requests for records under the Utah Government Record Access and Management Act, Title 63, Chapter 2, Utah Code Ann., are not governed by R315. See R305-1, U.A.C.

KEY: hazardous waste

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63-46b-4

R315. Environmental Quality, Solid and Hazardous Waste.

R315-13. Land Disposal Restrictions.

R315-13-1. Land Disposal Restrictions.

The requirements as found in 40 CFR 268, 2000 ed., as amended by 65 FR 67068, November 8, 2000; 66 FR 27266, May 16, 2001; 66 FR 58258, November 20, 2001; 67 FR 17119, April 9, 2002; and 67 FR 62618, October 7, 2002, are adopted and incorporated by reference including Appendices IV, VI, VII, VIII, IX, and XI, with the exclusion of Sections 268.5, 268.6, 268.42(b), and 268.44(a) - (g) and with the following exceptions:

(a) Substitute "Board" for all federal regulation references made to "Administrator" or "Regional Administrator" except for 40 CFR 268.40(b).

(b) All references made to "EPA Hazardous Waste Number" will include P999, and F999.

(c) Substitute Utah Code Annotated, Title 19, Chapter 6 for all references to RCRA.

KEY: hazardous waste

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19-6-106

19-6-105

R315. Environmental Quality, Solid and Hazardous Waste.

R315-14. Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.

R315-14-1. General Requirements.

(a) Purpose, Scope, and Applicability.

(1) The purpose of R315-14 is to establish minimum State standards which define the acceptable management of certain hazardous wastes and the acceptable practices for certain kinds of hazardous waste management facilities.

(2) R315-14 applies, in lieu of the requirements of R315-8 or R315-7, to the owners and operators of eligible hazardous waste management facilities.

R315-14-2. Recyclable Materials Used in a Manner Constituting Disposal.

(a) The requirements regarding recyclable materials used in a manner constituting disposal of 40 CFR 266.20 to 266.23, inclusive, 1994 ed., as amended by 59 FR 43496, August 24, 1994 and 59 FR 47982, September 19, 1994, are adopted and incorporated by reference.

R315-14-3. Reserved.

Reserved.

R315-14-4. Reserved.

Reserved.

R315-14-5. Recyclable Materials Utilized for Precious Metal Recovery.

The requirements regarding recyclable materials utilized for precious metal recovery of 40 CFR 266.70, 1996 ed., are adopted and incorporated by reference.

R315-14-6. Spent Lead-Acid Batteries Being Reclaimed.

The requirements regarding spent lead-acid batteries being reclaimed of 40 CFR 266.80, 1998 ed., as amended by 63 FR 71225, December 24, 1998, are adopted and incorporated by reference.

R315-14-7. Hazardous Waste Burned in Boilers and Industrial Furnaces.

The requirements as found in 40 CFR 266, Subpart H, 266.100 - 266.112, 2002 ed., are adopted and incorporated by reference.

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19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.
R315-15. Standards for the Management of Used Oil.

R315-15-1. Applicability, Prohibitions, and Definitions.

1.1 APPLICABILITY

This section identifies those materials which are subject to regulation as used oil under Section R315-15. This section also identifies some materials that are not subject to regulation as used oil under Rule R315-15, and indicates whether these materials may be subject to regulation as hazardous waste under Rules R315-1 through R315-14, and R315-50.

(a) Used oil. It is presumed that used oil is to be recycled unless a used oil handler disposes of used oil, or sends used oil for disposal. Except as provided in Section R315-15-1.2, the requirements of Rule R315-15 apply to used oil, and to materials identified in this section as being subject to regulation as used oil, whether or not the used oil or material exhibits any characteristics of hazardous waste identified in Section R315-2-9.

- (b) Mixtures of used oil and hazardous waste.
 - (1) Listed hazardous waste.

(i) Mixtures of used oil and hazardous waste that is listed in Section R315-2-10 are subject to regulation as hazardous waste under Rules R315-1 through R315-14, and R315-50, rather than as used oil under Rule R315-15.

(ii) Rebuttable presumption for used oil. Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Section R315-2-10. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste, for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Section R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII. SW-846, Edition III, is available for review during normal business hours at the Utah Division of Solid and Hazardous Waste office, located at 288 North 1460 West, Salt Lake City, Utah. To schedule an appointment, call 801-538-6170.

(A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Subsection R315-15-2.5(c), to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

(2) Characteristic hazardous waste. Mixtures of used oil and hazardous waste that solely exhibits one or more of the hazardous waste characteristics identified in Section R315-2-9 and mixtures of used oil and hazardous waste that is listed in Section R315-2-10 solely because it exhibits one or more of the characteristics of hazardous waste identified in Section R315-2-9 are subject to:

(i) Except as provided in Subsection R315-15-1(b)(2)(iii), regulation as hazardous waste under Rules R315-1 through R315-14, and R315-50 rather than as used oil under Rule R315-15, if the resultant mixture exhibits any characteristics of hazardous waste identified in Section R315-2-9; or

(ii) Except as specified in Subsection R315-15-1.1(b)(2)(iii), regulation as used oil under Rule R315-15, if the resultant mixture does not exhibit any characteristics of hazardous waste identified under Section R315-2-9.

(iii) Regulation as used oil under Rule R315-15, if the mixture is of used oil and a waste which is hazardous solely because it exhibits the characteristic of ignitability, e.g., mineral spirits, provided that the mixture does not exhibit the characteristic of ignitability under Subsection R315-2-9(d).

(3) Conditionally exempt small quantity generator hazardous waste. Mixtures of used oil and conditionally exempt small quantity generator hazardous waste regulated under Section R315-2-5, which incorporates by reference 40 CFR 261.5, are subject to regulation as used oil under Rule R315-15.

(c) Materials containing or otherwise contaminated with used oil.

(1) Except as provided in paragraph (c)(2) of this section, materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed to the extent possible such that no visible signs of free-flowing oil remain in or on the material:

(i) Are not used oil and thus not subject to Rule R315-15, and

(ii) If applicable are subject to the hazardous waste regulations of Rules R315-1 through R315-14, and R315-50.

(2) Materials containing or otherwise contaminated with used oil that are burned for energy recovery are subject to regulation as used oil under Rule R315-15.

(3) Used oil drained or removed from materials containing or otherwise contaminated with used oil is subject to regulation as used oil under Rule R315-15.

(d) Mixtures of used oil with products.

(1) Except as provided in paragraph (d)(2) of this section, mixtures of used oil and fuels or other fuel products are subject to regulation as used oil under Rule R315-15.

(2) Mixtures of used oil and diesel fuel mixed on-site by the generator of the used oil for use in the generator's own vehicles are not subject to Rule R315-15 once the used oil and diesel fuel have been mixed. Prior to mixing, the used oil is subject to the requirements of Section R315-15-2.

(e) Materials derived from used oil.

(1) Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal, e.g., re-refined lubricants, are:

(i) Not used oil and thus are not subject to Rule R315-15, and

(ii) Not solid wastes and are thus not subject to the hazardous waste regulations of Rules R315-1 through R315-14, and R315-50 as provided in Subsection R315-2-3(c)(2)(i).

(2) Materials produced from used oil that are burned for energy recovery, e.g., used oil fuels, are subject to regulation as used oil under Rule R315-15.

(3) Except as provided in paragraph (e)(4) of this section, materials derived from used oil that are disposed of or used in a manner constituting disposal are:

(i) Not used oil and thus are not subject to Rule R315-15, and

(ii) Are solid wastes and thus are subject to the hazardous waste regulations of Rules R315-1 through R315-14, and R315-50 if the materials are listed or identified as hazardous wastes.

(4) Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products are not subject to Rule R315-15.

(f) Wastewater. Wastewater, the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act, including wastewaters at facilities which have eliminated the discharge of wastewater, contaminated with de minimis quantities of used oil are not subject to the requirements of Rule R315-15. For purposes of this paragraph, "de minimis" quantities of used oils are defined as small spills, leaks, or drippings from pumps, machinery, pipes, and other similar equipment during normal operations or small amounts of oil lost to the wastewater treatment system during washing or draining operations. This exception does not apply if the used oil is discarded as a result of abnormal manufacturing operations resulting in substantial leaks, spills, or other releases, or to used oil recovered from wastewaters.

(g) Used oil introduced into crude oil pipelines or a petroleum refining facility.

(1) Used oil mixed with crude oil or natural gas liquids, e.g., in a production separator or crude oil stock tank, for insertion into a crude oil pipeline is exempt from the requirements of Rule R315-15. The used oil is subject to the requirements of Rule R315-15 prior to the mixing of used oil with crude oil or natural gas liquids.

(2) Mixtures of used oil and crude oil or natural gas liquids containing less than 1% used oil that are being stored or transported to a crude oil pipeline or petroleum refining facility for insertion into the refining process at a point prior to crude distillation or catalytic cracking are exempt from the requirements of Rule R315-15.

(3) Used oil that is inserted into the petroleum refining facility process before crude distillation or catalytic cracking without prior mixing with crude oil is exempt from the requirements of Rule R315-15 provided that the used oil constitutes less than 1% of the crude oil feed to any petroleum refining facility process unit at any given time. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of Rule R315-15.

(4) Except as provided in paragraph (g)(5) of this section, used oil that is introduced into a petroleum refining facility process after crude distillation or catalytic cracking is exempt from the requirements of Rule R315-15 only if the used oil meets the specification of Section R315-15.1.2. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of Rule R315-15.

(5) Used oil that is incidentally captured by a hydrocarbon recovery system or wastewater treatment system as part of routine process operations at a petroleum refining facility and inserted into the petroleum refining facility process is exempt from the requirements of Rule R315-15. This exemption does not extend to used oil which is intentionally introduced into a hydrocarbon recovery system, e.g., by pouring collected used oil into the waste water treatment system.

(6) Tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil or natural gas liquids are exempt from the requirements of Rule R315-15.

(h) Used oil on vessels. Used oil produced on vessels from normal shipboard operations is not subject to Rule R315-15 until it is transported ashore.

(i) Used oil containing PCBs. In addition to the requirements of Rule R315-15, marketers and burners of used oil

who market used oil containing any quantifiable level of PCBs are subject to the requirements found in 40 CFR 761.20(e).

(j) Inspections. Any duly authorized officer, employee or representative of the Department or the Board may, at any reasonable time and upon presentation of appropriate credentials and upon providing the opportunity to have a representative of the owner, operator, or agent in charge to be present, enter upon and inspect any property, premise, or place on or at which used oil is generated, transported, stored, treated or disposed of, and may have access to and the right to copy any records relating to used oil for purpose of ascertaining the compliance with Rule R315-15. Those persons referred to in this section may also inspect any waste and obtain samples thereof, including samples from any vehicle in which wastes are being transported or samples of any containers or labels. Any person obtaining samples shall give to the owner, operator or agent a receipt describing the sample obtained and, if requested, a portion of each sample of waste equal in volume or weight to the portion retained. If any analysis is made of those samples, a copy of the results of that analysis shall be furnished promptly to the owner, operator, or agent in charge.

(k) Violations, Orders, and Hearings. If the Executive Secretary has reason to believe a person is in violation of any provision of Rule R315-15, procedural requirements for compliance or cessation shall follow Section 19-6-721.

1.2 USED OIL SPECIFICATIONS

Used oil burned for energy recovery, and any fuel produced from used oil by processing, blending, or other treatment, is subject to regulation under Rule R315-15 unless it is shown not to exceed any of the allowable levels of the constituents and properties in the specification shown in Table 1. Once used oil that is to be burned for energy recovery has been shown not to exceed any specification and the person making that claim complies with Sections R315-15-7.3, R315-15-7.4, and Subsection R315-15-7.5(b), the used oil is no longer subject to Section R315-15-6.

TABLE 1
USED OIL NOT EXCEEDING ANY SPECIFICATION LEVEL IS NOT
SUBJECT TO R315-15-6 WHEN BURNED FOR ENERGY RECOVERY(1)

Constituent/property	Allowable level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 degrees F minimum
Total halogens	4,000 ppm maximum(2)

(1) The specification does not apply to mixtures of used oil and hazardous waste that continue to be regulated as hazardous waste, see Subsection R315-15-1.1(b).

(2) Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under Subsection R315-15.1(b)(1). Such used oil is subject to Section R315-14-7, which incorporates by reference 40 CFR 266 Subpart H, rather than Rule R315-15 when burned for energy recovery unless the presumption of mixing can be successfully rebutted.

Note: Applicable standards for the burning of used oil containing PCBs are imposed by 40 CFR 761.20(e).

1.3 PROHIBITIONS

Except as authorized by the Board, a person may not place, discard, or otherwise dispose of used oil in the following manner:

(a) Surface impoundment prohibition. Used oil shall not be managed in surface impoundments or waste piles unless the units are subject to regulation under Rule R315-7 or R315-8.

(b) Use as a dust suppressant, weed suppressant, or for road oiling. The use of used oil as a dust suppressant, weed suppressant, or for road oiling or other similar use is prohibited. Any disposal of used oil on the ground is prohibited under Subsection 19-6-706(1)(a)(iii).

(c) A person may not mix or commingle used oil with the following substances, except as incidental to the normal course of processing, mechanical, or industrial operations:

(1) Solid waste that is to be disposed of in any solid waste treatment, storage, or disposal facility, except as authorized by the Board; or

(2) Any hazardous waste so the resulting mixture may not be recycled or used for other beneficial purpose as authorized under Rule R315-15.

(d) Used oil shall not be disposed in a solid waste treatment, storage, or disposal facility, except for the disposal of hazardous used oil as authorized under R315-2.

(e) Used oil shall not be disposed in sewers, drainage systems, septic tanks, surface or ground waters, watercourses, or any body of water;

1.4 BURNING IN PARTICULAR UNITS

Burning in particular units. Off-specification used oil fuel may be burned for energy recovery only in the devices described in Subsection R315-15-6.2(a).

1.5 DISPOSAL OF DE MINIMIS USED OIL

(a) Section R315-15-1.3 does not apply to release of de minimis quantities of used oil identified under Subsection 19-6-706(4)(a).

(b) A person may dispose of an item or substance that contains de minimis amounts of oil in disposal facilities if:

(1) To the extent reasonably possible all oil has been removed from the item or substance; and

(2) No free flowing oil remains in the item or substance.

1.6 DISPOSAL OF USED OIL FILTERS

A person may dispose of a nonterne plated used oil filter that meets the exclusion of Subsection R315-2-4(b)(14) and is not mixed with hazardous waste defined by Rule R315-2.

1.7 DEFINITIONS

(a) Definitions of terms used in Rule R315-15 are incorporated by reference in Section R315-1-1.

(b) The definition of the term "de minimis" as used in Rule R315-15 has the same meaning as in Subsection 19-6-706(4)(b).

R315-15-2. Standards for Used Oil Generators.

2.1 APPLICABILITY

(a) General. Except as provided in paragraphs (a)(1) through (a)(4) of this section, Section R315-15-2 applies to all used oil generators. A used oil generator is any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation.

(1) Household "do-it-yourselfer" used oil generators. Household "do-it-yourselfer" used oil generators are not subject to regulation under Rule R315-15, except for the prohibitions of Section R315-15-1.3.

(2) Vessels. Vessels at sea or at port are not subject to Section R315-15-2. For purposes of Section R315-15-2, used oil produced on vessels from normal shipboard operations is considered to be generated at the time it is transported ashore. The owner or operator of the vessel and the person(s) removing

or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste in compliance with Section R315-15-2 once the used oil is transported ashore. The co-generators may decide among them which party will fulfill the requirements of Section R315-15-2.

(3) Diesel fuel. Mixtures of used oil and diesel fuel mixed by the generator of the used oil for use in the generator's own vehicles are not subject to Rule R315-15 once the used oil and diesel fuel have been mixed. Prior to mixing, the used oil fuel is subject to the requirements of Section R315-15-2.

(4) Farmers. Farmers who generate an average of 25 gallons per month or less of used oil from vehicles or machinery used on the farm in a calendar year are not subject to the requirements of Rule R315-15, except for the prohibitions of Section R315-15-1.3.

(b) Other applicable provisions. Used oil generators who conduct the following activities are subject to the requirements of other applicable provisions of Rule R315-15 as indicated in paragraphs (b)(1) through (5) of this section:

(1) Generators who transport used oil, except under the self-transport provisions of Subsections R315-15-2.5(a) and (b), shall also comply with Section R315-15-4.

(2)(i) Except as provided in paragraph (b)(2)(ii) of this section, generators who process or re-refine used oil must also comply with Section R315-15-5.

(ii) Generators who perform the following activities are not processors provided that the used oil is generated on-site and is not being sent off-site to a burner of on- or off-specification used oil fuel.

(A) Filtering, cleaning, or otherwise reconditioning used oil before returning it for reuse by the generator;

(B) Separating used oil from wastewater generated on-site to make the wastewater acceptable for discharge or reuse pursuant to section 402 or section 307(b) of the Clean Water Act or other applicable Federal or state regulations governing the management or discharge of wastewater;

(C) Using oil mist collectors to remove small droplets of used oil from in-plant air to make plant air suitable for continued recirculation;

(D) Draining or otherwise removing used oil from materials containing or otherwise contaminated with used oil in order to remove excessive oil to the extent possible pursuant to Subsection R315-15-1.1(c); or

(E) Filtering, separating or otherwise reconditioning used oil before burning it in a space heater pursuant to Section R315-15-2.4.

(3) Generators who burn off-specification used oil for energy recovery, except under the on-site space heater provisions of Section R315-15-2.4, shall also comply with Section R315-15-6.

(4) Generators who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section R315-15-1.2 shall also comply with Section R315-15-7.

(5) Generators who dispose of used oil shall also comply with Section R315-15-8.

2.2 HAZARDOUS WASTE MIXING

(a) Mixtures of used oil and hazardous waste shall be managed in accordance with Subsection R315-15-1.1(b).

(b) The rebuttable presumption for used oil of Subsection R315-15-1.1(b)(1)(ii) applies to used oil managed by generators.

Under the rebuttable presumption for used oil of Subsection R315-15-1.1(b)(1)(ii), used oil containing greater than 1,000 ppm total halogens is presumed to be a hazardous waste and thus shall be managed as hazardous waste and not as used oil unless the presumption is rebutted. However, the rebuttable presumption does not apply to certain metalworking oil/fluids and certain used oils removed from refrigeration units.

2.3 USED OIL STORAGE

Used oil generators are subject to all applicable Spill Prevention, Control and Countermeasures, 40 CFR part 112, in addition to the requirements of Section R315-15-2. Used oil generators are also subject to the standards and requirements of Rules R311-200 through R311-209, Underground Storage Tanks, for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section R315-15-2.

(a) Storage units. Used oil generators shall not store used oil in units other than tanks, containers, or units subject to regulation under Rule R315-7 or R315-8.

(b) Condition of units. Containers and aboveground tanks used to store used oil at generator facilities shall be:

(1) In good condition, with no severe rusting, apparent structural defects or deterioration; and

(2) Not leaking (no visible leaks).

(c) Labels.

(1) Containers and aboveground tanks used to store used oil at generator facilities shall be labeled or marked clearly with the words "Used Oil".

(2) Fill pipes used to transfer used oil into underground storage tanks at generator facilities shall be labeled or marked clearly with the words "Used Oil".

(d) Response to releases. Upon detection of a release of used oil to the environment not subject to the requirements of Section R311-202-1, which incorporates by reference 40 CFR 280, Subpart F, a generator shall comply with Section R315-15-9.

2.4 ON-SITE BURNING

Generators may burn used oil in used oil-fired space heaters without a permit provided that:

(a) The heater burns only used oil that the owner or operator generates;

(b) The heater is designed to have a maximum capacity of not more than 0.5 million Btu per hour;

(c) The combustion gases from the heater are vented to the ambient air;

(d) If registered as a Used Oil Collection Center as authorized in Section R315-15-3, the generator may burn used oil received from household do-it-yourselfer generators or farmers described in Subsection R315-15-2.1(a)(4); and

(e) The used oil is being legitimately recycled to utilize its energy content.

2.5 OFF-SITE SHIPMENTS

Except as provided in paragraphs (a) through (c) of this section, generators shall ensure that their used oil is transported only by transporters who have obtained EPA identification numbers.

(a) Self-transportation of small amounts to approved collection centers. Generators may transport, without an EPA identification number, used oil that is generated at the generator's site and used oil collected from household do-it-yourselfers to a used oil collection center provided that:

(1) The generator transports the used oil in a vehicle owned by the generator or owned by an employee of the generator;

(2) The generator transports no more than 55 gallons of used oil at any time; and

(3) The generator transports the used oil to a used oil collection center that is registered or permitted to manage used oil.

(b) Self-transportation of small amounts to aggregation points owned by the generator. Generators may transport, without an EPA identification number, used oil that is generated at the generator's site to an aggregation point provided that:

(1) The generator transports the used oil in a vehicle owned by the generator or owned by an employee of the generator;

(2) The generator transports no more than 55 gallons of used oil at any time; and

(3) The generator transports the used oil to an aggregation point that is owned and/or operated by the same generator.

(c) Tolling arrangements. Used oil generators may arrange for used oil to be transported by a transporter without an EPA identification number if the used oil is reclaimed under a contractual agreement pursuant to which reclaimed oil is returned by the processor/re-refiner to the generator for use as a lubricant, cutting oil, or coolant. The contract, known as a "tolling arrangement," shall indicate:

(1) The type of used oil and the frequency of shipments;

(2) That the vehicle used to transport the used oil to the processing/re-refining facility and to deliver recycled used oil back to the generator is owned and operated by the used oil processor/re-refiner; and

(3) That reclaimed oil will be returned to the generator.

R315-15-3. Standards for Used Oil Collection Centers and Aggregation Points.

3.1 DO-IT-YOURSELFER USED OIL COLLECTION CENTERS

(a) Applicability. This section applies to owners or operators of all do-it-yourselfer (DIYer) used oil collection centers. A DIYer used oil collection center is any site or facility that accepts/aggregates and stores used oil collected only from household do-it-yourselfers.

(b) DIYer used oil collection center requirements. Owners or operators of all DIYer used oil collection centers shall comply with the generator standards in Section R315-15-2 and the record keeping requirements of Subsections R315-15-3.2(b)(3)(i) through (iv).

3.2 GENERATOR USED OIL COLLECTION CENTERS

(a) Applicability. This section applies to owners or operators of generator used oil collection centers. A generator used oil collection center is any site or facility that accepts/aggregates and stores used oil collected from used oil generators regulated under Section R315-15-2 who bring used oil to the collection center in shipments of no more than 55 gallons under the provisions of Subsection R315-15-2.5(a). Used generator oil collection centers may also accept used oil from household do-it-yourselfers and farmers described in Subsection R315-15-2.1(a)(4), if registered to do so.

(b) Generator used oil collection center requirements. Owners or operators of all generator used oil collection centers shall:

(1) Comply with the generator standards in Section R315-15-2;

(2) Be registered with the Division of Solid and Hazardous Waste to manage used oil; and

(3) Keep records of used oil received from off-site sources and picked up/transported from the collection center. This does not include used oil generated on-site from maintenance and servicing operations. These records shall be kept for a minimum of three years and shall contain the following information:

(i) Name and address of generator; or if unavailable, a written description of how the used oil was received.

(ii) Quantity of used oil received;

(iii) Date the used oil is received; and

(iv) Volumes of used oil picked up by a permitted transporter and the transporter's name and federal EPA identification number.

3.3 USED OIL AGGREGATION POINTS OWNED BY THE GENERATOR

(a) Applicability. This section applies to owners or operators of all used oil aggregation points. A used oil aggregation point is any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gallons under the provisions of Subsection R315-15-2.5(b). Used oil aggregation points may also accept used oil from household do-it-yourselfers as long as they register as do-it-yourselfer collection centers, as described in Section R315-15-13.1, and comply with do-it-yourselfer collection center standards in Section R315-15-3.1. Used oil aggregation points that accept used oil from other generators must register as collection centers, as described in Section R315-15-13.2, and comply with collection center standards in Section R315-15-3.2.

(b) Used oil aggregation point requirements. Owners or operators of all used oil aggregation points shall comply with the generator standards in Section R315-15-2.

R315-15.4. Standards for Used Oil Transporter and Transfer Facilities.

4.1 APPLICABILITY

(a) General. Except as provided in paragraphs (a)(1) through (a)(4) of this section, Section R315-15-4 applies to all used oil transporters. Used oil transporters are persons who transport used oil, persons who collect used oil from more than one generator and transport the collected oil, and owners and operators of used oil transfer facilities. Except as provided by Subsection R315-15-13.4(f), used oil transporters or operators of used oil transfer facilities shall obtain a permit from the Executive Secretary prior to accepting any used oil for transportation or transfer. The application for a permit shall include the information required by Section R315-15-13.4.

(1) Section R315-15-4 does not apply to on-site transportation.

(2) Section R315-15-4 does not apply to generators who transport shipments of used oil totalling 55 gallons or less from the generator to a used oil collection center as specified in Subsection R315-15-2.5(a).

(3) Section R315-15-4 does not apply to generators who transport shipments of used oil totalling 55 gallons or less from the generator to a used oil aggregation point owned or operated

by the same generator as specified in Subsection R315-15-2.5(b).

(4) Section R315-15-4 does not apply to transportation of used oil from household do-it-yourselfers to a regulated used oil generator, collection center, aggregation point, processor/re-refiner, or burner subject to the requirements of Rule R315-15. Except as provided in paragraphs (a)(1) through (a)(3) of this section, Section R315-15-4 does, however, apply to transportation of collected household do-it-yourselfer used oil from regulated used oil generators, collection centers, aggregation points, or other facilities where household do-it-yourselfer used oil is collected.

(b) Imports and exports. Transporters who import used oil from abroad or export used oil outside of the United States are subject to the requirements of Section R315-15-4 from the time the used oil enters and until the time it exits Utah.

(c) Trucks used to transport hazardous waste. Unless trucks previously used to transport hazardous waste are emptied as described in Section R315-2-7 prior to transporting used oil, the used oil is considered to have been mixed with the hazardous waste and shall be managed as hazardous waste unless, under the provisions of Subsection R315-15-1.1(b), the hazardous waste/used oil mixture is determined not to be hazardous waste.

(d) Other applicable provisions. Used oil transporters who conduct the following activities are also subject to other applicable provisions of Rule R315-15 as indicated in paragraphs (d)(1) through (5) of this section:

(1) Transporters who generate used oil shall also comply with Section R315-15-2;

(2) Transporters who process or re-refine used oil, except as provided in Section R315-15-4.2, shall also comply with Section R315-15-5;

(3) Transporters who burn off-specification used oil for energy recovery shall also comply with Section R315-15-6;

(4) Transporters who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section R315-15-1.2 shall also comply with Section R315-15-7; and

(5) Transporters who dispose of used oil shall also comply with Section R315-15-8.

4.2 RESTRICTIONS ON TRANSPORTERS WHO ARE NOT ALSO PROCESSORS OR RE-REFINERS

(a) Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation. However, except as provided in paragraph (b) of this section, used oil transporters may not process used oil unless they also comply with the requirements for processors/re-refiners in Section R315-15-5.

(b) Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation, e.g., settling and water separation, but that are not designed to produce, or make more amenable for production of, used oil derived products unless they also comply with the processor/re-refiner requirements in Section R315-15-5.

(c) Transporters of used oil that is removed from oil bearing electrical transformers and turbines and filtered by the transporter or at a transfer facility prior to being returned to its original use are not subject to the processor/re-refiner requirements in Section R315-15-5.

4.3 NOTIFICATION

(a) Identification numbers. Used oil transporters who have not previously complied with the notification requirements of RCRA section 3010 shall comply with these requirements and obtain an EPA identification number.

(b) Mechanics of notification. A used oil transporter who has not received an EPA identification number may obtain one by notifying the Executive Secretary of his used oil activity by submitting either:

(1) A completed EPA Form 8700-12. To obtain EPA Form 8700-12 call Utah Division of Solid and Hazardous Waste at 801-538-6170; or

(2) A letter to the Division requesting an EPA identification number. The letter shall include the following information:

- (i) Transporter company name;
- (ii) Owner of the transporter company;
- (iii) Mailing address for the transporter;
- (iv) Name and telephone number for the transporter point of contact;
- (v) Type of transport activity, i.e., transport only, transport and transfer facility, transfer facility only;
- (vi) Location of all transfer facilities at which used oil is stored; and
- (vii) Name and telephone number for a contact at each transfer facility.

4.4 USED OIL TRANSPORTATION

(a) Deliveries. A used oil transporter shall deliver all used oil received to:

(1) Another used oil transporter, provided that the transporter has obtained an EPA identification number;

(2) A used oil processing/re-refining facility which has obtained an EPA identification number;

(3) An off-specification used oil burner facility which has obtained an EPA identification number; or

(4) An on-specification used oil burner facility.

(b) DOT Requirements. Used oil transporters shall comply with all applicable requirements under the U.S. Department of Transportation regulations in 49 CFR 171 through 180. Persons transporting used oil that meets the definition of a hazardous material in 49 CFR 171.8 shall comply with all applicable regulations in 49 CFR 171 through 180.

(c) Used oil discharges. In the event of a used oil discharge, a transporter shall comply with Section R315-15-9.

4.5 REBUTTABLE PRESUMPTION FOR USED OIL

(a) To ensure that used oil is not a hazardous waste under the rebuttable presumption of Subsection R315-15-1.1(b)(1)(ii), the used oil transporter shall determine whether the total halogen content of used oil being transported or stored at a transfer facility is above or below 1,000 ppm.

(b) The transporter shall make this determination by:

- (1) Testing the used oil; or
- (2) Applying knowledge of the halogen content of the used oil in light of the materials or processes used.

(c) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Section R315-2-10. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste, for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in R315-50-10, which incorporates by

reference 40 CFR 261 Appendix VIII. SW-846, Edition III, is available for review during normal business hours at the Utah Division of Solid and Hazardous Waste office, located at 288 North 1460 West, Salt Lake City, Utah. To schedule an appointment, call 801-538-6170.

(1) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Subsection R315-15-2.5(c), to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(2) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units if the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

(d) Record retention. Records of analyses conducted or information used to comply with paragraphs (a), (b), and (c) of this section shall be maintained by the transporter for at least three years.

4.6 USED OIL STORAGE AT TRANSFER FACILITIES

Used oil transporters are subject to all applicable Spill Prevention, Control and Countermeasures, 40 CFR 112, in addition to the requirements of Section R315-15-4. Used oil transporters are also subject to the standards of Title R311, which incorporates by reference 40 CFR 280, for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section R315-15-4.

(a) Applicability. This section applies to used oil transfer facilities. Used oil transfer facilities are transportation related facilities including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 hours during the normal course of transportation and not longer than 35 days. Transfer facilities that store used oil for more than 35 days are subject to the processor/re-refiner requirements as found in Section R315-15-5.

(b) Storage units. Owners or operators of used oil transfer facilities may not store used oil in units other than tanks, containers, or units subject to regulation under Rule R315-7 or R315-8.

(c) Condition of units. Containers and aboveground tanks used to store used oil at transfer facilities shall be:

- (1) In good condition, with no severe rusting, apparent structural defects, or deterioration; and
- (2) Not leaking (no visible leaks).

(d) Secondary containment. Containers, existing aboveground tanks, and new aboveground tanks used to store used oil at transfer facilities shall be equipped with a secondary containment system.

(1) The secondary containment system shall consist of, at a minimum:

- (i) Dikes, berms, or retaining walls; and
- (ii) A floor. The floor shall cover the entire area within the dikes, berms, or retaining walls except areas where existing portions of existing aboveground tanks meet the ground.

(2) The entire containment system, including walls and floors, shall be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

(e) Labels.

(1) Containers and aboveground tanks used to store used oil at transfer facilities shall be labeled or marked clearly with the words "Used Oil."

(2) Fill pipes used to transfer used oil into underground storage tanks at transfer facilities shall be labeled or marked clearly with the words "Used Oil."

(f) Response to releases. Upon detection of a release of used oil to the environment not subject to the requirements of Section R311-202-1, which incorporates by reference 40 CFR 280, Subpart F, the owner/operator of a transfer facility shall comply with Section R315-15-9.

4.7 TRACKING

(a) Acceptance. Used oil transporters shall keep a record of each used oil shipment accepted for transport. Records for each shipment shall include:

(1) The name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport;

(2) The EPA identification number, if applicable, of the generator, transporter, or processor/re-refiner who provided the used oil for transport;

(3) The quantity of used oil accepted;

(4) The date of acceptance; and

(5)(i) Except as provided in paragraph (a)(5)(ii) of this section, the signature, dated upon receipt of the used oil, of a representative of the generator, transporter, or processor/re-refiner who provided the used oil for transport.

(ii) Intermediate rail transporters are not required to sign the record of acceptance.

(b) Deliveries. Used oil transporters shall keep a record of each shipment of used oil that is delivered to another used oil transporter, or to a used oil burner, processor/re-refiner, or disposal facility. Records of each delivery shall include:

(1) The name and address of the receiving facility or transporter;

(2) The EPA identification number of the receiving facility or transporter;

(3) The quantity of used oil delivered;

(4) The date of delivery; and

(5) (i) Except as provided in paragraph (a)(5)(ii) of this section, the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter.

(ii) Intermediate rail transporters are not required to sign the record of delivery.

(c) Exports of used oil. Used oil transporters shall maintain the records described in paragraphs (b)(1) through (b)(4) of this section for each shipment of used oil exported to any foreign country.

(d) Record retention. The records described in paragraphs (a), (b), and (c) of this section shall be maintained for at least three years.

(e) Reporting. A used oil transporter/transfer facility shall report annually to the Executive Secretary by March 1 of each year. The report shall be consistent with the requirements of Subsection R315-15-13.4(d).

4.8 MANAGEMENT OF RESIDUES

Transporters who generate residues from the storage or transport of used oil shall manage the residues as specified in Subsection R315-15-1.1(e).

R315-15-5. Standards for Used Oil Processors and Re-Refiners.

5.1 APPLICABILITY

(a) The requirements of Section R315-15-5 apply to owners and operators of facilities that process used oil. Processing means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production of, fuel oils, lubricants, or other used oil-derived products. Processing includes: blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining. The requirements of Section R315-15-5 do not apply to:

(1) Transporters that conduct incidental processing operations that occur during the normal course of transportation as provided in Section R315-15-4.2; or

(2) Burners that conduct incidental processing operations that occur during the normal course of used oil management prior to burning as provided in Subsection R315-15-6.2(b).

(b) Other applicable provisions. Used oil processors/re-refiners who conduct the following activities are also subject to the requirements of other applicable provisions of Rule R315-15 as indicated in paragraphs (b)(1) through (b)(5) of this section.

(1) Processors/re-refiners who generate used oil shall also comply with Section R315-15-2.

(2) Processors/re-refiners who transport used oil shall also comply with Section R315-15-4.

(3) Except as provided in paragraphs (b)(3)(i) and (b)(3)(ii) of this section, processors/re-refiners who burn off-specification used oil for energy recovery shall also comply with Section R315-15-6. Processor/re-refiners burning used oil for energy recovery under the following conditions are not subject to Section R315-15-6:

(i) The used oil is burned in an on-site space heater that meets the requirements of Section R315-15-2.4; or

(ii) The used oil is burned for purposes of processing used oil, which is considered burning incidentally to used oil processing.

(4) Processors/re-refiners who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section R315-15-1.2 shall also comply with Section R315-15-7.

(5) Processors/re-refiners who dispose of used oil shall also comply with Section R315-15-8.

(c) Processors/re-refiners shall obtain a permit from the Executive Secretary prior to processing or re-refining used oil. An application for a permit shall contain the information required by Section R315-15-13.5.

5.2 NOTIFICATION

(a) Identification numbers. Used oil processors/re-refiners who have not previously complied with the notification requirements of RCRA section 3010 shall comply with these requirements and obtain an EPA identification number.

(b) Mechanics of notification. A used oil processor or re-refiner who has not received an EPA identification number may obtain one by notifying the Executive Secretary of their used oil activity by submitting either:

(1) A completed EPA Form 8700-12. To obtain EPA Form 8700-12 call Utah Division of Solid and Hazardous Waste at 801-538-6170; or

(2) A letter to the Division requesting an EPA identification number. The letter shall include the following information:

(i) Processor or re-refiner company name;

- (ii) Owner of the processor or re-refiner company;
- (iii) Mailing address for the processor or re-refiner;
- (iv) Name and telephone number for the processor or re-refiner point of contact;
- (v) Type of used oil activity, i.e., process only, process and re-refine;
- (vi) Location of the processor or re-refiner facility.

5.3 GENERAL FACILITY STANDARDS

(a) Preparedness and prevention. Owners and operators of used oil processor/re-refiner facilities shall comply with the following requirements:

(1) Maintenance and operation of facility. Facilities shall be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water which could threaten human health or the environment.

(2) Required equipment. Unless none of the hazards posed by used oil handled at the facility could require a particular kind of equipment specified in paragraphs (a)(2)(i) through (iv) of this section, all facilities shall be equipped with the following:

(i) An internal communications or alarm system capable of providing immediate emergency instruction, voice or signal, to facility personnel;

(ii) A device, such as a telephone, immediately available at the scene of operations, or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

(iii) Portable fire extinguishers, fire control equipment, including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, spill control equipment, and decontamination equipment; and

(iv) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

(3) Testing and maintenance of equipment. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.

(4) Access to communications or alarm system.

(i) Whenever used oil is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required in paragraph (a)(2) of this section.

(ii) If there is ever just one employee on the premises while the facility is operating, the employee shall have immediate access to a device, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio, capable of summoning external emergency assistance, unless such a device is not required in paragraph (a)(2) of this section.

(5) Required aisle space. The owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

(6) Arrangements with local authorities.

(i) The owner or operator shall attempt to make the following arrangements, as appropriate for the type of used oil handled at the facility and the potential need for the services of these organizations:

(A) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of used oil handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

(B) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(C) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(D) Arrangements to familiarize local hospitals with the properties of used oil handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(ii) Where State or local authorities decline to enter into such arrangements, the owner or operator shall document the refusal in the operating record.

(b) Contingency plan and emergency procedures. Owners and operators of used oil processors and re-refiners facilities shall comply with the following requirements:

(1) Purpose and implementation of contingency plan.

(i) Each owner or operator shall have a contingency plan for the facility. The contingency plan shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water.

(ii) The provisions of the plan shall be carried out immediately whenever there is a fire, explosion, or release of used oil which could threaten human health or the environment.

(2) Content of contingency plan.

(i) The contingency plan shall describe the actions facility personnel shall take to comply with paragraphs (b)(1) and (6) of this section in response to fires, explosions, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water at the facility.

(ii) If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or some other emergency or contingency plan, the owner or operator need only amend that plan to incorporate used oil management provisions necessary to comply with the requirements of R315-15.

(iii) The plan shall describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to paragraph (a)(6) of this section.

(iv) The plan shall list names, addresses, and phone numbers, office and home, of all persons qualified to act as emergency coordinator. This list shall be kept up to date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates. See also paragraph (b)(5) of this section.

(v) The plan shall include a list of all emergency equipment at the facility, such as fire extinguishing systems, spill control equipment, communications and alarm systems,

internal and external, and decontamination equipment, where this equipment is required. This list shall be kept up to date. In addition, the plan shall include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(vi) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes, in cases where the primary routes could be blocked by releases of used oil or fires.

(3) Copies of contingency plan. A copy of the contingency plan and all revisions to the plan shall be:

(i) Maintained at the facility; and

(ii) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

(4) Amendment of contingency plan. The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

(i) Applicable regulations are revised;

(ii) The plan fails in an emergency;

(iii) The facility changes its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of used oil, or changes the response necessary in an emergency;

(iv) The list of emergency coordinators changes; or

(v) The list of emergency equipment changes.

(5) Emergency coordinator. At all times, there shall be at least one employee either on the facility premises or on call, i.e., available to respond to an emergency by reaching the facility within a short period of time, with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristic of used oil handled, the location of all records within the facility, and facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

(6) Emergency procedures.

(i) Whenever there is an imminent or actual emergency situation, the emergency coordinator, or the designee when the emergency coordinator is on call, shall immediately:

(A) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(B) Notify appropriate State or local agencies with designated response roles if their help is needed.

(ii) Whenever there is a release, fire, or explosion, the emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records of manifests and, if necessary, by chemical analysis.

(iii) Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion, e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions.

(iv) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he shall report his findings as follows:

(A) If his assessment indicated that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to help appropriate officials decide whether local areas should be evacuated; and

(B) He shall implement the actions as required in Section R315-15-9.

(v) During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other used oil or hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operation, collecting and containing released used oil, and removing or isolating containers.

(vi) If the facility stops operation in response to a fire, explosion, or release, the emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(vii) Immediately after an emergency, the emergency coordinator shall provide for recycling, storing, or disposing of recovered used oil, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(viii) The emergency coordinator shall ensure that, in the affected area(s) of the facility:

(A) No waste or used oil that may be incompatible with the released material is recycled, treated, stored, or disposed of until cleanup procedures are completed; and

(B) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(C) The owner or operator shall notify the Executive Secretary, and appropriate local authorities that the facility is in compliance with paragraphs (b)(6)(viii)(A) and (B) of this section before operations are resumed in the affected area(s) of the facility.

(ix) The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he shall submit a written report on the incident to the Executive Secretary. The report shall include:

(A) Name, address, and telephone number of the owner or operator;

(B) Name, address, and telephone number of the facility;

(C) Date, time, and type of incident, e.g., fire, explosion;

(D) Name and quantity of material(s) involved;

(E) The extent of injuries, if any;

(F) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(G) Estimated quantity and disposition of recovered material that resulted from the incident.

5.4 REBUTTABLE PRESUMPTION FOR USED OIL

(a) To ensure that used oil managed at a processing/re-refining facility is not hazardous waste under the rebuttable presumption of Subsection R315-15.1(b)(1)(ii), the owner or operator of a used oil processing/re-refining facility shall determine whether the total halogen content of used oil managed at the facility is above or below 1,000 ppm.

(b) The owner or operator shall make this determination by:

- (1) Testing the used oil; or
- (2) Applying knowledge of the halogen content of the used oil in light of the materials or processes used.

(c) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Section R315-2-10. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste, for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Section R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII. SW-846, Edition III, is available for review during normal business hours at the Utah Division of Solid and Hazardous Waste office, located at 288 North 1460 West, Salt Lake City, Utah. To schedule an appointment, call 801-538-6170.

(1) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling agreement, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(2) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

5.5 USED OIL MANAGEMENT

Used oil processor/re-refiners are subject to all applicable Spill Prevention, Control and Countermeasures, 40 CFR 112, in addition to the requirements of Section R315-15-5. Used oil processors/re-refiners are also subject to the standards and requirements of Rules R311-200 through R311-209, Underground Storage Tanks, for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section R315-15-5.

(a) Management units. Used oil processors/re-refiners may not store used oil in units other than tanks, containers, or units subject to regulation under Rule R315-7 or R315-8.

(b) Condition of units. Containers and aboveground tanks used to store or process used oil at processing and re-refining facilities shall be:

- (1) In good condition, with no severe rusting, apparent structural defects, or deterioration; and
- (2) Not leaking (no visible leaks).

(c) Secondary containment. Containers, existing aboveground tanks, and new aboveground tanks used to store or process used oil at processing and re-refining facilities shall be equipped with a secondary containment system.

(1) The secondary containment system shall consist of, at a minimum:

- (i) Dikes, berms, or retaining walls; and
- (ii) A floor. The floor shall cover the entire area within the dike, berm, or retaining wall, except areas where existing portions of existing aboveground tanks meet the ground.

(2) The entire containment system, including walls and floors, shall be sufficiently impervious to used oil to prevent any

used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

(d) Labels.

(1) Containers and aboveground tanks used to store or process used oil at processing and re-refining facilities shall be labeled or marked clearly with the words "Used Oil."

(2) Fill pipes used to transfer used oil into underground storage tanks at processing and re-refining facilities shall be labeled or marked clearly with the words "Used Oil."

(e) Response to releases. Upon detection of a release of used oil to the environment not subject to the requirements of Section R311-202-1, which incorporates by reference 40 CFR 280, Subpart F, an owner/operator shall comply with Section R315-15-9.

(f) Closure.

(1) Aboveground tanks. Owners and operators who store or process used oil in aboveground tanks shall comply with the following requirements:

(i) At closure of a tank system, the owner or operator shall remove or decontaminate used oil residues in tanks, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil, and manage them as hazardous waste, unless the materials are not hazardous waste under this chapter. Nonhazardous solid waste, must be managed in accordance with Section R315-301-4.

(ii) If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in paragraph (f)(1)(i) of this section, then the owner or operator shall close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to hazardous waste landfills, Section R315-7-21.4.

(2) Containers. Owners and operators who store used oil in containers shall comply with the following requirements:

(i) At closure, containers holding used oils or residues of used oil shall be removed from the site;

(ii) The owner or operator shall remove or decontaminate used oil residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil, and manage them as hazardous waste, unless the materials are not hazardous waste under Rule R315-2.

5.6 ANALYSIS PLAN

Owners or operators of used oil processing and re-refining facilities shall develop and follow a written analysis plan describing the procedures that will be used to comply with the analysis requirements of Section R315-15-5.4 and, if applicable, the marketer requirements in Section R315-15-7.3. The owner or operator shall keep the plan at the facility.

(a) Rebuttable presumption for used oil in Section R315-15-5.4. At a minimum, the plan shall specify the following:

(1) Whether sample analyses or knowledge of the halogen content of the used oil will be used to make this determination.

(2) If sample analyses are used to make this determination:

(i) The sampling method used to obtain representative samples to be analyzed. A representative sample may be obtained using either:

(A) One of the sampling methods in Section R315-50-6, which incorporates by reference 40 CFR 261, Appendix I; or

(B) A method shown to be equivalent under Section R315-2-15;

(ii) The frequency of sampling to be performed, and whether the analysis will be performed on-site or off-site; and

(iii) The methods used to analyze used oil for the parameters specified in Section R315-15-5.4; and

(3) The type of information that will be used to determine the halogen content of the used oil.

(b) On-specification used oil fuel in Section R315-15-7.3. At a minimum, the plan shall specify the following if Section R315-15-7.3 is applicable:

(1) Whether sample analyses or other information will be used to make this determination;

(2) If sample analyses are used to make this determination:

(i) The sampling method used to obtain representative samples to be analyzed. A representative sample may be obtained using either:

(A) One of the sampling methods in Section R315-50-6, which incorporates by reference 40 CFR 261, Appendix I; or

(B) A method shown to be equivalent under Section R315-2-15;

(ii) Whether used oil will be sampled and analyzed prior to or after any processing/re-refining;

(iii) The frequency of sampling to be performed, and whether the analysis will be performed on-site or off-site; and

(iv) The methods used to analyze used oil for the parameters specified in Section R315-15-7.3.

(3) The type of information that will be used to make the on-specification used oil fuel determination.

5.7 TRACKING

(a) Acceptance. Used oil processors/re-refiners shall keep a record of each used oil shipment accepted for processing/re-refining. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping documents. Records for each shipment shall include the following information:

(1) The name and address of the transporter who delivered the used oil to the processor/re-refiner;

(2) The name and address of the generator or processor/re-refiner from whom the used oil was sent for processing/re-refining;

(3) The EPA identification number of the transporter who delivered the used oil to the processor/re-refiner;

(4) The EPA identification number, if applicable, of the generator or processor/re-refiner from whom the used oil was sent for processing/re-refining;

(5) The quantity of used oil accepted; and

(6) The date of acceptance.

(b) Delivery. Used oil processor/re-refiners shall keep a record of each shipment of used oil that is shipped to a used oil burner, processor/re-refiner, or disposal facility. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping documents. Records for each shipment shall include the following information:

(1) The name and address of the transporter who delivers the used oil to the burner, processor/re-refiner, or disposal facility;

(2) The name and address of the burner, processor/re-refiner, or disposal facility which will receive the used oil;

(3) The EPA identification number of the transporter who delivers the used oil to the burner, processor/re-refiner, or disposal facility;

(4) The EPA identification number of the burner, processor/re-refiner, or disposal facility which will receive the used oil;

(5) The quantity of used oil shipped; and

(6) The date of shipment.

(c) Record retention. The records described in paragraphs (a) and (b) of this section shall be maintained for at least three years.

5.8 OPERATING RECORD AND REPORTING

(a) Operating record.

(1) The owner or operator shall keep a written operating record at the facility.

(2) The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(i) Records and results of used oil analyses performed as described in the analysis plan required under R315-15-5.6;

(ii) Summary reports and details of all incidents that require implementation of the contingency plan as specified in Subsection R315-15-5.3(b); and

(iii) Records detailing the mass balance of wastewater entering and leaving the facility. This includes wastewater discharge records. This does not include water used in non-contact cooling processes.

(b) Reporting. A used oil processor/re-refiner shall report annually to the Executive Secretary by March 1 of each year. The report shall be consistent with the requirements of Subsection R315-15-13.5(d).

5.9 OFF-SITE SHIPMENTS OF USED OIL

Used oil processors/re-refiners who initiate shipments of used oil off-site shall ship the used oil using a used oil transporter who has obtained an EPA identification number.

5.10 MANAGEMENT OF RESIDUES

Owners and operators who generate residues from the storage, processing, or re-refining of used oil shall manage the residues as specified in Subsection R315-15-1.1(e).

R315-15-6. Standards for Used Oil Burners Who Burn Used Oil for Energy Recovery.

6.1 APPLICABILITY

(a) General. The requirements of Section R315-15-6 apply to used oil burners except as specified in paragraphs (a)(1) through (a)(3) of this section. An off-specification used oil burner is a facility where used oil not meeting the specification requirements in Section R315-15-1.2 is burned for energy recovery in devices identified in Subsection R315-15-6.2(a). Facilities burning used oil for energy recovery under the following conditions are not subject to Section R315-15-6:

(1) The used oil is burned by the generator in an on-site space heater under the provisions of Section R315-15-2.4;

(2) The used oil is burned by a processor/re-refiner for purposes of processing used oil, which is considered burning incidentally to used oil processing; or

(3) The used oil burned by the facility is obtained from a registered marketer who claims the oil meets the used oil fuel specifications set forth in Section R315-15-1.2 and who delivers the oil in the manner set forth in Subsection R315-15-7.5(b).

(b) Other applicable provisions. Used oil burners who conduct the following activities are also subject to the requirements of other applicable provisions of Rule R315-15 as indicated below.

(1) Burners who generate used oil shall also comply with Section R315-15-2;

(2) Burners who transport used oil shall also comply with Section R315-15-4;

(3) Except as provided in Subsection R315-15-6.2(b)(2), burners who process or re-refine used oil shall also comply with Section R315-15-5;

(4) Burners who direct shipments of off-specification used oil from their facility to an off-specification used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section R315-15-1.2 shall also comply with Sections R315-15-7 and R315-15-13.7;

(5) Burners who dispose of used oil shall comply with Section R315-15-8; and

(6) Burners who collect used oil must also comply with the collection center requirements in Section R315-15-3. Burners who burn used oil collected from other generators must become marketers and comply with the provisions of Section R315-15-7. Burners who collect and burn used oil that does not fall into the categories of "do-it-yourselfer" or farmer-generated used oil as described in Subsections R315-15-2.1(a)(1) and (4), must also become marketers and comply with the provisions of Section R315-15-7.

(c) Specification fuel. Persons burning used oil that meets the used oil fuel specifications of Section R315-15-1.2 under the conditions described in Subsections R315-15-6.1(a)(1) through (3) are not subject to Section R315-15-6, provided that the burner complies with the requirements of Section R315-15-7 and Subsection R315-15-13.6(a).

6.2 RESTRICTIONS ON BURNING

(a) Off-specification used oil fuel may be burned for energy recovery in only the following devices:

(1) Industrial furnaces identified in Section R315-1-1, which incorporates by reference 40 CFR 260.10;

(2) Boilers, as defined in Section R315-1-1, which incorporates by reference 40 CFR 260.10, that are identified as follows:

(i) Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes;

(ii) Utility boilers used to produce electric power, steam, heated or cooled air, or other gases or fluids for sale;

(iii) Used oil-fired space heaters provided that the burner meets the provisions of Section R315-15-2.4; or

(3) Hazardous waste incinerators subject to regulation under Section R315-7-22 or R315-8-15.

(b)(1) With the following exception, off-specification used oil burners may not process used oil unless they also comply with the requirements of Section R315-15-5.

(2) Off-specification used oil burners may aggregate off-specification used oil with virgin oil or on-specification used oil for purposes of burning, but may not aggregate for purposes of producing on-specification used oil without also complying with the processor/re-refiner requirements in Section R315-15-5.

6.3 NOTIFICATION

(a) Identification numbers. Off-specification used oil burners which have not previously complied with the notification requirements of RCRA section 3010 shall comply with these requirements and obtain an EPA identification number.

(b) Mechanics of notification. An off-specification used oil burner who has not received an EPA identification number may obtain one by notifying the Executive Secretary of their used oil activity by submitting either:

(1) A completed EPA Form 8700-12. To obtain EPA Form 8700-12 call Utah Division of Solid and Hazardous Waste at 801-538-6170; or

(2) A letter to the Division requesting an EPA identification number. The letter shall include the following information:

(i) Burner company name;

(ii) Owner of the burner company;

(iii) Mailing address for the burner;

(iv) Name and telephone number for the burner point of contact;

(v) Type of used oil activity; and

(vi) Location of the burner facility.

6.4 REBUTTABLE PRESUMPTION FOR USED OIL

(a) To ensure that used oil managed at a used oil burner facility is not hazardous waste under the rebuttable presumption of Subsection R315-15-1.1(b)(1)(ii), a used oil burner shall determine whether the total halogen content of used oil managed at the facility is above or below 1,000 ppm.

(b) The used oil burner shall determine if the used oil contains above or below 1,000 ppm total halogens by:

(1) Testing the used oil;

(2) Applying knowledge of the halogen content of the used oil in light of the materials or processes used; or

(3) Using information provided by the processor/re-refiner, if the used oil has been received from a processor/re-refiner subject to regulation under Section R315-15-5.

(c) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Section R315-2-10. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste, for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII. SW-846, Edition III, is available for review during normal business hours at the Utah Division of Solid and Hazardous Waste office, located at 288 North 1460 West, Salt Lake City, Utah. To schedule an appointment, call 801-538-6170.

(1) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Subsection R315-15-2.5(c), to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

(2) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

(d) Record retention. Records of analyses conducted or information used to comply with paragraphs (a), (b), and (c) of this section shall be maintained by the burner for at least 3 years.

6.5 USED OIL STORAGE

Used oil burners are subject to all applicable Spill Prevention, Control and Countermeasures, 40 CFR part 112, in addition to the requirements of Section R315-15-6. Used oil burners are also subject to the standards and requirements of Rules R311-200 through R315-209, Underground Storage

Tanks, for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section R315-15-6.

(a) Storage units. Used oil burners may not store used oil in units other than tanks, containers, or units subject to regulation under Rule R315-7 or R315-8.

(b) Condition of units. Containers and aboveground tanks used to store oil at used oil burner facilities shall be:

(1) In good condition, with no severe rusting, apparent structural defects, or deterioration; and

(2) Not leaking (no visible leaks).

(c) Secondary containment. Containers, existing aboveground tanks, and new aboveground tanks used to store off-specification used oil at burner facilities shall be equipped with a secondary containment system.

(1) The secondary containment system shall consist of, at a minimum:

(i) Dikes, berms, or retaining walls; and

(ii) A floor. The floor shall cover the entire area within the dike, berm, or retaining wall, except areas where existing portions of existing aboveground tanks meet the ground.

(2) The entire containment system, including walls and floor, shall be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

(d) Labels.

(1) Containers and aboveground tanks used to store off-specification used oil at burner facilities shall be labeled or marked clearly with the words "Used Oil."

(2) Fill pipes used to transfer off-specification used oil into underground storage tanks at burner facilities shall be labeled or marked clearly with the words "Used Oil."

(e) Response to releases. Upon detection of a release of used oil to the environment not subject to the requirements of Section R311-202-1, which incorporates by reference 40 CFR 280, Subpart F, a burner shall comply with Section R315-15-9.

6.6 TRACKING

(a) Acceptance. Off-specification used oil burners shall keep a record of each off-specification used oil shipment accepted for burning. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping documents. Records for each shipment shall include the following information:

(1) The name and address of the transporter who delivered the used oil to the burner;

(2) The name and address of the generator or processor/re-refiner from whom the used oil was sent to the burner;

(3) The EPA identification number of the transporter who delivered the used oil to the burner;

(4) The EPA identification number, if applicable, of the generator or processor/re-refiner from whom the used oil was sent to the burner;

(5) The quantity of used oil accepted; and

(6) The date of acceptance.

(b) Record retention. The records described in paragraph (a) of this section shall be maintained for at least three years.

6.7 NOTICES

(a) Certification. Before a burner accepts the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner shall provide to the generator, transporter, or processor/re-refiner a one-time written and signed notice certifying that:

(1) The burner has notified the Executive Secretary stating the location and general description of his used oil management activities; and

(2) The burner will burn the used oil only in an industrial furnace or boiler identified in Subsection R315-15-6.2(a).

(b) Certification retention. The certification described in paragraph (a) of this section shall be maintained for three years from the date the burner last receives shipment of off-specification used oil from that generator, transporter, or processor/re-refiner.

6.8 MANAGEMENT OF RESIDUES

Burners who generate residues from the storage or burning of used oil shall manage the residues as specified in Subsection R315-15-1.1(e).

R315-15-7. Standards for Used Oil Fuel Marketers.

7.1 APPLICABILITY

(a) Any person who conducts either of the following activities is subject to the requirements of Sections R315-15-7 and R315-15-13.7:

(1) Directs a shipment of off-specification used oil from their facility to a used oil burner; or

(2) First claims that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section R315-15-1.2.

(b) The following persons are not marketers subject to Section R315-15-7:

(1) Used oil generators, and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner. However, processors/re-refiners who burn some used oil fuel for purposes of processing are considered to be burning incidentally to processing. Thus, generators and transporters who direct shipments of off-specification used oil to processors/re-refiners who incidentally burn used oil are not marketers subject to Section R315-15-7;

(2) Persons who direct shipments of on-specification used oil and who are not the first person to claim the oil meets the used oil fuel specifications of Section R315-15-1.2.

(c) Any person subject to the requirements of Section R315-15-7 shall also comply with one of the following:

(1) Section R315-15-2 - Standards for Used Oil Generators;

(2) Section R315-15-4 - Standards for Used Oil Transporters and Transfer Facilities;

(3) Section R315-15-5 - Standards for Used Oil Processors and Re-refiners; or

(4) Section R315-15-6 - Standards for Used Oil Burners who Burn Off-Specification Used Oil for Energy Recovery.

(d) A person may not act as a used oil fuel marketer without receiving a registration number issued by the Executive Secretary pursuant to Section R315-15-13.7.

7.2 PROHIBITIONS

A used oil fuel marketer may initiate a shipment of off-specification used oil only to a used oil burner who:

(a) Has an EPA identification number; and

(b) Burns the used oil in an industrial furnace or boiler identified in Subsection R315-15-6.2(a).

7.3 ON-SPECIFICATION USED OIL FUEL

(a) Analysis of used oil fuel. A generator, transporter, processor/re-refiner, or burner may determine that used oil that is to be burned for energy recovery meets the fuel specifications of

Section R315-15.1.2 by performing analyses or obtaining copies of analyses or other information documenting that the used oil fuel meets the specifications.

(b) Record retention. A generator, transporter, processor/re-refiner, or burner who first claims that used oil that is to be burned for energy recovery meets the specifications for used oil fuel under Section R315-15.1.2, shall keep copies of analyses of the used oil, or other information used to make the determination, for three years.

7.4 NOTIFICATION

(a) Identification numbers. A used oil fuel marketer subject to the requirements of Section R315-15-7 who has not previously complied with the notification requirements of RCRA section 3010 shall comply with these requirements and obtain an EPA identification number.

(b) A marketer who has not received an EPA identification number may obtain one by notifying the Executive Secretary of their used oil activity by submitting either:

(1) A completed EPA Form 8700-12, which can be obtained by calling the Utah Division of Solid and Hazardous Waste at 801-538-6170; or

(2) A letter to the Division requesting an EPA identification number. The letter shall include the following information:

- (i) Marketer company name;
- (ii) Owner of the marketer;
- (iii) Mailing address for the marketer;
- (iv) Name and telephone number for the marketer point of contact; and
- (v) Type of used oil activity, e.g., generator directing shipments of off-specification used oil to a burner.

7.5 TRACKING

(a) Off-specification used oil delivery. Any used oil marketer who directs a shipment of off-specification used oil to a burner shall keep a record of each shipment of used oil to a used oil burner. These records may take the form of a log, invoice, manifest, bill of lading or other shipping documents. Records for each shipment shall include the following information:

- (1) The name and address of the transporter who delivers the used oil to the burner;
- (2) The name and address of the burner who will receive the used oil;
- (3) The EPA identification number of the transporter who delivers the used oil to the burner;
- (4) The EPA identification number of the burner;
- (5) The quantity of used oil shipped; and
- (6) The date of shipment.

(b) On-specification used oil delivery. A generator, transporter, processor/re-refiner, or burner who first claims that used oil that is to be burned for energy recovery meets the fuel specifications under Section R315-15.1.2 shall keep a record of each shipment of used oil to an on-specification used oil burner. Records for each shipment shall include the following information:

- (1) The name and address of the facility receiving the shipment;
- (2) The quantity of used oil fuel delivered;
- (3) The date of shipment or delivery; and
- (4) A cross-reference to the record of used oil analysis or other information used to make the determination that the oil

meets the specification as required under Subsection R315-15-7.3(a).

(c) Record retention. The records described in paragraphs (a) and (b) of this section shall be maintained for at least three years.

7.6 NOTICES

(a) Certification. Before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil fuel to a burner, he shall obtain a one-time written and signed notice from the burner certifying that:

(1) The burner has notified the Executive Secretary stating the location and general description of used oil management activities; and

(2) The burner will burn the off-specification used oil only in an industrial furnace or boiler identified in Subsection R315-15-6.2(a).

(b) Certification retention. The certification described in paragraph (a) of this section shall be maintained for three years from the date the last shipment of off-specification used oil is shipped to the burner.

R315-15-8. Standards for the Disposal of Used Oil.

8.1 APPLICABILITY

The requirements of Section R315-15-8 apply to all used oils that cannot be recycled and are therefore being disposed.

8.2 DISPOSAL

(a) Disposal of hazardous used oils. Used oils that are identified as a hazardous waste and cannot be recycled in accordance with Rule R315-15 shall be managed in accordance with the hazardous waste management requirements of Rules R315-1 through R315-14, and R315-50.

(b) Disposal of nonhazardous used oils. Used oils that are not hazardous wastes and cannot be recycled under Rule R315-15 shall be disposed in a solid waste disposal facility meeting the applicable requirements of Rules R315-301 through R315-318 and authorized by the Board.

8.3 USE AS A DUST SUPPRESSANT, WEED SUPPRESSANT, OR FOR ROAD OILING

The use of used oil as a dust suppressant, weed suppressant, or for road oiling or other similar use is prohibited.

R315-15-9. Emergency Controls.

9.1 IMMEDIATE ACTION

In the event of a release of used oil, the person responsible for the material at the time of the release shall immediately:

(a) Take appropriate action to minimize the threat to human health and the environment.

(b) Notify the Utah State Department of Environmental Quality, 24-hour Answering Service, 801-536-4123 for used oil releases exceeding 25 gallons, or smaller releases that pose a potential threat to human health or the environment. Small leaks and drips from vehicles are considered de minimis and are not subject to the release clean-up provisions of R315-15-9.

(c) Provide the following information when reporting the release:

- (1) Name, phone number, and address of person responsible for the release.
- (2) Name, title, and phone number of individual reporting.
- (3) Time and date of release.
- (4) Location of release--as specific as possible including nearest town, city, highway, or waterway.

(5) Description contained on the manifest and the amount of material released.

(6) Cause of release.

(7) Possible hazards to human health or the environment and emergency action taken to minimize that threat.

(8) The extent of injuries, if any.

(d) An air, rail, highway, or water transporter who has discharged used oil shall:

(1) Give notice, if required by 49 CFR 171.15 to the National Response Center, 800-424-8802 or 202-426-2675; and

(2) Report in writing as required by 49 CFR 171.16 to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590.

(e) A water, bulk shipment, transporter who has discharged used oil shall give the same notice as required by 33 CFR 153.203 for oil and hazardous substances.

9.2 EMERGENCY CONTROL VARIANCE

If a release of used oil requires immediate removal to protect human health or the environment, as determined by the Executive Secretary, a variance may be granted by the Executive Secretary to the EPA Identification Number requirement for used oil transporters until the released material and any residue or contaminated soil, water, or other material resulting from the release no longer presents an immediate hazard to human health or the environment, as determined by the Executive Secretary.

9.3 RELEASE CLEAN-UP

The person responsible for the material at the time of the release shall clean up all the released material and any residue or contaminated soil, water or other material resulting from the release or take action as may be required by the Executive Secretary so that the released material, residue, or contaminated soil, water, or other material no longer presents a hazard to human health or the environment. The cleanup or other required actions shall be at the expense of the person responsible for the release.

9.4 REPORTING

Within 15 days after any release of used oil that is reported under R315-15-9.1(b), the person responsible for the material at the time of the release shall submit to the Board or the Executive Secretary a written report which contains the following information:

(a) The person's name, address, and telephone number;

(b) Date, time, location, and nature of the incident;

(c) Name and quantity of material(s) involved;

(d) The extent of injuries, if any;

(e) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(f) The estimated quantity and disposition of recovered material that resulted from the incident.

R315-15-10. Liability/Financial Requirements.

An owner or operator of a used oil collection, off-specification burner, transportation, processing, re-refining, or transfer facility, or a group of such facilities, shall demonstrate financial responsibility for any liability resulting from accidental spill or mishandling of used oil, e.g., bodily injury, property damage, and damage to third parties arising from operations of the facility or group of facilities. In approving the financial mechanisms, the Executive Secretary will take into account existing financial mechanisms already in place by the facility if required by Sections R315-7-15, R315-8-8, and R311-201-6.

Additionally the Executive Secretary will consider other relevant factors in approving the financial mechanism, such as the volumes of used oil handled, existing secondary containment, etc. Evidence of financial responsibility shall be provided to the Executive Secretary as part of the permit/registration application.

R315-15-11. Closure.

11.1 The owner or operator of a used oil collection, aggregation, transfer, processing/re-refining, or off-specification used oil burning facility shall reclaim the site of the operation to a post operational land use in a manner that:

(a) Minimizes the need for further maintenance;

(b) Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of used oil, used oil constituents, leachate, contaminated run-off, or used oil decomposition products to the ground or surface waters, or to the atmosphere; and

(c) Complies with the closure requirements of this section or supplies evidence to the Executive Secretary demonstrating a closure mechanism meeting the requirements of R315-7-15 or R315-8-8.

11.2 CLOSURE PLAN

(a) Written plan. The owner or operator of a used oil transfer, off-specification burner, or processing/re-refining facility shall have a written closure plan. The plan shall be submitted to the Executive Secretary as part of the permit application.

(b) Content of plan. The plan shall identify steps necessary to perform partial and/or final closure of the facility at any point during its active life. The closure plan shall include, at least:

(1) A description of how each used oil management unit at the facility will be closed.

(2) A description of how final closure of the facility will be conducted. The description shall identify the maximum extent of the operations which will be closed during the active life of the facility.

(3) An estimate of the maximum inventory of used oil to be stored on-site at any one time during the life of the facility and a detailed description of the methods to be used during partial closures and final closure, including, but not limited to, methods for removing, transporting, or disposing of all used oil, and identification of the off-site used oil facilities to be used, if applicable.

(4) A detailed description of the steps needed to remove or decontaminate all used oil residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy closure.

(5) A detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure standards.

(6) A closure cost estimate and a mechanism for reclamation surety to cover the cost of closure.

11.3 TIME ALLOWED FOR CLOSURE

Within 90 days after receiving the final volume of used oil, the owner or operator of a used oil transfer, off-specification burning, or processing/re-refining facility shall begin implementing the facility's approved closure plan.

11.4 CERTIFICATION OF CLOSURE

Within 60 days of completion of closure the owner or operator of a used oil transfer, off-specification burning, or processing/re-refining facility shall submit to the Executive Secretary, by registered mail, a certification that the used oil facility has been closed in accordance with the specifications in the approved closure plan. The certification shall be signed by the owner or operator and by an independent registered professional engineer.

R315-15-12. Reclamation Surety.

12.1 DEFINITIONS

For the purposes of Section R315-15-12, the following definitions apply:

(a) "Existing used oil facility" means any used oil transfer facility, off-specification burner, or used oil processing/re-refining facility in operation on July 1, 1993 under a used oil operating permit issued by the Division of Oil, Gas and Mining and in effect on or before June 30, 1993. An existing used oil facility is also required to obtain a permit from the Executive Secretary in accordance with Section R315-15-13.

(b) "New used oil facility" means any used oil transfer, off-specification burner, or used oil processing/re-refining facility that was not in operation as a used oil facility on July 1, 1993, and received an operating permit in accordance with Section R315-15-13 from the Executive Secretary after July 1, 1993.

12.2 APPLICABILITY

(a) The owner or operator of an existing or new used oil facility requiring a permit under Section R315-15-13 shall establish a reclamation surety sufficient to assure reclamation of the facility in conformity with Sections R315-15-12.4 and R315-15-11.1 with one or more of the reclamation surety mechanisms of Section R315-15-12.3 prior to receiving a permit from the Executive Secretary.

(b) Any increase in capacity to store or process used oil at a used oil facility permitted by the Executive Secretary, above the storage or processing capacity identified in the permit application approved by the Executive Secretary, shall require the owner or operator of the used oil facility to increase the amount of the reclamation surety to meet the additional capacity. The additional amount of reclamation surety shall be in place and effective before operation of the increased storage or processing capacity and shall meet the requirements of Sections R315-15-12.3 and R315-15-12.4.

(c) DIYer used oil collection centers, generator used oil collection centers, and used oil aggregation points are not required to post a reclamation surety under this rule, but are subject to the reclamation requirements of Section R315-15-11.1.

12.3 RECLAMATION SURETY MECHANISMS

(a) Any reclamation surety mechanism in place for an existing or new used oil facility shall:

(1) be legally valid, binding, and enforceable under state and federal law;

(2) be approved by the Executive Secretary; and

(3) ensure that funds will be available in a timely fashion when needed for completing all reclamation activities approved by the Board, in coordination with the Department.

(b) The owner or operator of an existing or new used oil facility shall establish a reclamation surety by one of the following mechanisms and shall submit a copy of the surety

mechanism to the Executive Secretary for approval as part of the permit application.

(1) Trust Fund for Reclamation.

(i) The trustee shall be an entity which has the authority to act as a trustee and whose operations are regulated and examined by a federal or state agency.

(ii) A copy of the trust agreement shall be submitted to the Executive Secretary.

(iii) For trust funds not fully funded at the time of permit approval by the Executive Secretary, payments into the trust fund shall be made annually by the owner or operator to be fully funded within five years of permit approval by the Executive Secretary.

(iv) For a new used oil facility, the initial payment into the trust fund shall be made before the initial receipt of used oil.

(v) For an existing used oil facility, the initial payment into the trust fund shall be made on or before April 1, 1994.

(vi) The owner or operator, or other person authorized to conduct reclamation activities may request reimbursement from the trustee for reclamation activities completed.

(vii) The request for reimbursement may be granted by the trustee as follows:

(A) only if sufficient funds exist to cover the reimbursement request; and

(B) if justification and documentation of the reclamation expenditures are submitted to and approved by the Board, in coordination with the Department, prior to the trustee granting reimbursement.

(2) Surety Bond Guaranteeing Payment or Performance.

(i) The bond shall be effective as follows:

(A) For a new used oil facility, before the initial receipt of used oil; or

(B) For an existing used oil facility, on or before April 1, 1994.

(ii) The surety company issuing the bond shall, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury and the owner or operator shall notify the Executive Secretary that a copy of the bond has been placed in the operating record.

(iii) The penal sum of the bond shall be in an amount at least equal to the reclamation cost estimate developed under Subsection R315-15-12.4(c).

(iv) Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond.

(v) The owner or operator shall establish a standby trust fund.

(A) The standby trust fund shall meet the requirements of Subsection R315-15-12.3(b)(1).

(B) Payment made under the terms of the bond shall be deposited by the surety directly into the standby trust fund and payments from the trust fund shall be approved by the trustee with the concurrence of the Board, in coordination with the Department.

(3) Insurance.

(i) The insurance shall be effective as follows:

(A) For a new used oil facility before the initial receipt of used oil; or

(B) For an existing used oil facility on or before April 1, 1994.

(ii) At a minimum, the insurer shall be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states.

(iii) The insurance policy shall guarantee that funds will be available to perform the reclamation activities approved by the Board, in coordination with the Department.

(iv) The policy shall guarantee that the insurer will be responsible for the paying out of funds to the owner or operator or other person authorized to conduct the reclamation activities, as approved by the Board, in coordination with the Department, up to an amount equal to the face amount of the policy. Payment of any funds by the insurer shall be made with the concurrence of the Board, in coordination with the Department.

(v) The insurance policy shall be issued for a face amount at least equal to the reclamation cost estimate developed under Subsection R315-15-12.4(c).

(vi) An owner or operator, or other authorized person may receive reimbursements for reclamation activities completed if:

(A) the value of the policy is sufficient to cover the reimbursement request; and

(B) justification and documentation of the reclamation expenditures are submitted to and approved by the Board, in coordination with the Department, prior to receiving reimbursement.

(vii) Each policy shall contain a provision allowing assignment of the policy to a successor owner or operator.

(viii) The insurance policy shall provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. If there is a failure to pay the premium, the insurer may cancel the policy by sending notice of cancellation by certified mail to the owner or operator and the Executive Secretary 120 days in advance of cancellation. If the insurer cancels the policy, the owner or operator shall obtain an alternate reclamation surety meeting the requirements of this subsection within 60 days of cancellation of the policy.

(4) Letter of Credit for Reclamation.

(i) The letter of credit shall be effective as follows:

(A) For a new used oil facility, before the initial receipt of used oil; or

(B) For an existing used oil facility, on or before April 1, 1994.

(ii) An owner or operator of a used oil facility subject to the reclamation surety requirements of Section R315-15-12 may obtain an irrevocable standby letter of credit for reclamation of the used oil facility and shall submit a copy to the Executive Secretary.

(iii) The financial institution issuing the letter of credit shall be an entity that has the authority to issue letters of credit and whose letter of credit operations are regulated and examined by a state or federal agency.

(iv) The letter of credit shall be issued in an amount at least equal to the reclamation cost estimate developed under Subsection R315-15-12.4(c).

(5) The owner or operator of an existing or new used oil facility may establish reclamation surety by other mechanisms as approved by the Executive Secretary.

(6) The owner or operator of an existing or new used oil facility may establish reclamation surety by a combination of the above mechanisms as approved by the Executive Secretary.

(c) In approving the reclamation surety, the Executive Secretary will take into account existing financial mechanisms

the used oil facility may already have in place under Sections R315-7-15 or R315-8-8.

(d) The owner or operator of a used oil transfer, processing or rerefining facility may terminate or cancel an active reclamation surety mechanism under the following conditions:

(1) if the owner or operator establishes alternate reclamation surety as approved by the Executive Secretary; or

(2) if the owner or operator is released from the reclamation surety requirements by the Executive Secretary.

12.4 RECLAMATION SURETY ANNUAL UPDATE AND COST ESTIMATE

(a) The reclamation surety information required by Subsection R315-15-12.4(c) shall be submitted to the Executive Secretary with the initial permit application for a new used oil facility or by April 1, 1994 for an existing used oil facility.

(b) The reclamation surety shall be updated each year to adjust for inflation or facility modification that would affect the amount of the reclamation surety required. The updated reclamation surety information shall be submitted to the Executive Secretary by March 1 of each year beginning March 1, 1995.

(c) The reclamation cost estimate shall be based on a third party performing reclamation of the facility to a post-operational land use in accordance with Section R315-15-11.1 and at a minimum shall contain the following elements:

(1) the estimated cost of removing from the facility the permitted maximum used oil storage capacity of the facility;

(2) the estimated cost of removing from the facility and decontaminating all used oil residues in containers, tanks, containment systems, soils, structures, and equipment; and

(3) a written description and an itemized estimated cost of the proposed methods for removing used oil and used oil residues from the facility and decontaminating used oil residues at the facility.

R315-15-13. Registration and Permitting of Used Oil Handlers.

13.1 DO-IT-YOURSELFER USED OIL COLLECTION CENTERS

(a) Applicability. A person may not operate a do-it-yourselfer (DIYer) used oil collection center without holding a registration number issued by the Executive Secretary.

(b) General. The application for a registration number shall include the following information regarding the DIYer used oil collection center:

(1) the name and address of the operator;

(2) the location of the center;

(3) the type of storage and secondary containment to be used;

(4) the status of the business, zoning, or other licenses and permits if required by federal, state and local governmental entities;

(5) a spill containment plan in the event of a release of used oil; and

(6) proof of insurance or other means of financial responsibility for liabilities that may be incurred in collecting or storing used oil.

(c) Waiver of proof of insurance or other means of financial responsibility for liabilities that may be incurred in collecting or storing used oil. Pursuant to Section 19-6-710, the Executive Secretary may waive the requirement of proof of

liability insurance or other means of financial responsibility if the following criteria are satisfied:

(1) The used oil storage tank or container is in good condition with no severe rusting, apparent structural defects or deterioration, and no visible leaks;

(2) There is adequate secondary containment for the tank or container that is impervious to used oil to prevent any used oil released into the secondary containment system from migrating out of the system to the soil, groundwater or surface water;

(3) The storage tank or container is clearly labeled with the words "Used Oil;"

(4) DIYer log entries are complete including the name and address of the generator, date and quantity of used oil received;

(5) EPA approved test kits for total halogens are readily available and operators are trained to perform halogen tests on any used oil received that may have been mixed with hazardous waste; and

(6) Oil sorbent material is readily available on site for immediate clean up of spills.

(d) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted to apply for a registration number within 20 days of the change.

13.2 GENERATOR USED OIL COLLECTION CENTERS

(a) Applicability. A person may not operate a generator used oil collection center without holding a registration number issued by the Executive Secretary.

(b) General. The application for registration shall include the following information regarding the generator used oil collection center:

(1) the name and address of the operator;

(2) the location of the center;

(3) whether the center will accept DIYer used oil;

(4) the type of storage and secondary containment to be used;

(5) the status of the business, zoning, or other licenses and permits if required by federal, state and local governmental entities;

(6) a spill containment plan in the event of a release of used oil; and

(7) proof of insurance or other means of financial responsibility for liabilities that may be incurred in collecting or storing used oil.

(c) permit. Waiver of proof of insurance or other means of financial responsibility for liabilities that may be incurred in collecting or storing used oil. Pursuant to Section 19-6-710, the Executive Secretary may waive the requirement of proof of liability insurance or other means of financial responsibility if the following criteria are satisfied:

(1) The used oil storage tank or container is in good condition with no severe rusting, apparent structural defects or deterioration, and no visible leaks;

(2) There is adequate secondary containment for the tank or container that is impervious to used oil to prevent any used oil released into the secondary containment system from migrating out of the system to the soil, groundwater or surface water;

(3) The storage tank or container is clearly labeled with the words "Used Oil;"

(4) DIYer log entries are complete including the name and address of the generator, date and quantity of used oil received;

(5) EPA approved test kits for total halogens are readily available and operators are trained to perform halogen tests on any used oil received that may have been mixed with hazardous waste; and

(6) Oil sorbent material is readily available on site for immediate clean up of spills.

(d) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted to apply for a registration number within 20 days of the change.

13.3 USED OIL AGGREGATION POINTS

(a) Applicability. A person may operate a used oil aggregation point without holding a registration number issued by the Executive Secretary unless that aggregation point also accepts used oil from household do-it-yourselfers (DIYers) or other generators.

(b) If an aggregation point accepts used oil from household DIYers, it must register with the Division as a DIYer collection center and comply with the DIYer standards in Section R315-15-3.1.

(c) If an aggregation point accepts used oil from other generators it must register with the Division as a generator collection center and comply with the standards in Section R315-15-3.2.

13.4 USED OIL TRANSPORTERS AND USED OIL TRANSFER FACILITIES

(a) Applicability. Except as provided by Section R315-15-13.4(f), a person may not operate as a used oil transporter or operate a transfer facility without holding a permit issued by the Executive Secretary.

(b) General. The application for a permit shall include the following information:

(1) The name and address of the operator;

(2) The location of the transporter's base of operations and the location of any transfer facilities, if applicable;

(3) Maps of all transfer facilities, if applicable;

(4) The methods to be used for collecting, storing, and delivering used oil;

(5) The methods to be used to determine if used oil received by the transporter or facility is on-specification or off-specification;

(6) The type of containment and the volume, including type and number of storage vessels to be used and the number and type of transportation vehicles, if applicable;

(7) The methods of disposing of any waste by-products;

(8) The status of business, zoning, and other applicable licenses and permits if required by federal, state, and local government entities;

(9) An emergency spill containment plan;

(10) Proof of liability insurance or other means of financial responsibility for liabilities that may be incurred in collecting, transporting, or storing used oil;

(11) Proof of form and amount of reclamation surety for any facility used in conjunction with transportation or storage of used oil; and

(12) A closure plan meeting the requirements of Section R315-15-11.

(c) Permit fees. Registration and permitting fees are established under the terms and conditions of Section 63-38-3. A copy of the Division's Fee Schedule is available upon request. Payment of appropriate fees is required prior to issuance of registration numbers and permit approvals.

(d) Annual Reporting. Each transporter/transfer facility shall submit an annual report to the Division of their activities during the calendar year. The annual report shall be submitted to the Division no later than March 1, of the year following the reported activities. The Annual report shall either be submitted on a form provided by the Division or shall contain the following information:

- (1) the EPA identification number, name, and address of the transporter/transfer facility;
- (2) the calendar year covered by the report;
- (3) the total amount of used oil transported;
- (4) the itemized amounts and types of used oil transferred to permitted transporters/transfer facilities, used oil processors/re-refiners, off-specification used oil burners, and used oil fuel marketers; and
- (5) the itemized amounts and types of used oil transferred inside and outside the state, indicating the state of transfer, and the specific name, address and telephone number of the operations or facility to which used oil was transferred.

(e) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted to apply for a permit within 20 days of the change.

(f) Permits by rule. Notwithstanding any other provisions of Section R315-15-13.4, a used oil generator who transports used oil generated at a non-contiguous operation to a central collection facility for the purpose of storing it shall be deemed to have an approved used oil transporter permit if the generator meets all of the following conditions:

- (1) Transports only used oil generated by the generator;
- (2) Transports the used oil in a service vehicle owned by the generator;
- (3) Transports the used oil to a facility that the generator owns, operates, or both;
- (4) Subsequently burns the stored used oil for energy recovery at that facility, or arranges for a permitted used oil transporter to pick up the used oil;
- (5) Complies with Sections R315-15-4.3, R315-15-4.4, and R315-15-4.8, and Subsections R315-15-4.6(b) through (f) and R315-15-4.7(b) and (d);
- (6) Notifies the Executive Secretary with the information required by Subsection R315-15-13.4(b)(6);
- (7) Registers as a used oil fuel marketer and complies with Section R315-15-7; and
- (8) Is defined by one of the following Standard Industrial Classification (SIC) codes found in the Standard Industrial Classification Manual, 1987, published by the US Office of Management and Budget:
 - (i) 10 (metal mining);
 - (ii) 12 (coal mining);
 - (iii) 13 (oil and gas extraction);
 - (iv) 14 (mining and quarrying of nonmetallic minerals, except fuels);
 - (v) 15 (building construction--general contractors and operative builders);
 - (vi) 16 (heavy construction other than building construction);
 - (vii) 1791 (miscellaneous special trade contractors);
 - (viii) 1794 (excavation work); and
 - (ix) 1795 (wrecking and demolition work).

13.5 USED OIL PROCESSORS/RE-REFINERS

(a) Applicability. A person may not operate as a used oil processing/re-refining facility without holding a permit issued by the Executive Secretary.

(b) General. The application for a permit shall include the following information:

- (1) The name and address of the operator;
- (2) The location of the facility;
- (3) A map of the facility;
- (4) The grades of oil to be produced;
- (5) The methods to be used to determine if used oil received by the transporter or facility is on-specification or off-specification;
- (6) The type of containment and the volume, including type and number of storage vessels to be used and the number and type of transportation vehicles, if applicable;
- (7) The methods of disposing of any waste by-products;
- (8) The status of business, zoning, and other applicable licenses and permits if required by federal, state, and local government entities;
- (9) An emergency spill containment plan;
- (10) Proof of liability insurance or other means of financial responsibility for liabilities that may be incurred in processing or rerefining used oil;
- (11) Proof of form and amount of reclamation surety for any facility used in conjunction with transportation or storage of used oil; and
- (12) A closure plan meeting the requirements of Section R315-15-11.

(c) Permit fees. Registration and permitting fees are established under the terms and conditions of Section 63-38-3. A copy of the Division's Fee Schedule is available upon request. Payment of appropriate fees is required prior to issuance of registration numbers and permit approvals.

(d) Annual Reporting. Each used oil processing or rerefining facility shall submit an annual report to the Division of their activities during the calendar year. The annual report shall be submitted to the Division no later than March 1, of the year following the reported activities. The annual report shall either be submitted on a form provided by the Division or shall contain the following information:

- (1) the EPA identification number, name, and address of the processor/re-refiner facility;
- (2) the calendar year covered by the report;
- (3) the quantities of used oil accepted for processing/rerefining and the manner in which the used oil is processed/rerefined, including the specific processes employed;
- (4) the average daily quantities of used oil processed at the beginning and end of the reporting period;
- (5) an itemization of the total amounts of used oil processed or rerefined during the reporting period year specifying the type and amounts of products produced, i.e., lubricating oil, fuel oil, etc.; and
- (6) the amounts of used oil prepared for reuse as a lubricating oil, as a fuel, and for other uses, specifying each type of use, the amounts of used oil consumed or used in the process of preparing used oil for reuse, specifying the amounts and types of waste by-products generated including waste, water, and the methods and specific locations utilized for disposal.

(e) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted to apply for a permit within 20 days of the change.

13.6 USED OIL BURNERS

(a) Specification used oil fuel burners. Facilities burning only on-specification used oil fuel are not required to register as used oil burners with the Executive Secretary.

(1) Applicability. These requirements apply to persons burning only used oil that meets the used oil fuel specification of Section R315-15-1.2, provided that the burner also complies with the requirements of Section R315-15-7.3. Persons burning specification used oil fuel shall be considered to have an authorization from the Department, for the purpose of this section, if they hold a valid air quality operating order, or are exempt under Section R315-15-2.4.

(2) Notification. Specification used oil fuel burners are required to notify the Executive Secretary by submitting a letter that includes the following information:

- (i) Company name and location;
- (ii) Owner of the company; and
- (iii) Name and telephone number for the company point of contact.

(b) Off-specification used oil fuel burners

(1) Applicability. The permitting requirements of this section apply to used oil burners who burn off-specification used oil for energy recovery except as specified in Subsections R315-15-6.1(a)(1) through (3). A person may not burn off-specification used oil fuel for energy recovery without holding a permit issued by the Executive Secretary.

(2) Permit application. The application for a permit shall include the following information regarding the facility:

- (i) the name and address of the operator;
- (ii) the location of the facility;
- (iii) the type of containment and type and capacity of storage;
- (iv) the type of burner to be used;
- (v) the methods of disposing of any waste by-products;
- (vi) the status of business, zoning, and other applicable licenses and permits required by federal, state, and local governmental entities;
- (vii) an emergency spill containment plan;
- (viii) proof of insurance or other means of financial responsibility for liabilities that may be incurred in storing and burning off-specification used oil fuels.
- (ix) proof of form and amount of reclamation surety for any facility receiving and burning off-specification used oil.
- (x) A closure plan meeting the requirements of Section R315-15-11.

(3) Permit fees. Registration and permitting fees are established under the terms and conditions of Section 63-38-3. A copy of the Division's Fee Schedule is available upon request. Payment of appropriate fees is required prior to issuance of registration numbers or permit approvals.

(4) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted during permit application within 20 days of the change.

(5) Annual Reporting. Each off-specification used oil burner shall submit an annual report to the Division of their activities during the calendar year. The annual report shall be submitted to the Division no later than March 1, of the year following the reported activities. The annual report shall either be submitted on a form provided by the Division or shall contain the following information:

(i) the EPA identification number, name, and address of the burner facility;

(ii) the calendar year covered by the report; and

(iii) the total amount of used oil burned.

13.7 USED OIL FUEL MARKETERS

(a) Applicability. A person may not act as a used oil fuel marketer, as defined in Section R315-15-7, without holding a registration number issued by the Executive Secretary.

(b) General. The application for a registration number shall include the following information regarding the facility acting as a used oil fuel marketer:

(1) The name and address of the marketer.

(2) The location of any facilities used by the marketer to collect, transport, process, or store used oil subject to separate permits, or registrations under this section.

(3) the status of business, zoning, and other applicable licenses and permits required by federal, state, and local governmental entities, including registrations or permits required under this part to collect, process/re-refine, transport, or store used oil.

(4) Registration fees. Registration and permitting fees are established under the terms and conditions of Section 63-38-3. A copy of the Division's Fee Schedule is available upon request. Payment of appropriate fees is required prior to issuance of registration numbers.

(5) Changes in information. The owner or operator of the facility shall notify the Executive Secretary in writing of any changes in the information submitted to apply for a registration within 20 days of the change.

R315-15-14. DIYer Reimbursement.

14.1 DIYER USED OIL COLLECTION CENTER INCENTIVE PAYMENT APPLICABILITY

(a) The Division shall pay a quarterly recycling fee incentive to registered DIYer used oil collection centers and curbside programs approved by the Executive Secretary for each gallon of used oil collected from DIYer used oil generators on and after July 1, 1994, and transported by a permitted used oil transporter to a permitted used oil processor/re-refiner, burner, or registered marketer.

(b) All registered DIYer used oil collection centers can qualify for a recycling incentive payment of up to \$0.16 per gallon, subject to availability of funds and the priorities of Section 19-6-720.

14.2 REIMBURSEMENT PROCEDURES

In order for DIYer collection centers to qualify for the recycling incentive payment they are required to comply with the following procedures.

(a) Submit a copy of all records and receipts from permitted transporters of DIYer used oil collected during the quarter for which the reimbursement is requested, quarterly, beginning July 1, 1994 and ending September 30, 1994, and each quarter thereafter. These records shall be submitted within 30 days following the end of the calendar quarter in which the DIYer oil was collected and for which reimbursement is requested.

(b) Reimbursements will be issued by the Executive Secretary within 30 days following the report filing period.

(c) Reports received later than 30 days after the end of the calendar quarter for which reimbursement is requested will be paid during the next quarterly reimbursement period.

R315-15-15. Issuance and Revocation of Permits and Registrations.

15.1 PUBLIC COMMENTS AND HEARING.

In considering permit applications under these Rules, the Executive Secretary shall adhere to the requirements of Section 19-6-712.

15.2 REVOCATION OF PERMITS AND REGISTRATIONS.

Violation of any permit/registration conditions or failure to comply with any provisions of the applicable statutes and rules, shall be grounds for imposing statutory sanctions, including revocation of the permit or registration and denial of an application for permit or registration. The Executive Secretary shall notify, in writing, the owner or operator of any facility of intent to revoke a permit or registration.

R315-15-16. Grants.

16.1 STATUTORY AUTHORITY.

Section 19-6-720 authorizes the Division of Solid and Hazardous Waste to award grants, as funds are available, for the following:

- (a) Used oil collection centers; and
- (b) Curbside used oil collection programs, including costs of retrofitting trucks, curbside containers, and other costs of collection programs.

16.2 ELIGIBILITY AND APPLICATION.

(a) The establishment of new or the enhancement of existing used oil collection centers or curbside collection programs that address the proper management of used lubricating oil may be eligible for grant assistance.

(b) A Used Oil Recycling Block Grant Package, published by the Division, shall be completed and submitted to the Executive Secretary for consideration.

16.3 LIMITATIONS.

(a) The grantee must commit to perform the permitted used oil handling activity for a minimum of two years.

(b) If the two-year commitment is not fulfilled, the grantee may be required to repay all or a portion of the grant amount.

KEY: hazardous waste, used oil*

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R315. Environmental Quality, Solid and Hazardous Waste.

R315-16. Standards for Universal Waste Management.

R315-16-1.General.

1.1 SCOPE

(a) This rule establishes requirements for managing the following:

- (1) Batteries as described in section 1.2;
- (2) Pesticides as described in section 1.3;
- (3) Thermostats as described in section 1.4; and
- (4) Mercury-containing lamps as described in section 1.5.

(b) This rule provides an alternative set of management standards in lieu of regulation under R315-1 through R315-101.

1.2 APPLICABILITY - BATTERIES

(a) Batteries covered under R315-16.

(1) The requirements of this rule apply to persons managing batteries, as described in section 1.9, except those listed in paragraph (b) of this section.

(2) Spent lead-acid batteries which are not managed under 40 CFR part 266, subpart G, as incorporated by reference at R315-14-6, are subject to management under this rule.

(b) Batteries not covered under R315-16. The requirements of this rule do not apply to persons managing the following batteries:

(1) Spent lead-acid batteries that are managed under R315-14-6.

(2) Batteries, as described in section 1.9, that are not yet wastes under R315-2, including those that do not meet the criteria for waste generation in paragraph (c) of this section.

(3) Batteries, as described in section 1.9, that are not hazardous waste. A battery is a hazardous waste if it exhibits one or more of the characteristics identified in R315-2-9.

(c) Generation of waste batteries.

(1) A used battery becomes a waste on the date it is discarded, e.g., when sent for reclamation.

(2) An unused battery becomes a waste on the date the handler decides to discard it.

1.3 APPLICABILITY - PESTICIDES

(a) Pesticides covered under R315-16. The requirements of this rule apply to persons managing pesticides, as described in section 1.9, meeting the following conditions, except those listed in paragraph (b) of this section:

(1) Recalled pesticides that are:

(i) Stocks of a suspended and canceled pesticide that are part of a voluntary or mandatory recall under FIFRA Section 19(b), including, but not limited to those owned by the registrant responsible for conducting the recall; or

(ii) Stocks of a suspended or canceled pesticide, or a pesticide that is not in compliance with FIFRA, that are part of a voluntary recall by the registrant.

(2) Stocks of other unused pesticide products that are collected and managed as part of a waste pesticide collection program.

(b) Pesticides not covered under R315-16. The requirements of this rule do not apply to persons managing the following pesticides:

(1) Recalled pesticides described in paragraph (a)(1) of this section, and unused pesticide products described in paragraph (a)(2) of this section, that are managed by farmers in compliance with R315-5-7. R315-5-7 addresses pesticides disposed of on the farmer's own farm in a manner consistent with the disposal instructions on the pesticide label, providing the container is triple rinsed in accordance with R315-2-7(b)(3);

(2) Pesticides not meeting the conditions set forth in paragraph (a) of this section. These pesticides must be managed in compliance with the hazardous waste regulations in R315-1 through R315-101;

(3) Pesticides that are not wastes under R315-2, including those that do not meet the criteria for waste generation in paragraph (c) of this section or those that are not wastes as described in paragraph (d) of this section; and

(4) Pesticides that are not hazardous waste. A pesticide is a hazardous waste if it is listed in R315-2-10 or if it exhibits one or more of the characteristics identified in R315-2-9.

(c) When a pesticide becomes a waste.

(1) A recalled pesticide described in paragraph (a)(1) of this section becomes a waste on the first date on which both of the following conditions apply:

(i) The generator of the recalled pesticide agrees to participate in the recall; and

(ii) The person conducting the recall decides to discard, e.g., burn the pesticide for energy recovery.

(2) An unused pesticide product described in paragraph (a)(2) of this section becomes a waste on the date the generator decides to discard it.

(d) Pesticides that are not wastes. The following pesticides are not wastes:

(1) Recalled pesticides described in paragraph (a)(1) of this section, provided that the person conducting the recall:

(i) Has not made a decision to discard, e.g., burn for energy recovery, the pesticide. Until such a decision is made, the pesticide does not meet the definition of "solid waste" under R315-2-2; thus the pesticide is not a hazardous waste and is not subject to hazardous waste requirements, including R315-16. This pesticide remains subject to the requirements of FIFRA; or

(ii) Has made a decision to use a management option that, under R315-2-2, does not cause the pesticide to be a solid waste, i.e., the selected option is use, other than use constituting disposal, or reuse, other than burning for energy recovery or reclamation. Such a pesticide is not a solid waste and therefore is not a hazardous waste, and is not subject to the hazardous waste requirements including R315-16. This pesticide, including a recalled pesticide that is exported to a foreign destination for use or reuse, remains subject to the requirements of FIFRA.

(2) Unused pesticide products described in paragraph (a)(2) of this section, if the generator of the unused pesticide product has not decided to discard, them, e.g., burn for energy recovery. These pesticides remain subject to the requirements of FIFRA.

1.4 APPLICABILITY - MERCURY THERMOSTATS

(a) Thermostats covered under R315-16. The requirements of this section apply to persons managing thermostats, as described in section 1.9, except those listed in paragraph (b) of this section.

(b) Thermostats not covered under R315-16. The requirements of this section do not apply to persons managing the following thermostats:

(1) Thermostats that are not yet wastes under R315-2. Paragraph (c) of this section describes when thermostats become wastes.

(2) Thermostats that are not hazardous waste. A thermostat is a hazardous waste if it exhibits one or more of the characteristics identified in R315-2-9.

(c) Generation of waste thermostats.

(1) A used thermostat becomes a waste on the date it is discarded, e.g., sent for reclamation.

(2) An unused thermostat becomes a waste on the date the handler decides to discard it.

1.5 APPLICABILITY - LAMPS

(a) Lamps covered under R315-16. The requirements of this section apply to persons managing lamps, as described in section 1.9, except those listed in paragraph (b) of this section.

(b) Lamps not covered under R315-16. The requirements of R315-16 do not apply to persons managing the following lamps:

(1) Lamps that are not yet wastes under R315-2 as provided in paragraph (c) of this section.

(2) Lamps, that are not hazardous waste. A lamp is a hazardous waste if it exhibits one or more of the characteristics identified in R315-2-9(a) and (d) - (g).

(c) Generation of waste lamps.

(1) A used lamp becomes a waste on the date it is discarded, e.g., sent for reclamation.

(2) An unused lamp becomes a waste on the date the handler decides to discard it.

1.8 APPLICABILITY - HOUSEHOLD AND CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR WASTE

(a) Persons managing the wastes listed below may, at their option, manage them under the requirements of this section:

(1) Household wastes that are exempt under R315-2-4 and are also of the same type as the universal wastes defined in section 1.9; or

(2) Conditionally exempt small quantity generator wastes that are exempt under R315-2-5 and are also of the same type as the universal wastes defined in section 1.9.

(b) Persons who commingle the wastes described in paragraphs (a)(1) and (a)(2) of this section together with universal waste regulated under this rule must manage the commingled waste under the requirements of this rule.

1.9 DEFINITIONS

(a) "Battery" means a device consisting of one or more electrically connected electrochemical cells which is designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections, electrical and mechanical, as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed.

(b) "Destination facility" means a facility that treats, disposes of, or recycles a particular category of universal waste, except those management activities described in sections 16-2.4(a) and (c) and sections 16-3.4(a) and (c). A facility at which a particular category of universal waste is only accumulated, is not a destination facility for purposes of managing that category of universal waste.

(c) "FIFRA" means the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136-136y.

(d) "Generator" means any person, by site, whose act or process produces hazardous waste identified or listed in R315-2 of this rule, or whose act first causes a hazardous waste to become subject to regulation.

(e) "Lamp," also referred to as "universal waste lamp" is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the

electromagnetic spectrum. Examples of common universal waste electric lamps include fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.

(f) "Large Quantity Handler of Universal Waste" means a universal waste handler, as defined in this section, who accumulates 5,000 kilograms or more total of universal waste, batteries, pesticides, lamps, or thermostats, calculated collectively, at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5,000 kilograms or more total of universal waste is accumulated.

(g) "On-site" means the same or geographically contiguous property which may be divided by public or private right-of-way, provided that the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along the right of way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access, are also considered on-site property.

(h) "Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than any article that:

(1) Is a new animal drug under FFDCA section 201(w), or

(2) Is an animal drug that has been determined by regulation of the Secretary of Health and Human Services not to be a new animal drug, or

(3) Is an animal feed under FFDCA section 201(x) that bears or contains any substances described by paragraph (1) or (2) of this section.

(i) "Small Quantity Handler of Universal Waste" means a universal waste handler, as defined in this section, who does not accumulate 5,000 kilograms or more total of universal waste, batteries, pesticides, lamps, or thermostats, calculated collectively, at any time.

(j) "Thermostat" means a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of sections 16-2.4(c)(2) or 16-3.4(c)(2).

(k) "Universal Waste" means any of the following hazardous wastes that are subject to the universal waste requirements of R315-16:

(1) Batteries as described in section 16-1.2;

(2) Pesticides as described in section 16-1.3;

(3) Thermostats as described in section 16-1.4; and

(4) Lamps as described in section 16-1.5.

(l) "Universal Waste Handler":

(1) Means:

(i) A generator, as defined in this section, of universal waste; or

(ii) The owner or operator of a facility, including all contiguous property, that receives universal waste from other universal waste handlers, accumulates universal waste, and sends universal waste to another universal waste handler, to a destination facility, or to a foreign destination.

(2) Does not mean:

(i) A person who treats, except under the provisions of sections 16-2.4(a) or (c), or 16-3.4(a) or (c), disposes of, or recycles universal waste; or

(ii) A person engaged in the off-site transportation of universal waste by air, rail, highway, or water, including a universal waste transfer facility.

(m) "Universal Waste Transfer Facility" means any transportation-related facility including loading docks, parking areas, storage areas and other similar areas where shipments of universal waste are held during the normal course of transportation for ten days or less.

(n) "Universal Waste Transporter" means a person engaged in the off-site transportation of universal waste by air, rail, highway, or water.

R315-16-2. Standards for Small Quantity Handlers of Universal Waste.

2.1 APPLICABILITY

This section applies to small quantity handlers of universal waste as defined in section 16-1.9.

2.2 PROHIBITIONS

A small quantity handler of universal waste is:

- (a) Prohibited from disposing of universal waste; and
- (b) Prohibited from diluting or treating universal waste, except by responding to releases as provided in section 16-2.8; or by managing specific wastes as provided in section 16-2.4.

2.3 NOTIFICATION

A small quantity handler of universal waste is not required to notify the Division of universal waste handling activities.

2.4 WASTE MANAGEMENT

(a) Universal waste batteries. A small quantity handler of universal waste must manage universal waste batteries in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A small quantity handler of universal waste must contain any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the battery, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A small quantity handler of universal waste may conduct the following activities as long as the casing of each individual battery cell is not breached and remains intact and closed, except that cells may be opened to remove electrolyte but must be immediately closed after removal:

- (i) Sorting batteries by type;
- (ii) Mixing battery types in one container;
- (iii) Discharging batteries so as to remove the electric charge;
- (iv) Regenerating used batteries;
- (v) Disassembling batteries or battery packs into individual batteries or cells;
- (vi) Removing batteries from consumer products; or
- (vii) Removing electrolyte from batteries.

(3) A small quantity handler of universal waste who removes electrolyte from batteries, or who generates other solid waste, e.g., battery pack materials, discarded consumer products, as a result of the activities listed above, must determine whether the electrolyte or other solid waste exhibit a characteristic of hazardous waste identified in R315-2-9.

(i) If the electrolyte or other solid waste exhibits a characteristic of hazardous waste, it is subject to all applicable requirements of R315-1 through R315-101. The handler is

considered the generator of the hazardous electrolyte or other waste and is subject to R315-5.

(ii) If the electrolyte or other solid waste is not hazardous, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

(b) Universal waste pesticides. A small quantity handler of universal waste must manage universal waste pesticides in a way that prevents releases of any universal waste or component of a universal waste to the environment. The universal waste pesticides must be contained in one or more of the following:

(1) A container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions; or

(2) A container that does not meet the requirements of paragraph (b)(1) of this section, provided that the unacceptable container is overpacked in a container that does meet the requirements of paragraph (b)(1) of this section; or

(3) Except for 40 CFR 265.197(c), 265.200, and 265.201, a tank that meets the requirements of R315-7-17, which incorporates 40 CFR part 265, subpart J by reference; or

(4) A transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(c) Universal waste thermostats. A small quantity handler of universal waste must manage universal waste thermostats in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A small quantity handler of universal waste must contain any universal waste thermostat that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the thermostat, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A small quantity handler of universal waste may remove mercury-containing ampules from universal waste thermostats provided the handler:

(i) Removes the ampules in a manner designed to prevent breakage of the ampules;

(ii) Removes ampules only over or in a containment device, e.g., tray or pan sufficient to collect and contain any mercury released from an ampule in case of breakage;

(iii) Ensures that a mercury clean-up system is readily available to immediately transfer any mercury resulting from spills or leaks from broken ampules, from the containment device to a container that meets the requirements of 40 CFR 262.34, as incorporated by reference at R315-5-3.34;

(iv) Immediately transfers any mercury resulting from spills or leaks from broken ampules from the containment device to a container that meets the requirements of 40 CFR 262.34, as incorporated by reference at R315-5-3.34;

(v) Ensures that the area in which ampules are removed is well ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury;

(vi) Ensures that employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate containers;

(vii) Stores removed ampules in closed, non-leaking containers that are in good condition;

(viii) Packs removed ampules in the container with packing materials adequate to prevent breakage during storage, handling, and transportation; and

(3)(i) A small quantity handler of universal waste who removes mercury-containing ampules from thermostats must determine whether the following exhibit a characteristic of hazardous waste identified in R315-2-9:

(A) Mercury or clean-up residues resulting from spills or leaks; or

(B) Other solid waste generated as a result of the removal of mercury-containing ampules, e.g., remaining thermostat units.

(ii) If the mercury, residues, or other solid waste exhibit a characteristic of hazardous waste, it must be managed in compliance with all applicable requirements of R315-1 through R315-101. The handler is considered the generator of the mercury, residues, or other waste and must manage it subject to R315-5.

(iii) If the mercury, residues, or other solid waste is not hazardous, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

(d) Lamps. A small quantity handler of universal waste must manage lamps in a way that prevents release of any universal waste or component of a universal waste to the environment as follows:

(1) A small quantity handler of universal waste shall contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A small quantity handler of universal waste shall immediately clean up and place in a container any lamp that is broken and must place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment. Containers must be closed, structurally sound, compatible with the contents of the lamps and must lack evidence of leakage, spillage, or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.

2.5 LABELING/MARKING

A small quantity handler of universal waste must label or mark the universal waste to identify the type of universal waste as specified below:

(a) Universal waste batteries, i.e., each battery, or a container in which the batteries are contained, must be labeled or marked clearly with the following phrase: "Universal Waste Battery" or "Universal Waste Batteries";

(b) A container, or multiple container package unit, tank, transport vehicle or vessel in which recalled universal waste pesticides as described in section 16-1.3(a)(1) are contained must be labeled or marked clearly with:

(1) The label that was on or accompanied the product as sold or distributed; and

(2) The words "Universal Waste Pesticide" or "Universal Waste Pesticides";

(c) A container, tank, or transport vehicle or vessel in which unused pesticide products as described in section 16-1.3(a)(2) are contained must be labeled or marked clearly with:

(1)(i) The label that was on the product when purchased, if still legible;

(ii) If using the labels described in paragraph (c)(1)(i) of this section is not feasible, the appropriate label as required under the Department of Transportation regulation 49 CFR part 172;

(iii) If using the labels described in paragraphs (c)(1) (i) and (ii) of this section is not feasible, another label prescribed or designated by the waste pesticide collection program administered or recognized by a state; and

(2) The words "Universal Waste-Pesticide" or "Universal Waste Pesticides."

(d) Universal waste thermostats, i.e., each thermostat, or a container in which the thermostats are contained, must be labeled or marked clearly with the following phrase: "Universal Waste Mercury Thermostat" or "Universal Waste Mercury Thermostats."

(e) Each lamp or a container or package in which such lamps are contained shall be labeled or marked clearly with one of the following phrases: "Universal Waste - Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)."

2.6 ACCUMULATION TIME LIMITS

(a) A small quantity handler of universal waste may accumulate universal waste for no longer than one year from the date the universal waste is generated, or received from another handler, unless the requirements of paragraph (b) of this section are met.

(b) A small quantity handler of universal waste may accumulate universal waste for longer than one year from the date the universal waste is generated, or received from another handler, if such activity is solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal. However, the handler bears the burden of proving that such activity is solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal.

(c) A small quantity handler of universal waste who accumulates universal waste must be able to demonstrate the length of time that the universal waste has been accumulated from the date it becomes a waste or is received. The handler may make this demonstration by:

(1) Placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received;

(2) Marking or labeling each individual item of universal waste, e.g., each battery, lamp, or thermostat with the date it became a waste or was received;

(3) Maintaining an inventory system on-site that identifies the date each universal waste became a waste or was received;

(4) Maintaining an inventory system on-site that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received;

(5) Placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received; or

(6) Any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date it becomes a waste or is received.

2.7 EMPLOYEE TRAINING

A small quantity handler of universal waste must inform all employees who handle or have responsibility for managing universal waste. The information must describe proper handling and emergency procedures appropriate to the type, or types of universal waste handled at the facility.

2.8 RESPONSE TO RELEASES

(a) A small quantity handler of universal waste must immediately contain all releases of universal wastes and other residues from universal wastes.

(b) A small quantity handler of universal waste must determine whether any material resulting from the release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements of R315-1 through R315-101. The handler is considered the generator of the material resulting from the release, and must manage it in compliance with R315-5.

2.9 OFF-SITE SHIPMENTS

(a) A small quantity handler of universal waste is prohibited from sending or taking universal waste to a place other than another universal waste handler, a destination facility, or a foreign destination.

(b) If a small quantity handler of universal waste self-transport universal waste off-site, the handler becomes a universal waste transporter for those self-transportation activities and must comply with the transporter requirements of section 16-4 of this rule while transporting the universal waste.

(c) If a universal waste being offered for off-site transportation meets the definition of hazardous materials under 49 CFR parts 171 through 180, a small quantity handler of universal waste must package, label, mark and placard the shipment, and prepare the proper shipping papers in accordance with the applicable Department of Transportation regulations under 49 CFR parts 172 through 180;

(d) Prior to sending a shipment of universal waste to another universal waste handler, the originating handler must ensure that the receiving handler agrees to receive the shipment.

(e) If a small quantity handler of universal waste sends a shipment of universal waste to another handler or to a destination facility and the shipment is rejected by the receiving handler or destination facility, the originating handler must either:

(1) Receive the waste back when notified that the shipment has been rejected, or

(2) Agree with the receiving handler on a destination facility to which the shipment will be sent.

(f) A small quantity handler of universal waste may reject a shipment containing universal waste, or a portion of a shipment containing universal waste that he has received from another handler. If a handler rejects a shipment or a portion of a shipment, he must contact the originating handler to notify him of the rejection and to discuss reshipment of the load. The handler must:

(1) Send the shipment back to the originating handler, or

(2) If agreed to by both the originating and receiving handler, send the shipment to a destination facility.

(g) If a small quantity handler of universal waste receives a shipment containing hazardous waste that is not a universal waste, the handler must immediately notify the Division of Solid and Hazardous Waste of the illegal shipment, and provide the name, address, and phone number of the originating shipper. The

Division will provide instructions for managing the hazardous waste.

(h) If a small quantity handler of universal waste receives a shipment of non-hazardous, non-universal waste, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

2.10 TRACKING UNIVERSAL WASTE SHIPMENTS

A small quantity handler of universal waste is not required to keep records of shipments of universal waste.

2.11 EXPORTS

A small quantity handler of universal waste who sends universal waste to a foreign destination other than to those OECD countries specified in R315-5-5, which incorporates by reference 40 CFR 262.58(a)(1), in which case the handler is subject to the requirements of R315-5-8, which incorporates by reference 40 CFR 262 subpart H, must:

(a) Comply with the requirements applicable to a primary exporter in 40 CFR 262.53, 262.56(a)(1) through (4) and (6), 262.53(b), and 262.57, as incorporated by reference at R315-5-5;

(b) Export such universal waste only upon consent of the receiving country and in conformance with the EPA Acknowledgment of Consent as defined in 40 CFR part 262 subpart E, as incorporated by reference at R315-5-5; and

(c) Provide a copy of the EPA Acknowledgment of Consent for the shipment to the transporter transporting the shipment for export.

2.12 TESTING REQUIREMENTS

A determination of whether or not mercury-containing lamps are hazardous waste shall be performed by a Utah certified laboratory using the Toxicity Characteristic Leaching Procedure according to:

(a) R315-50-7, which incorporates the requirements of 40 CFR 261, Appendix II, 1993 ed.; and

(b) the Science Applications International Corporation report, "Analytical Results of Mercury in Fluorescent Lamps," section 6.0, "Summary Guidelines for the Extraction of Fluorescent Lamps," 1992, prepared for the U.S. Environmental Protection Agency, which is adopted and incorporated by reference.

R315-16-3. Standards for Large Quantity Handlers of Universal Waste.

3.1 APPLICABILITY

This section applies to large quantity handlers of universal waste as defined in section 16-1.9.

3.2 PROHIBITIONS

A large quantity handler of universal waste is:

(a) Prohibited from disposing of universal waste; and

(b) Prohibited from diluting or treating universal waste, except by responding to releases as provided in section 16-3.8; or by managing specific wastes as provided in section 16-3.4.

3.3 NOTIFICATION

(a)(1) Except as provided in paragraphs (a)(2) and (3) of this section, a large quantity handler of universal waste must have sent written notification of universal waste management to the Executive Secretary, and received an EPA Identification Number, before meeting or exceeding the 5,000 kilogram storage limit.

(2) A large quantity handler of universal waste who has already notified the Division of his hazardous waste management activities and has received an EPA Identification Number is not required to renotify under this section.

(3) A large quantity handler of universal waste who manages recalled universal waste pesticides as described in section 16-1.3(a)(1) and who has sent notification to EPA as required by 40 CFR part 165 is not required to notify for those recalled universal waste pesticides under this section.

(b) This notification must include:

(1) The universal waste handler's name and mailing address;

(2) The name and business telephone number of the person at the universal waste handler's site who should be contacted regarding universal waste management activities;

(3) The address or physical location of the universal waste management activities;

(4) A list of all of the types of universal waste managed by the handler, e.g., batteries, pesticides, thermostats, lamps;

(5) A statement indicating that the handler is accumulating more than 5,000 kilograms of universal waste at one time and the types of universal waste, e.g., batteries, pesticides, thermostats, and lamps, the handler is accumulating above this quantity.

3.4 WASTE MANAGEMENT

(a) Universal waste batteries. A large quantity handler of universal waste must manage universal waste batteries in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A large quantity handler of universal waste must contain any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the battery, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A large quantity handler of universal waste may conduct the following activities as long as the casing of each individual battery cell is not breached and remains intact and closed, except that cells may be opened to remove electrolyte but must be immediately closed after removal:

(i) Sorting batteries by type;

(ii) Mixing battery types in one container;

(iii) Discharging batteries so as to remove the electric charge;

(iv) Regenerating used batteries;

(v) Disassembling batteries or battery packs into individual batteries or cells;

(vi) Removing batteries from consumer products; or

(vii) Removing electrolyte from batteries.

(3) A large quantity handler of universal waste who removes electrolyte from batteries, or who generates other solid waste, e.g., battery pack materials, discarded consumer products as a result of the activities listed above, must determine whether the electrolyte or other solid waste, or both, exhibits a characteristic of hazardous waste identified in R315-2-9.

(i) If the electrolyte or other solid waste exhibits a characteristic of hazardous waste, it must be managed in compliance with all applicable requirements of R315-1 through R315-101. The handler is considered the generator of the hazardous electrolyte or other waste and is subject to R315-5.

(ii) If the electrolyte or other solid waste is not hazardous, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

(b) Universal waste pesticides. A large quantity handler of universal waste must manage universal waste pesticides in a way that prevents releases of any universal waste or component of a universal waste to the environment. The universal waste pesticides must be contained in one or more of the following:

(1) A container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions; or

(2) A container that does not meet the requirements of paragraph (b)(1) of this section, provided that the unacceptable container is overpacked in a container that does meet the requirements of paragraph (b)(1) of this section; or

(3) A tank that meets the requirements of R315-7-17, which incorporates by reference 40 CFR part 265 subpart J, excluding the requirements of 40 CFR 265.197(c), 265.200, and 265.201; or

(4) A transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(c) Universal waste thermostats. A large quantity handler of universal waste must manage universal waste thermostats in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A large quantity handler of universal waste must contain any universal waste thermostat that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the thermostat, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A large quantity handler of universal waste may remove mercury-containing ampules from universal waste thermostats provided the handler:

(i) Removes the ampules in a manner designed to prevent breakage of the ampules;

(ii) Removes ampules only over or in a containment device, e.g., tray or pan sufficient to contain any mercury released from an ampule in case of breakage;

(iii) Ensures that a mercury clean-up system is readily available to immediately transfer any mercury resulting from spills or leaks from broken ampules, from the containment device to a container that meets the requirements of R315-5-3.34;

(iv) Immediately transfers any mercury resulting from spills or leaks from broken ampules from the containment device to a container that meets the requirements of R315-5-3.34;

(v) Ensures that the area in which ampules are removed is well ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury;

(vi) Ensures that employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate containers;

(vii) Stores removed ampules in closed, non-leaking containers that are in good condition;

(viii) Packs removed ampules in the container with packing materials adequate to prevent breakage during storage, handling, and transportation; and

(3)(i) A large quantity handler of universal waste who removes mercury-containing ampules from thermostats must determine whether the following exhibit a characteristic of hazardous waste identified in R315-2-9:

(A) Mercury or clean-up residues resulting from spills or leaks; or

(B) Other solid waste generated as a result of the removal of mercury-containing ampules, e.g., remaining thermostat units.

(ii) If the mercury, residues, or other solid waste exhibit a characteristic of hazardous waste, it must be managed in compliance with all applicable requirements of R315-1 through R315-101. The handler is considered the generator of the mercury, residues, or other waste and is subject to R315-5.

(iii) If the mercury, residues, or other solid waste is not hazardous, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

(d) Lamps. A large quantity handler of universal waste shall manage lamps in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

(1) A large quantity handler of universal waste shall contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages shall remain closed and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

(2) A large quantity handler of universal waste shall immediately clean up and place in a container any lamp that is broken and shall place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment. Containers shall be closed, structurally sound, compatible with the contents of the lamps and shall lack evidence of leakage, spillage, or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.

3.5 LABELING/MARKING

A large quantity handler of universal waste must label or mark the universal waste to identify the type of universal waste as specified below:

(a) Universal waste batteries, i.e., each battery, or a container or tank in which the batteries are contained, must be labeled or marked clearly with the following phrase: "Universal Waste Battery" or "Universal Waste Batteries";

(b) A container, or multiple container package unit, tank, transport vehicle or vessel in which recalled universal waste pesticides as described in R315-16-1-3(a)(1) are contained must be labeled or marked clearly with:

(1) The label that was on or accompanied the product as sold or distributed; and

(2) The words "Universal Waste Pesticide" or "Universal Waste Pesticides";

(c) A container, tank, or transport vehicle or vessel in which unused pesticide products as described in R315-16-1-3(a)(2) are contained must be labeled or marked clearly with:

(1)(i) The label that was on the product when purchased, if still legible;

(ii) If using the labels described in paragraph (c)(1)(i) of this section is not feasible, the appropriate label as required

under the Department of Transportation regulation 49 CFR part 172;

(iii) If using the labels described in paragraphs (c)(1)(i) and (1)(ii) of this section is not feasible, another label prescribed or designated by the pesticide collection program; and

(2) The words "Universal Waste Pesticide" or "Universal Waste Pesticides".

(d) Universal waste thermostats, i.e., each thermostat, or a container or tank in which the thermostats are contained, must be labeled or marked clearly with the following phrase: "Universal Waste Mercury Thermostat" or "Universal Waste Mercury Thermostats".

(e) Each lamp or a container or package in which such lamps are contained shall be labeled or marked clearly with any one of the following phrases: "Universal Waste - Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)."

3.6 ACCUMULATION TIME LIMITS

(a) A large quantity handler of universal waste may accumulate universal waste for no longer than one year from the date the universal waste is generated, or received from another handler, unless the requirements of paragraph (b) of this section are met.

(b) A large quantity handler of universal waste may accumulate universal waste for longer than one year from the date the universal waste is generated, or received from another handler, if such activity is solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal. However, the handler bears the burden of proving that such activity was solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal.

(c) A large quantity handler of universal waste must be able to demonstrate the length of time that the universal waste has been accumulated from the date it becomes a waste or is received. The handler may make this demonstration by:

(1) Placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received;

(2) Marking or labeling the individual item of universal waste, e.g., each battery, lamp, or thermostat) with the date it became a waste or was received;

(3) Maintaining an inventory system on-site that identifies the date the universal waste being accumulated became a waste or was received;

(4) Maintaining an inventory system on-site that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received;

(5) Placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received; or

(6) Any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date it becomes a waste or is received.

3.7 EMPLOYEE TRAINING

A large quantity handler of universal waste must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal facility operations and emergencies.

3.8 RESPONSE TO RELEASES

(a) A large quantity handler of universal waste must immediately contain all releases of universal wastes and other residues from universal wastes.

(b) A large quantity handler of universal waste must determine whether any material resulting from the release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements of R315-1 through R315-101. The handler is considered the generator of the material resulting from the release, and is subject to R315-5.

3.9 OFF-SITE SHIPMENTS

(a) A large quantity handler of universal waste is prohibited from sending or taking universal waste to a place other than another universal waste handler, a destination facility, or a foreign destination.

(b) If a large quantity handler of universal waste self-transportes universal waste off-site, the handler becomes a universal waste transporter for those self-transportation activities and must comply with the transporter requirements of section 16-4 while transporting the universal waste.

(c) If a universal waste being offered for off-site transportation meets the definition of hazardous materials under 49 CFR 171 through 180, a large quantity handler of universal waste must package, label, mark and placard the shipment, and prepare the proper shipping papers in accordance with the applicable Department of Transportation regulations under 49 CFR parts 172 through 180;

(d) Prior to sending a shipment of universal waste to another universal waste handler, the originating handler must ensure that the receiving handler agrees to receive the shipment.

(e) If a large quantity handler of universal waste sends a shipment of universal waste to another handler or to a destination facility and the shipment is rejected by the receiving handler or destination facility, the originating handler must either:

(1) Receive the waste back when notified that the shipment has been rejected, or

(2) Agree with the receiving handler on a destination facility to which the shipment will be sent.

(f) A large quantity handler of universal waste may reject a shipment containing universal waste, or a portion of a shipment containing universal waste that he has received from another handler. If a handler rejects a shipment or a portion of a shipment, he must contact the originating handler to notify him of the rejection and to discuss reshipment of the load. The handler must:

(1) Send the shipment back to the originating handler, or

(2) If agreed to by both the originating and receiving handler, send the shipment to a destination facility.

(g) If a large quantity handler of universal waste receives a shipment containing hazardous waste that is not a universal waste, the handler must immediately notify the Division of the illegal shipment, and provide the name, address, and phone number of the originating shipper. The Division will provide instructions for managing the hazardous waste.

(h) If a large quantity handler of universal waste receives a shipment of non-hazardous, non-universal waste, the handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

3.10 TRACKING UNIVERSAL WASTE SHIPMENTS

(a) Receipt of shipments. A large quantity handler of universal waste must keep a record of each shipment of universal waste received at the facility. The record may take the

form of a log, invoice, manifest, bill of lading, or other shipping document. The record for each shipment of universal waste received must include the following information:

(1) The name and address of the originating universal waste handler or foreign shipper from whom the universal waste was sent;

(2) The quantity of each type of universal waste received, e.g., batteries, pesticides, lamps, or thermostats;

(3) The date of receipt of the shipment of universal waste.

(b) Shipments off-site. A large quantity handler of universal waste must keep a record of each shipment of universal waste sent from the handler to other facilities. The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of universal waste sent must include the following information:

(1) The name and address of the universal waste handler, destination facility, or foreign destination to whom the universal waste was sent;

(2) The quantity of each type of universal waste sent, e.g., batteries, pesticides, thermostats, or lamps;

(3) The date the shipment of universal waste left the facility.

(c) Record retention.

(1) A large quantity handler of universal waste must retain the records described in paragraph (a) of this section for at least three years from the date of receipt of a shipment of universal waste.

(2) A large quantity handler of universal waste must retain the records described in paragraph (b) of this section for at least three years from the date a shipment of universal waste left the facility.

3.11 EXPORTS

A large quantity handler of universal waste who sends universal waste to a foreign destination other than to those OECD countries specified in R315-5-5, which incorporates by reference 40 CFR 262.58(a)(1), in which case the handler is subject to the requirements of R315-5-8, which incorporates by reference 40 CFR 262 subpart H, must:

(a) Comply with the requirements applicable to a primary exporter in R315-5-5;

(b) Export such universal waste only upon consent of the receiving country and in conformance with the EPA Acknowledgement of Consent as defined in subpart E of 40 CFR, part 262, as incorporated by reference at R315-5-5; and

(c) Provide a copy of the EPA Acknowledgement of Consent for the shipment to the transporter transporting the shipment for export.

3.12 TESTING REQUIREMENTS

A determination of whether or not mercury-containing lamps are hazardous waste shall be performed by a Utah certified laboratory using the Toxicity Characteristic Leaching Procedure according to:

(a) R315-50-7, which incorporates the requirements of 40 CFR 261, Appendix II, 1993 ed.; and

(b) the Science Applications International Corporation report, "Analytical Results of Mercury in Fluorescent Lamps," section 6.0, "Summary Guidelines for the Extraction of Fluorescent Lamps," which is adopted and incorporated by reference.

R315-16-4. Standards for Universal Waste Transporters.

4.1 APPLICABILITY

This section applies to universal waste transporters, as defined in R315-16-1.9.

4.2 PROHIBITIONS

A universal waste transporter is:

- (a) Prohibited from disposing of universal waste; and
- (b) Prohibited from diluting or treating universal waste, except by responding to releases as provided in section 16-4.5.

4.3 WASTE MANAGEMENT

(a) A universal waste transporter must comply with all applicable U.S. Department of Transportation regulations in 49 CFR part 171 through 180 for transport of any universal waste that meets the definition of hazardous material in 49 CFR 171.8. For purposes of the Department of Transportation regulations, a material is considered a hazardous waste if it is subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 CFR part 262. Because universal waste does not require a hazardous waste manifest, it is not considered hazardous waste under the Department of Transportation regulations.

(b) Some universal waste materials are regulated by the Department of Transportation as hazardous materials because they meet the criteria for one or more hazard classes specified in 49 CFR 173.2. As universal waste, shipments do not require a manifest under 40 CFR 262, they may not be described by the DOT proper shipping name "hazardous waste, (I) or (S), n.o.s.", nor may the hazardous material's proper shipping name be modified by adding the word "waste."

4.4 ACCUMULATION TIME LIMITS

(a) A universal waste transporter may only store the universal waste at a universal waste transfer facility for ten days or less.

(b) If a universal waste transporter stores universal waste for more than ten days, the transporter becomes a universal waste handler and must comply with the applicable requirements of sections 16-2 or 16-3 of this rule while storing the universal waste.

4.5 RESPONSE TO RELEASES

(a) A universal waste transporter must immediately contain all releases of universal wastes and other residues from universal wastes.

(b) A universal waste transporter must determine whether any material resulting from the release is hazardous waste, and if so, it is subject to all applicable requirements of R315-1 through R315-101. If the waste is determined to be a hazardous waste, the transporter is subject to R315-5.

4.6 OFF-SITE SHIPMENTS

(a) A universal waste transporter is prohibited from transporting the universal waste to a place other than a universal waste handler, a destination facility, or a foreign destination.

(b) If the universal waste being shipped off-site meets the Department of Transportation's definition of hazardous materials under 49 CFR 171.8, the shipment must be properly described on a shipping paper in accordance with the applicable Department of Transportation regulations under 49 CFR part 172.

4.7 EXPORTS

A universal waste transporter transporting a shipment of universal waste to a foreign destination other than to those OECD countries specified in R315-5-5, which incorporates by reference 40 CFR 262.58(a)(1), in which case the transporter is subject to the requirements of R315-5-8, which incorporates by reference 40 CFR 262 subpart H, may not accept a shipment if

the transporter knows the shipment does not conform to the EPA Acknowledgment of Consent. In addition the transporter must ensure that:

- (a) A copy of the EPA Acknowledgment of Consent accompanies the shipment; and
- (b) The shipment is delivered to the facility designated by the person initiating the shipment.

R315-16-5. Standards for Destination Facilities.

5.1 APPLICABILITY

(a) The owner or operator of a destination facility as defined in section 16-1.9 is subject to all applicable requirements of R315-3, R315-7, R315-8, R315-13, R315-14, and the notification requirement under section 3010 of RCRA.

(b) The owner or operator of a destination facility that recycles a particular universal waste without storing that universal waste before it is recycled must comply with 40 CFR 261.6(c)(2), as incorporated by reference at R315-2-6.

5.2 OFF-SITE SHIPMENTS

(a) The owner or operator of a destination facility is prohibited from sending or taking universal waste to a place other than a universal waste handler, another destination facility or foreign destination.

(b) The owner or operator of a destination facility may reject a shipment containing universal waste, or a portion of a shipment containing universal waste. If the owner or operator of the destination facility rejects a shipment or a portion of a shipment, he must contact the shipper to notify him of the rejection and to discuss reshipment of the load. The owner or operator of the destination facility must:

(1) Send the shipment back to the original shipper, or

(2) If agreed to by both the shipper and the owner or operator of the destination facility, send the shipment to another destination facility.

(c) If the owner or operator of a destination facility receives a shipment containing hazardous waste that is not a universal waste, the owner or operator of the destination facility must immediately notify the appropriate regional EPA office of the illegal shipment, and provide the name, address, and phone number of the shipper. The Division will provide instructions for managing the hazardous waste.

(d) If the owner or operator of a destination facility receives a shipment of non-hazardous, non-universal waste, the owner or operator may manage the waste in any way that is in compliance with applicable federal or state solid waste regulations.

5.3 TRACKING UNIVERSAL WASTE SHIPMENTS.

(a) The owner or operator of a destination facility must keep a record of each shipment of universal waste received at the facility. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The record for each shipment of universal waste received must include the following information:

(1) The name and address of the universal waste handler, destination facility, or foreign shipper from whom the universal waste was sent;

(2) The quantity of each type of universal waste received, e.g., batteries, pesticides, thermostats, or lamps;

(3) The date of receipt of the shipment of universal waste.

(b) The owner or operator of a destination facility must retain the records described in paragraph (a) of this section for at

least three years from the date of receipt of a shipment of universal waste.

R315-16-6. Import Requirements.

Persons managing universal waste that is imported from a foreign country into the United States are subject to the applicable requirements of this rule, immediately after the waste enters the United States, as indicated in paragraphs (a) through (c) of this section:

(a) A universal waste transporter is subject to the universal waste transporter requirements of section 16-4 of this rule.

(b) A universal waste handler is subject to the small or large quantity handler of universal waste requirements of sections 16-2 or 16-3, as applicable.

(c) An owner or operator of a destination facility is subject to the destination facility requirements of section 16-5 of this rule.

(d) Persons managing universal waste that is imported from an OECD country as specified in R315-5-5, which incorporates by reference 40 CFR 262.58(a)(1), are subject to paragraphs (a) through (c) of this section, in addition to the requirements of R315-5-8, which incorporates by reference 40 CFR 262, subpart H.

R315-16-7. Petitions to Include Other Wastes Under R315-16.

7.1 GENERAL

(a) Any person seeking to add a hazardous waste or a category of hazardous waste to R315-16 may petition for a regulatory amendment under this section and R315-2.

(b) To be successful, the petitioner must demonstrate to the satisfaction of the Executive Secretary that regulation under the universal waste regulations of R315-16 is: appropriate for the waste or category of waste; will improve management practices for the waste or category of waste; and will improve implementation of the hazardous waste program. The petition must include the information required by R315-2-17(b). The petition should also address as many of the factors listed in R315-16-7.2 as are appropriate for the waste or waste category addressed in the petition.

(c) The Executive Secretary will evaluate petitions using the factors listed in R315-16-7.2. The Executive Secretary will grant or deny a petition using the factors listed in section 16-7-2. The decision will be based on the weight of evidence showing that regulation under R315-16 is appropriate for the waste or category of waste, will improve management practices for the waste or category of waste, and will improve implementation of the hazardous waste program.

(d) The Executive Secretary may request additional information needed to evaluate the merits of the petition.

7.2 FACTORS FOR PETITIONS TO INCLUDE OTHER WASTES UNDER R315-16

(a) The waste or category of waste, as generated by a wide variety of generators, is listed in R315-2-10, 2-11, and 2-26 (which incorporate by reference 40 CFR 261 Subpart D), and R315-2-24, or if not listed, a proportion of the waste stream exhibits one or more characteristics of hazardous waste identified in R315-2-9. When a characteristic waste is added to the universal waste regulations of R315-16 by using a generic name to identify the waste category, e.g., batteries, the definition of universal waste in section 16-1.9 will be amended to include only the hazardous waste portion of the waste category, e.g.,

hazardous waste batteries. Thus, only the portion of the waste stream that does exhibit one or more characteristics, i.e., is hazardous waste, is subject to the universal waste regulations of R315-16;

(b) The waste or category of waste is not exclusive to a specific industry or group of industries, is commonly generated by a wide variety of types of establishments, including, for example, households, retail and commercial businesses, office complexes, conditionally exempt small quantity generators, small businesses, government organizations, as well as large industrial facilities;

(c) The waste or category of waste is generated by a large number of generators, e.g., more than 1,000 nationally, and is frequently generated in relatively small quantities by each generator;

(d) Systems to be used for collecting the waste or category of waste, including packaging, marking, and labeling practices, would ensure close stewardship of the waste;

(e) The risk posed by the waste or category of waste during accumulation and transport is relatively low compared to other hazardous wastes, and specific management standards proposed or referenced by the petitioner, e.g., waste management requirements appropriate to be added to R315-16, sections 2.4, 3.4, and 4.3; and applicable Department of Transportation requirements would be protective of human health and the environment during accumulation and transport;

(f) Regulation of the waste or category of waste under R315-16 will increase the likelihood that the waste will be diverted from non-hazardous waste management systems, e.g., the municipal waste stream, non-hazardous industrial or commercial waste stream, and municipal sewer or stormwater systems, to recycling, treatment, or disposal in compliance with Utah Code Annotated 19-6.

(g) Regulation of the waste or category of waste under R315-16 will improve implementation of and compliance with the hazardous waste regulatory program; and

(h) Such other factors as may be appropriate.

KEY: hazardous waste

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19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.
R315-50. Appendices.

R315-50-1. Instructions for Completion of Uniform Hazardous Waste Manifest.

The requirements of the Appendix to Part 262 of 40 CFR, Uniform Hazardous Waste Manifest, 1990 ed., are adopted and incorporated by reference with the following additional requirements:

(a) Generators and owners and operators shall complete the following additional items of the manifest form:

(1) Item D. Transporter's phone

Enter the phone number of the first transporter who will transport the waste.

(2) Item F. Transporter's phone

If applicable, enter the phone number of the second transporter who will transport the waste.

(3) Item H. Facility's phone

Enter the phone number of the facility designated to receive the waste listed on the manifest.

(4) Item I. Waste number

Enter the 4-digit EPA Hazardous Waste number assigned to the waste. If the waste is a mixture, include all EPA Hazardous Waste numbers for the wastes known to be present, regardless of the quantity of each individual waste component.

(5) Item J. Additional Descriptions for Materials Listed Above

If the DOT shipping description in item 11, a, b, c, d, of the manifest form contains only NOS or other general term, the hazardous waste constituent(s) must be provided here for each. The specific gravity is assumed to be one (1.00) unless otherwise indicated here.

(6) Item O. Transporter's phone

Refer to Item D

(7) Item Q. Transporter's phone

Refer to Item F

(8) Item R. Waste number

Refer to Item I

(9) Item S. Additional Descriptions for Materials Listed Above

Refer to Item J

R315-50-2. Recordkeeping Instructions.

The recordkeeping requirements of 40 CFR 264, Appendix I, and 265, Appendix I, 1993 ed., as amended by 59 FR 13891, March 24, 1994, are adopted and incorporated by reference.

R315-50-3. EPA Interim Primary Drinking Water Standards.

The interim primary drinking water standards of 40 CFR 265, Appendix III, 1991 ed., are adopted and incorporated by reference.

R315-50-4. Tests for Significance.

The requirements of 40 CFR 264 and 265, Appendix IV, 1991 ed., are adopted and incorporated by reference.

R315-50-5. Examples of Potentially Incompatible Waste.

The requirements of 40 CFR 264, Appendix V, and 265, Appendix V, 1991 ed., are adopted and incorporated by reference.

R315-50-6. Representative Sampling Methods.

The requirements of 40 CFR 261, Appendix I, 1991 ed., are adopted and incorporated by reference with the following exception:

Substitute "Board" for all references to "Agency".

R315-50-7. Toxicity Characteristic Leaching Procedure (TCLP).

The requirements of 40 CFR 261, Appendix II, 1993 ed., as amended by 58 FR 46040, August 31, 1993, are adopted and incorporated by reference.

R315-50-8. Chemical Analysis Test Methods.

The requirements of 40 CFR 261, Appendix III, 1993 ed., as amended by 58 FR 46040, August 31, 1993, are adopted and incorporated by reference.

R315-50-9. Basis for Listing Hazardous Wastes.

The requirements of 40 CFR 261, Appendix VII, 2002 ed., are adopted and incorporated by reference, with the following additions, excluding the constituents for which K064, K065, K066, K090, and K091 are listed:

1. F999 - CX, GA, GB, GD, H, HD, HL, HN-1, HN-2, HN-3, HT, L, T, and VX.

R315-50-10. Hazardous Constituents.

The requirements of 40 CFR 261, Appendix VIII, 2002 ed., are adopted and incorporated by reference.

R315-50-11. Political Jurisdiction in Which Compliance with R315-8-2.9(a) Must be Demonstrated Within the State of Utah.

Beaver
Box Elder
Cache
Carbon
Daggett
Davis
Duchesne
Emery
Garfield
Grand
Iron
Juab
Kane
Millard
Morgan
Piute
Rich
Salt Lake
San Juan
Sanpete
Sevier
Summit
Tooele
Uintah
Utah
Wasatch
Washington
Wayne
Weber

R315-50-12. Reserved.

Reserved.

R315-50-13. Reserved.

Reserved.

R315-50-14. Ground Water Monitoring List.

The requirements of 40 CFR 264, Appendix IX, Groundwater Monitoring List, 1997 ed., are adopted and incorporated by reference.

R315-50-15. Reserved.

Reserved.

R315-50-16. Appendices to 40 CFR 266.

The requirements of 40 CFR 266, Appendices I - IX and XI - XIII, 2000 ed., are adopted and incorporated by reference.

R315-50-17. Compounds With Henry's Law Constant.

The requirements of Appendix VI of 40 CFR 265, Compounds with Henry's Law Constant, 1997 ed., as amended by 62 FR 64636, December 8, 1997, are adopted and incorporated by reference.

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R315. Environmental Quality, Solid and Hazardous Waste.

R315-101. Cleanup Action and Risk-Based Closure Standards.

R315-101-1. Purpose, Applicability.

(a) Purpose. R315-101 establishes information requirements to support risk-based cleanup and closure standards at sites for which remediation or removal of hazardous constituents to background levels will not be achieved. The procedures in this rule also provide for continued management of sites for which minimal risk-based standards cannot be met.

(b) Applicability.

(1) R315-101 is applicable to any responsible party involved in management of a site contaminated with hazardous waste or hazardous constituents. This rule does not apply to a site that has been or will be cleaned to background.

(2) In the event of a release of hazardous waste or material which, when released, becomes hazardous waste, these requirements apply if the responsible party fails to clean up all the released material and any residue or contaminated soil, water or other material resulting from the release as required by R315-9-3. If the level of risk present at the site is below 1×10^{-6} for carcinogens and a Hazard Index of less than or equal to one for non-carcinogens based on the risk assessment conducted in accordance with R315-101-5.2(b)(1) and the Executive Secretary determines that ecological effects are insignificant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8), the requirements of R315-9-3 shall be considered met.

(3) The owner or operator of a hazardous waste management facility or a facility subject to interim status requirements shall meet the requirements of R315-7-14 and R315-8-7 prior to implementation of any activities described in R315-101. The requirements of R315-3-1.1(e)(5) and (6) shall be met for a hazardous waste management unit if the level of risk present at the site is below 1×10^{-6} for carcinogens and a Hazard Index of less than or equal to one for non-carcinogens based on the risk assessment conducted in accordance with R315-101-5.2(b)(1) and the Executive Secretary determines that ecological effects are insignificant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8). If these risk exposure criteria are met, a request for a risk-based closure may be submitted to the Executive Secretary for review.

(4) If the risk present at the site is greater than the exposure limit as defined in R315-101-1(b)(2) or (3) or the Executive Secretary determines that ecological effects may be significant, then a risk-based closure will not be granted and appropriate management will be required and may include corrective action, post-closure care, monitoring, deed restrictions, and security of the site. For determinations of appropriate corrective action or management activities at a site, the following criteria shall be considered in order of importance:

- (a) The impact or potential impact of the contamination on the human health;
- (b) The impact or potential impact of the contamination on the environment;
- (c) The technologies available for use in clean-up; and
- (d) Economic considerations and cost-effectiveness of clean-up options.

R315-101-2. Stabilization.

The responsible party must immediately take appropriate action to stabilize the site either through source removal or

source control. After the responsible party has attempted to complete the requirements of R315-9 and the Executive Secretary determines that additional work is needed to stabilize the site, the Executive Secretary will notify the responsible party that additional work is necessary and provide the responsible party with objectives to be addressed in developing a work plan to further stabilize the site. The work plan shall be submitted to the Executive Secretary for review and approval within fifteen days of receiving notification that additional work will be necessary to complete the emergency actions required by R315-9. Work plans shall be of a scope commensurate with the work to be performed and site-specific characteristics. This work plan shall include a description of the interim measure and how it will meet the criteria of source removal or source control. The implementation of the work plan shall be according to the schedule contained within the approved plan. All interim measures shall be at the expense of the party responsible for the site. If the party responsible for the site fails to take the measures required for stabilizing the site, the Executive Secretary may request the Executive Director of the Department to take abatement and cost recovery actions as provided in Section 19-6-301, et seq., Utah Hazardous Substances Mitigation Act.

R315-101-3. Principle of Non-degradation.

When closing or managing a contaminated site, the responsible party shall not allow levels of contamination in groundwater, surface water, soils, and air to increase beyond the existing levels of contamination at a site when site management commences. The responsible party will demonstrate compliance with this policy by submitting appropriate monitoring data or other data as may be required by the Executive Secretary. If at any time the level of contamination increases, the responsible party shall take immediate corrective action to prevent further degradation of any medium.

R315-101-4. Site Characterization.

The following information shall be collected to characterize the site, and define site boundaries and Area(s) of Contamination:

- (a) A legal description of the site;
- (b) Historical land use and ownership of the site;
- (c) Topographical map(s) of sufficient detail, scale, and accuracy to depict and locate all past and current physical structures including all building(s) and waste activities at the site;
- (d) Information and maps of sufficient detail, scale, and accuracy to describe regional, local, and site geology, surface water, and hydrogeological conditions;
- (e) An inventory of all current and past wastestreams managed at the site, including process descriptions and suspected contamination source information;
- (f) Background levels of suspected hazardous constituents based on the inventory as determined in R315-101-4(e) in media of concern, e.g. sediments, soil, groundwater, surface water, and air which are representative of the site; and
- (g) Location and boundaries of all Area(s) of Contamination, including concentrations, types and extent of hazardous constituents. Media to be sampled may include sediments, soil, groundwater, surface water, and air, as applicable.

R315-101-5. Health Evaluation Criteria, Risk Assessment.

5.1 REQUIRED STUDY

(a) When conducting the risk assessment the responsible party will use all applicable site characterization data and shall consider the following parameters when conducting the risk assessment:

- (1) Identification, concentration, and distribution of all suspected hazardous constituents identified in R315-101-4(e);
- (2) All area(s) of contamination at the site;
- (3) Fate of contaminants and pathways of contaminant transport; and
- (4) Potentially exposed populations.

5.2 CHARACTERIZATION AND EVALUATION OF RISK

(a) The responsible party shall conduct a risk assessment which includes the following:

- (1) The concentration term "C" for each medium for each hazardous constituent identified in R315-101-5.1(a)(1);
- (2) Evaluation of the fate of contaminants and of all pathways of contaminant transport identified in R315-101-5.1(a)(3);
- (3) Exposure assessment identifying the RME for all exposure pathways, intakes, and identified constituents;
- (4) Current toxicity information for carcinogenic and noncarcinogenic effects;
- (5) Risk characterization identifying carcinogenic risk, individual and multiple substances, and noncarcinogenic hazardous index, individual and multiple substances;
- (6) An ecological evaluation which provides for terrestrial and aquatic processes; and
- (7) Current toxicity information for all the constituents and biological processes relevant to the ecological evaluation.

(b) The risk assessment shall be conducted using one or both of the standard exposure scenarios listed below, as needed to determine site management options:

(1) Residential. This exposure scenario includes ingestion of water (must include surface water and ground water regardless of water quality), ingestion of soil and dust, ingestion of contaminated and potentially contaminated food, inhalation of contaminants, dermal contact with chemicals in soil, and dermal contact with chemicals in water for a human being ages zero through 70 years old using the equations and default variable values found in the Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual Supplemental Guidance, "Standard Default Exposure Factors", Interim Final, OSWER Directive 9285.6-03, March 25, 1991 or most recent edition;

(2) Actual land use conditions or potential land use conditions based upon applicable zoning and future land use planning considerations, if potential land use conditions offer a more protective exposure scenario than actual land use conditions. This exposure scenario involves an assessment based on actual site conditions using standard default variable values. The potential land use exposure scenario should include a conceptual model including current site conditions, expected future conditions based upon site-specific physical and chemical information, and the assumption that contaminated media will not have undergone any remedial engineering.

5.3 DATA PRESENTATION

(a) A risk assessment report shall be submitted to the Executive Secretary and must include at a minimum the following:

- (1) An executive summary;
- (2) An overview of the site and the areas of contamination;
- (3) A site characterization report which includes:
 - (i) Maps of sufficient detail and accuracy to depict areas of contamination, topography, geology, and groundwater contours or potentiometric surface;
 - (ii) Site and regional geological and hydrological descriptions;
 - (iii) A detailed discussion of areas of contamination;
 - (iv) Background levels of hazardous constituents including details of statistical methods used to determine background; and
 - (v) Descriptions of releases of hazardous constituents and expected extent of migration from the area of contamination.
- (4) Identification and concentration of hazardous constituents identified in R315-101-5.1(a)(1). A sampling and analysis plan shall be prepared and utilized for the collection of all data. This plan shall be developed using procedures and methods outlined in R315-50-6 and the most current version of "SW-846, Test Methods for Evaluating Solid Waste." It shall contain a summary outlining data quality objectives, completed analytical request forms for all analysis performed, dry weight equivalents, sampling location identification and justification, standard operating procedures used for data collection, all statistical analysis performed, quality assurance and quality control plans (QA/QC plan) and QA/QC results, instrument calibration results, and analytical methods including constituent detection limits;
- (5) Exposure assessment identifying exposure levels for all exposure pathways identified in R315-101-5.2(a)(3). If fate and transport models are used, the users manual, model theory, computer software for the model, installation verification data set for the model and parametric analysis of the input parameters must be provided upon request of the Executive Secretary;
- (6) Identification of toxicity information gathered for all identified hazardous constituents for carcinogenic, slope factors and weight-of-evidence classification, noncarcinogenic effects, chronic reference doses (RfDs) and critical effects associated with RfDs from, in order of preference, the Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST), Agency for Toxic Substances and Disease Registry (ATSDR) toxicological profiles, Environmental Criteria and Assessment Office (ECAO), or other scientifically accepted listings. The source and date of the toxicological information must be identified and be acceptable to the Executive Secretary;
- (7) The risk characterization identifying carcinogenic risk, individual and multiple substances, noncarcinogenic hazardous index, individual and multiple substances, chronic hazard quotient, subchronic hazard quotient, uncertainties, and a tabulation of all risk characterization data presented in a format approved by the Executive Secretary; and
- (8) Unless justification is provided to the Executive Secretary, and a waiver of this requirement is granted by the Executive Secretary in writing, an ecological assessment of the site which contains at least the following:
 - (i) An inventory of the current biological community;
 - (ii) Estimates of ecological effects based on a subset of ecological endpoints;
 - (iii) The magnitude and variation of toxic effects; and
 - (iv) Identification of extent of effects, specifically from the presence of hazardous waste.

(b) If the risk assessment report does not contain all required information of sufficient quality and detail, the Executive Secretary will notify the responsible party in writing of the deficiencies and require resubmittal of the report in a designated time frame.

(c) If the risk assessment report contains all required information of sufficient quality and detail, the Executive Secretary will approve the risk assessment report in writing.

R315-101-6. Risk Management: Site Management Plan and Closure Equivalency.

(a) A site management plan which is supported by the findings in the approved risk assessment report shall be submitted to the Executive Secretary within 60 days of approval of the risk assessment report. This plan may be submitted along with the risk assessment report and must include a schedule for implementation.

(b) The Executive Secretary shall review and approve or disapprove of the conclusions of the proposed site management plan. If the Executive Secretary finds that the site management plan is not adequate for protection of human health and the environment, the responsible party shall then submit a revised site management plan addressing the comments of the Executive Secretary within an appropriate time frame as specified by the Executive Secretary. The Executive Secretary shall review and approve or reject the revised site management plan. Upon draft approval of the site management plan, the Executive Secretary shall follow the requirements of R315-101-7 prior to issuance of final approval. The approved site management plan shall be implemented according to the approved schedule. If the Executive Secretary rejects this revised site management plan, the revised plan will be considered deficient for the reasons specified by the Executive Secretary in a statement of disapproval.

(c)(1) The site management plan may contain a no further action option only if the level of risk present at the site is below 1×10^{-6} for carcinogens and a Hazard Index of "less than or equal to one" for non-carcinogens based on the approved assessment conducted in accordance with R315-101-5.2(b)(1) and the Executive Secretary determines that ecological effects are insignificant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8);

(2) The requirements of R315-3-1.1(e)(5) and (6) shall be deemed met for a hazardous waste management unit if the level of risk present at the site is below 1×10^{-6} for carcinogens and a Hazard Index of "less than or equal to one" for non-carcinogens based on the risk assessment conducted in accordance with R315-101-5.2(b)(1) and the Executive Secretary determines that ecological effects are insignificant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8). If this risk exposure criterion is met, a request for a risk-based closure may be submitted; or

(3) If the risk present at the site is greater than or equal to 1×10^{-6} for carcinogens or a Hazard Index of "greater than one" for non-carcinogens based upon the exposure assessment conducted in accordance with R315-101-5.2(b)(1), or the Executive Secretary determines that ecological effects may be significant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8), a risk-based closure will not be granted. The responsible party shall then submit a site management plan fulfilling the requirements of R315-101-6(d) or (e) as applicable.

(d) If the level of risk present at the site is less than 1×10^{-4} for carcinogens and a hazard index is "less than or equal to one" for the risk assessment conducted in accordance with R315-101-5.2(b)(2) but greater than or equal to 1×10^{-6} for carcinogens or a hazard index is greater than one for a risk assessment conducted in accordance with R315-101-5.2(b)(1) or the Executive Secretary determines that ecological effects may be significant based on the approved assessment conducted in accordance with R315-101-5.3(a)(8), the site management plan may contain, but is not required to contain, procedures for corrective action. The site management plan shall contain appropriate management activities e.g., monitoring, deed notations, site security, or post-closure care, as determined on a case-by-case basis in accordance with criteria identified in R315-101-1(b)(4).

(e) The site management plan must contain procedures for corrective action if the level of risk present at the site is greater than or equal to 1×10^{-4} for carcinogens or a Hazard Index of "greater than one" for non-carcinogens based on the approved assessment conducted in accordance with R315-101-5.2(b)(2) or the Executive Secretary concludes that corrective action is required to mitigate ecological effects based on the approved assessment conducted in accordance with R315-101-5.3(a)(8). For determination of appropriate corrective action the criteria identified in R315-101-1(b)(4) shall be considered.

(f) If hazardous constituents are present only in groundwater at the site, and if the hazardous constituents are listed in Table 1 of R315-8-6.5, the Maximum Concentration Levels listed in Table 1 can be presented in lieu of health risk estimates for those constituents. The RME for Table 1 constituents must be determined in accordance with approved site characterization methods listed in R315-101-4.

R315-101-7. Public Participation.

(a) The Executive Secretary may provide for public participation in all phases of the cleanup action process, as defined in R315-101-4 through R315-101-6. As directed by the Executive Secretary and based on the circumstances and level of public interest at the site, pertinent work plans shall describe how information will be made available to the public through, for example, fact sheets or information repositories and, where appropriate, contain proposed time frames for public input through, for example, public meetings, hearings, or comment periods. The Executive Secretary shall also provide public notice, a public comment period, and public hearing(s) for the site management plan in accordance with R315-4-1.10 through R315-4-1.12 and R315-4-1.17.

R315-101-8. Cleanup/Management Action.

(a) Upon approval of the site management plan by the Executive Secretary, all remedial activities at the site shall proceed according to the schedule established in the approved site management plan using the method(s) described therein.

(b) **Cleanup/Management Report.** The Cleanup/Management Report shall detail remediation, treatment, and monitoring activities undertaken at the site by the responsible party as required by the approved site management plan. If the Cleanup/Management Report provides analytical data as evidence that levels of contamination at the site meet the requirements established in the site management plan for a risk-based closure or no further action as defined in R315-101-6(c)(2), the responsible party shall submit a certification of

completion as outlined in R315-101-8(c), or request risk-based closure as outlined in R315-3-1.1(e)(6), whichever is applicable.

(c) Certification of Completion. Within 60 days of the completion of all activities documented in the Cleanup/Management Report, a Certification of Completion of Cleanup/Management Action shall be submitted to the Executive Secretary by registered mail. The certification of completion shall state the site has been managed in accordance with the specifications in the approved Site Management Plan and shall be signed by the responsible party and by an independent Utah registered professional engineer.

(d) Oversight.

(1) The Executive Secretary or his representatives shall have access to the site as described in R315-2-12 and at all times when activity pursuant to R315-101 is taking place. The Executive Secretary or his representatives may take samples or make records of any visit to the site by photographic, electronic, videotape or any other reasonable means.

(2) The Executive Secretary shall bill the responsible party for review of plans submitted to meet the requirements of this Rule.

(3) The responsible party shall notify the Executive Secretary at least seven days prior to any sampling event or remediation activity.

KEY: hazardous waste

September 20, 2001

Notice of Continuation November 8, 2001

19-6-105

19-6-106

R315. Environmental Quality, Solid and Hazardous Waste.

R315-102. Penalty Policy.

R315-102-1. Purpose, Scope, and Applicability.

(a) Subsection 19-6-113(2) of the Utah Solid and Hazardous Waste Act and Subsection 19-6-721(1) of the Used Oil Management Act provide that any person who violates any order, plan, rule, or other requirement issued or adopted under the Acts is subject in a civil proceeding to a penalty of not more than \$10,000 per day for each day of violation. Subsection 19-6-104(1)(e) of the Utah Solid and Hazardous Waste Act allows the board to settle or compromise administrative or civil actions initiated to compel compliance with the Act or rules adopted under the Act.

(b) The following criteria are to be used by the Executive Secretary of the Board for determining amounts which (1) may be sought in settlement of enforcement actions, and which (2) may be accepted in settlement of enforcement actions.

(c) The procedures in R315-102 are intended solely for the guidance of the Executive Secretary and are not intended, and cannot be relied upon, to create a cause of action against the State.

R315-102-2. Criterion 1: Factors.

The Executive Secretary shall consider the following factors when calculating a settlement amount:

(a) Economic benefit of noncompliance. These are the costs a person may save by delaying or avoiding compliance with applicable laws or rules.

(b) Gravity of the violation. This component of the calculation shall be based on:

(1) the extent of deviation from the rules, and

(2) the potential for harm to human health and the environment, regardless of the extent of harm that actually occurred.

(c) The number of days of noncompliance.

(d) Good faith efforts to comply or lack of good faith. This takes into account the openness in dealing with the violations, promptness in correction of the problems, and the degree of cooperation with the State to include accessibility to information and the amount of State effort necessary to bring the person into compliance.

(e) Degree of willfulness or negligence. Factors to be considered include how much control the violator had over the events constituting the violation, the foreseeability of the events constituting the violation, whether the violator took reasonable precautions to prevent the violation, and whether the violator knew, or should have known, of the hazards associated with the conduct or the legal requirements which were violated.

(f) History of compliance or noncompliance. The settlement amount may be adjusted upward in consideration of previous violations and the degree of recidivism. Likewise, the settlement amount may be adjusted downward when it is shown that the violator has a good compliance record.

(g) Ability to pay. The settlement amount may be adjusted downward based on a person's inability to pay. This should be distinguished from a person's unwillingness to pay. In cases of financial hardship, the Executive Secretary may accept payment of the settlement under an installment plan, delayed payment schedule, reduced penalty amount, or any combination of these options.

(h) Other unique factors.

R315-102-3. Criterion 2: Calculation of Settlement Amounts.

(a) Violations are grouped into the following categories based on the gravity of the violation:

(1) Major potential for harm, major extent of deviation from the requirement: \$8,000 to \$10,000.

(i) The violation: poses, or may pose, a relatively high risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a relatively high adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator deviates from requirements of the regulation or statute to such an extent that most, or important aspects, of the requirements are not met, resulting in substantial noncompliance.

(2) Major potential for harm, moderate extent of deviation from the requirement: \$6,000 to \$8,000.

(i) The violation: poses, or may pose, a relatively high risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a relatively high adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator significantly deviates from the requirements of the regulation or statute but some of the requirements are implemented as intended.

(3) Major potential for harm, minor extent of deviation from the requirement: \$4,400 to \$6,000.

(i) The violation: poses, or may pose, a relatively high risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a relatively high adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator deviates somewhat from the regulatory or statutory requirements but most, or all important aspects, of the requirements are met.

(4) Moderate potential for harm, major extent of deviation: \$3,200 to \$4,400.

(i) The violation: poses, or may pose, a medium risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a medium adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste or used oil programs.

(ii) The violator deviates from requirements of the regulation or statute to such an extent that most, or important aspects, of the requirements are not met, resulting in substantial noncompliance.

(5) Moderate potential for harm, moderate extent of deviation from the requirement: \$2,000 to \$3,200.

(i) The violation: poses, or may pose, a medium risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a medium adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste or used oil programs.

(ii) The violator significantly deviates from the requirements of the regulation or statute but some of the requirements are implemented as intended.

(6) Moderate potential for harm, minor extent of deviation from the requirement: \$1,200 to \$2,000.

(i) The violation: poses, or may pose, a medium risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a medium adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste or used oil programs.

(ii) The violator deviates somewhat from the regulatory or statutory requirements but most, or all important aspects, of the requirements are met.

(7) Minor potential for harm, major extent of deviation from the requirement: \$600 to \$1,200.

(i) The violation: poses, or may pose, a relatively low risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a small adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator deviates from requirements of the regulation or statute to such an extent that most, or important aspects, of the requirements are not met, resulting in substantial noncompliance.

(8) Minor potential for harm, moderate extent of deviation from the requirements: \$200 to \$600.

(i) The violation: poses, or may pose, a relatively low risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a small adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator significantly deviates from the requirements of the regulation or statute but some of the requirements are implemented as intended.

(9) Minor potential for harm, minor extent of deviation from the requirements: \$40 to \$200.

(i) The violation: poses, or may pose, a relatively low risk of exposure of humans or other environmental receptors to hazardous waste or constituents, solid waste, or used oil; or has, or may have, a small adverse effect on statutory or regulatory purposes or procedures for implementing the hazardous waste, solid waste, or used oil programs.

(ii) The violator deviates somewhat from the regulatory or statutory requirements but most, or all important aspects, of the requirements are met.

(b) The Executive Secretary shall have the discretion to determine the appropriate amount within these ranges.

(c) If applicable, a multi-day component may be added to the settlement amount determined in R315-102-3(b). The amount used in a multi-day calculation will typically range from 5% to 20%, with a minimum of \$40 per day, of the amount determined in R315-102-3(b) for each day of violation up to 179 days following the first day of violation. However, discretion is retained to consider amounts (1) of up to \$10,000 per day of violation and (2) for days of violation after the first 179 days following the first day of violation.

(d) The amount calculated above may be adjusted by taking into account the factors specified in R315-102-2(d) through (h).

(e) This amount will then be added to any economic benefit gained by the person as specified in R315-102-2(a).

(f) If applicable, partial credit may be given for an approved supplemental environmental project.

KEY: hazardous waste

January 15, 1996

Notice of Continuation September 15, 2000

19-6-105

19-6-106



EJSCREEN Report (Version 2019)

Blockgroup: 490351145003

UTAH, EPA Region 8

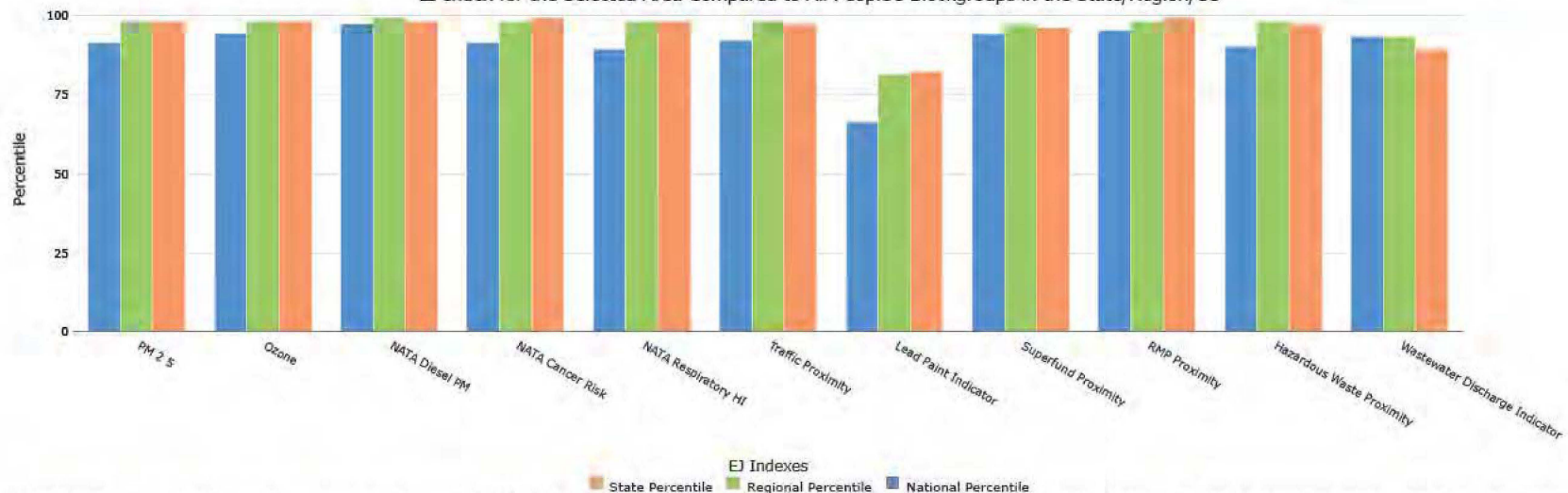
Approximate Population: 4,061

Input Area (sq. miles): 16.19



Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	98	98	91
EJ Index for Ozone	98	98	94
EJ Index for NATA* Diesel PM	98	99	97
EJ Index for NATA* Air Toxics Cancer Risk	99	98	91
EJ Index for NATA* Respiratory Hazard Index	98	98	89
EJ Index for Traffic Proximity and Volume	97	98	92
EJ Index for Lead Paint Indicator	82	81	66
EJ Index for Superfund Proximity	96	97	94
EJ Index for RMP Proximity	99	98	95
EJ Index for Hazardous Waste Proximity	97	98	90
EJ Index for Wastewater Discharge Indicator	89	93	93

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

Source: U.S. Environmental Protection Agency, Bureau of Land Management, Utah AGRC, Esri, HERE, Garmin, NGA, USGS, NPS

Species Reporting to EPA

Perennial Nests

Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)

Zoom Out

Selected Variables	Value	State		EPA Region		USA	
		Average	Percentile	Average	Percentile	Average	Percentile
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	8.58	7.47	96	6.4	98	8.3	57
Ozone (ppb)	53.5	53	43	49.2	76	43	94
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	1.19	0.595	91	0.423	95-100 h	0.479	95-100 h
NATA* Air Toxics Cancer Risk (risk per MM)	37	23	98	23	90-95th	32	70-80th
NATA* Respiratory Hazard Index	0.44	0.34	88	0.31	80-90th	0.44	50-60th
Traffic Proximity and Volume (daily traffic count/distance to road)	950	560	83	460	87	750	80
Lead Paint Indicator (% pre-1980s housing)	0.0073	0.18	16	0.22	18	0.28	11
Superfund Proximity (site count/km distance)	0.19	0.18	77	0.11	86	0.13	84
RMP Proximity (facility count/km distance)	1.8	0.61	93	0.62	91	0.74	88
Hazardous Waste Proximity (facility count/km distance)	2.1	0.81	89	0.63	92	4	78
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.017	290	61	80	71	14	82
Demographic Indicators							
Demographic Index	53%	25%	94	26%	90	36%	76
Minority Population	61%	21%	96	24%	91	39%	73
Low Income Population	46%	29%	82	29%	82	33%	74
Linguistically Isolated Population	7%	2%	88	2%	89	4%	77
Population with Less Than High School Education	15%	8%	83	8%	83	13%	68
Population under Age 5	10%	8%	72	7%	82	6%	87
Population over Age 64	6%	10%	29	13%	18	15%	11

*The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the

12/17/2020

EJSCREEN Report

limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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December 16, 2020

**EPA's Explanation of the Proposed Penalty Assessment in the Matter of New Prime, Inc.,
Docket No. RCRA-08-2020-0007**

Pursuant to the Prehearing Order in this matter, EPA Region 8 (EPA) provides this narrative explanation of the administrative penalty it proposes be assessed against New Prime, Inc. (Prime).

For the reasons explained below, EPA has calculated a penalty of \$631,402.

I. Introduction

This memorandum describes how EPA calculated a proposed penalty for the RCRA violations alleged against Prime. EPA conducted a calculation in accordance with the statutory factors set forth in section 3008(a)(3) of RCRA, 42 U.S.C. § 6928(a)(3), including assessing the seriousness of the violations, any good faith efforts of Prime to comply with the applicable requirements, and other matters as justice may require.

EPA uses the 2003 RCRA Civil Penalty Policy (RCPP), [Link to 2003 RCPP](#), to provide a rational and consistent application of the statutory factors to the facts and circumstances of a specific case. Section II of this memorandum provides a brief overview of the RCPP calculation process. Section III describes facts that are relevant to all or most of the alleged violations. Section IV provides a detailed description of the calculations for each violation, including other relevant facts.

II. Brief Description of the RCPP Calculation Process

The RCPP requires four steps in calculating a penalty for each violation: (1) determining a gravity-based penalty from a penalty assessment matrix, (2) adding a "multi-day" component, as appropriate, to account for a violation's duration, (3) adjusting the sum of the gravity-based and multi-day components, up or down, for case specific circumstances, and (4) adding to this amount the appropriate economic benefit gained through non-compliance.

The gravity-based penalty is comprised of two components: (1) the potential for harm and (2) the extent of deviation from the regulatory requirements.

EPA determines the potential for harm based on the "risk of exposure" and "harm to the RCRA regulatory program." EPA measures the risk of exposure by evaluating the probability of exposure and potential seriousness of contamination. EPA assesses harm to the RCRA regulatory program based on how fundamental the requirement is to the integrity of the regulatory scheme. Using this analysis, EPA then assigns one of three gravity categories for the potential for harm component: (a) major, (b) moderate, or (c) minor. Each category is described in detail in the RCPP.

EPA determines the extent of deviation based on the degree to which the violator renders inoperative the requirement it has violated. Similar to the potential for harm component, EPA assigns one of three categories to the extent of deviation for a violation: (a) major, (b) moderate, or (c) minor.

EPA then uses a penalty assessment matrix to select the penalty amount. The potential for harm is represented on the vertical axis and the extent of deviation is represented on the horizontal axis. The specific penalty cell is selected after determining the appropriate category for each factor for the specific violation.

Since the enactment of RCRA, the statutory penalty maximum amounts have been amended numerous times to account for inflation pursuant to numerous pieces of legislation. Similarly, the RCPP has been amended twice to reflect inflation adjustments. The applicable RCPP amounts depend upon the date of violation. The key date for purposes of this matter is November 3, 2015, the cutoff date established for inflation adjustments under Federal Civil Penalty Inflation Adjustments Act Improvement Act of 2015.

For Counts 1, 2, and 3, discussed below, the violations are alleged to have occurred before November 3, 2015. In accordance with an EPA Memorandum from Rosemarie A. Kelley, *Revision to Adjusted Penalty Policy Matrices Package Issued on November 16, 2009* (April 6, 2010) ([Link to 2010 Matrices Update Memo](#)), the gravity-based penalty matrix and the multi-day penalty matrix in the 2003 RCPP were modified to reflect a gravity-based penalty matrix ranging from \$150 to \$37,500 and a multi-day matrix ranging from \$150 to \$7,090.

For Counts 4 and 5, which are alleged to have occurred on or after November 3, 2015, the penalty amounts have been calculated pursuant to adjustments made to the 2003 RCPP matrices as directed by an EPA Memorandum from Susan Bodine, *Amendments to the U.S. Environmental Protection Agency's Civil Penalty Policies to Account for Inflation* (January 15, 2020) ([Link to 2020 Matrices Update Memo](#)). Pursuant to the 2020 memorandum, the penalty calculation numbers in the RCPP that was issued in 2003 were adjusted upward by a multiplier of 1.60451. Therefore, pursuant to the 2020 memorandum each number in each matrix is adjusted upward by 1.60451.

EPA then determines whether a “multi-day” component is appropriate, and consults a similar matrix for penalties to be assessed from day 2 of violation through the last day. Generally, EPA is constrained by the RCPP to calculate a penalty for a maximum of 180 days.

The RCPP then requires consideration of case-specific facts to determine whether upward or downward adjustments to the gravity based number are warranted.

Finally, EPA is required use the best information available to EPA to determine whether any significant economic benefit has accrued to Prime as a result of the violation and, under many circumstances, include that amount in the final calculation.

III. Core Facts Relating to Each Violation Discussed in Section IV

On September 27, 2015, while en route from Pennsylvania to Oregon, a shipment of paints, including Universal Urethane Yellow Primer strontium chromate, being transported by Prime, a large national transit company, caught fire outside of Mountain Home, Idaho. Safety Data Sheets (SDS) for the paint and a bill of lading accompanied the shipment.

The SDS and bill of lading clearly state that the products Prime was transporting are hazardous

materials, because they have a flash point less than 140 degrees Fahrenheit and because the primer contains significant amounts of chromium and barium. The SDS states that the strontium chromate in the primer contains chromium at concentrations between 25,000 parts per million (ppm) and 62,500 ppm, and barium chromate in the primer contains chromium at concentrations between 750 ppm and 2,500 ppm. (The federal regulatory level at which a waste becomes hazardous for chromium (D007) is 5 milligrams per liter (mg/L).¹ The SDS also states that the barium chromate in the primer contains barium at concentrations between approximately 1,620 ppm and 5,400 ppm. (The federal regulatory level at which a waste becomes hazardous for barium (D005) is 100 mg/L).

The Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to Know Act (EPCRA) ([Link to the List of Lists](#)), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and section 112(r) of the Clean Air Act (CAA) helps the regulated community identify whether they need to submit reports about these materials under 302 and 313 of EPCRA and determine if and when releases to the environment of these chemicals must be reported under 102 and 103 of CERCLA and Section 304 of EPCRA. It also helps facilities determine if they are subject to accident prevention regulations under CAA 112(r). Strontium chromate is a reportable substance under CERCLA when 10 or more pounds are released and it is a reportable quantity under EPCRA 313. The bill of lading states that the paint materials contained a reportable quantity of strontium chromate.

As a result of the fire, several drum of paint spilled along-side the highway and drums that remained in the burned trailer were rendered unusable, creating a significant amount of hazardous waste. After determining that the initial response to the fire and spillage of materials along-side the highway did not result in an adequate cleanup, the Idaho Department of Environmental Quality (IDEQ) required Prime, to conduct a second cleanup. IDEQ required that Prime or its contractors properly characterize the spilled paint residual and impacted soils to determine whether it was regulated hazardous waste and if it was to obtain an EPA ID number, use a manifest when transporting the waste, and dispose of the wastes at a permitted hazardous waste disposal facility. As part of the second cleanup, Prime hired Premium Environmental Services (Premium), and Premium arranged for H2O Environmental to conduct sampling on the residual wastes and impacted soils on November 18, 2015. Premium informed IDEQ on November 30, 2015, the residual waste and impacted soils excavated during the second clean-up were a hazardous waste being characteristically toxic for chromium, as well as carrying the D001 waste code for ignitability. As a result, Premium contacted IDEQ staff on November 30, 2015, to inquire about obtaining an EPA ID number. Finally, Premium, on behalf of Prime, arranged for disposal at U.S. Ecology, a permitted hazardous waste disposal facility and ensured the waste was transported under a manifest.

Based on the SDS and the bill of lading, both of which accompanied the original paint shipment, and based on communications from IDEQ at least as early as November 2015, Prime should have been on notice that the drums which remained on the compromised trailer contained waste that posed hazards to human health and the environment and that it might be regulated.

Prime did not make a hazardous waste determination pursuant to the regulations after the emergency ended at the site of the fire. Instead, Prime hired B&W Wrecker Services (B&W) to assist with the fire cleanup and transport materials away from the accident site, including the 32 drums which are the subject of this matter. B&W is a local wrecking company which is not equipped and trained to transport and dispose of regulated hazardous waste. B&W, with the assistance of Corder White Excavation (CWE), transported a portion of the waste generated during the initial response to CWE's facility in

¹ Note that ppm is equivalent to mg/L; so, 1 ppm=1 mg/L.

Idaho and then to Idaho Waste Systems solid waste landfill, which is not authorized for receipt of hazardous waste. B&W transported the remaining hazardous waste (burned drums that are the subject of this action) and the burned trailer to B&W's Lot in Idaho.

On or about October 1, 2015, Prime hired Brett's Towing to transport the burned trailer and the remaining drums of hazardous waste from B&W's lot in Idaho to Prime's lot located at 3720 W. 800S, Salt Lake City, Utah (Facility). The drums and trailer were transported in their impaired condition and without complying with any of the requirements for safely transporting hazardous waste, including shipping the waste with a hazardous waste manifest.

After arrival at the Facility, the burned drums remained illegally stored on the impaired trailer, under a tarpaulin, for approximately 300 days until the situation was discovered by EPA's Criminal Investigation Division (EPA-CID) and the U.S. Department of Transportation Office of Inspector General. On or about August 3, 2016, in response to the discovery, EPA-CID sent a preservation letter to Prime requesting that the trailer and drums were not to be moved or manipulated.

On August 24, 2016, at the request of EPA-CID, EPA's National Enforcement Investigation Center (NEIC) conducted a field inspection at the Facility. NEIC conducted an inventory of the drums, performed on-site X-ray fluorescence spectrometry (XRF) of the 32 drums located on the burned trailer, and took representative samples of 8 of the 20 drums that the XRF indicated contained materials consistent with strontium chromate primer.

All eight samples had chromium levels between 36.8 and 352 mg/L, exceeding the regulatory level of 5 mg/L for toxicity for chromium. The samples were also tested to determine the flashpoint using an EPA-approved closed cup method. The flash point for all samples indicated that they exhibited the characteristic of ignitability, having flashpoints between 109 and 113 degrees Fahrenheit, below the threshold of 140 degrees Fahrenheit. The wastes in the 20 drums clearly are hazardous waste for ignitability (D001) and toxicity for chromium (D007).

IV. Summary and Count-Specific Analysis

SUMMARY OF TOTAL PROPOSED PENALTY

#	Count	Potential for Harm	Extent of Deviation	Gravity	Adjustment Factors Willfulness/ Negligence	Economic Benefit	Daily Statutory Max ²	Total
1	Failure to make a hazardous waste determination (Utah Admin. Code R315-5-1-1.11)	Major	Major	\$32,915	+10% \$3,292	\$10,800	\$37,500	\$37,500
2	Failure to prepare a manifest (Utah Admin. Code R315-5-2-2.20(a))	Major	Major	\$32,915	+10% \$3292	0	\$37,500	\$36,207
3	Storage of hazardous waste without a permit or interim status (Utah Admin. Code R315-3-1-1.1(a))	Moderate	Major	Day One: \$16,767 Multi-Day \$2295 x 179 \$427,572	+10% \$42,757	0	\$37,500	\$462,056
4	Failure to properly manage containers (Utah Admin. Code R315-7-16.4)	Major	Major	\$39,712	+10% \$3971	0	\$101,439	\$43,683
5	Failure to obtain an EPA ID Number (Utah Admin. Code R315-8-2-2.2)	Major	Major	\$39,712	+10% \$3971	0	\$101,439	\$43,683
Total								\$631,402

VIOLATIONS

² Section 3008(a)(3) of RCRA, 42 U.S.C. 6928(a)(3), as modified pursuant to the Debt Collection Improvement Act of 1996, and the Civil Monetary Penalties Inflation Adjustment Rule, 40 C.F.R. part 19, authorize a civil penalty of up to of up to \$37,500 per day per violation that occurred prior to November 2, 2015, and \$101,439 per day per violation that occurred after November 2, 2015, when penalties are assessed on or after January 13, 2020. Civil Monetary Penalties Inflation Adjustment, 71 Fed. Reg. 1751 (Jan. 13, 2020) and 78 Fed. Reg. 66643 (Nov. 6, 2013).

Count 1. Failure to Make a Hazardous Waste Determination

According to 40 C.F.R. § 262.11, incorporated by reference at Utah Admin. Code R315-5-1-1.11, a generator must determine whether each solid waste it generates is a hazardous waste. Prime failed to conduct a hazardous waste determination for the 32 55-gallon burned drums of paint waste in violation of Utah Admin. Code R315-5-1-1.11.

Hazardous wastes regulated under RCRA, and state hazardous waste programs authorized by EPA to operate in lieu of the federal program, are either listed in 40 CFR Part 261, Subpart D, or are wastes characterized in 40 CFR Part 261 Subpart C (or state equivalent regulations), as hazardous by exhibiting one of four characteristics: ignitability (i.e., an oxidizer or flash point <140 F), corrosivity (i.e., pH < 2 or > 12.5), reactivity or toxicity. A hazardous waste determination must be made for each waste generated. Regardless of quantity, the generator of hazardous waste is then responsible for proper management of the waste from “cradle to grave” and can be held responsible for improper management of hazardous waste.

Prime did not make a hazardous waste determination at any point for almost a year after the fire. Had Prime made an accurate hazardous waste determination, Prime might have handled the waste in compliance with the transportation, storage, and disposal requirements, which would have reduced the risks of harm to humans (transporters and others) and the environment.

Penalty Summary Table:

Count 1. Failure to make a hazardous waste determination (Utah Admin. Code R315-5-1-1.11)	
Gravity Based Penalty a. Potential for Harm: Major b. Extent of Deviation: Major c. Middle of the Penalty Matrix Cell	\$32,915
Multi-day Penalty	N/A
Total Gravity Based Penalty	\$32,915
Adjustment Factors	
• Good Faith	N/A
• Willfulness/Negligence	+10%, \$3,292
• History of Noncompliance	N/A
• Other Unique Factors	N/A
Total Base Penalty	\$36,207
Economic Benefit	\$10,800
Total Penalty	\$37,500 (stat. max)

POTENTIAL FOR HARM

Major potential for harm is defined in the RCPP as (1) a violation that poses or may pose a substantial risk of exposure of humans or other environmental receptors to hazardous waste or constituents; and/or

(2) the actions have or may have a substantial adverse effect on statutory or regulatory purposes or procedures for implementing the RCRA program.

The potential for harm associated with Prime's failure to make a hazardous waste violation is assigned as major. Proper hazardous waste determinations are the critical first step in the management of hazardous waste from the point of generation through final proper disposal. A failure to make a hazardous waste determination typically represents substantial harm to the RCRA program. In particular, failing to characterize hazardous waste increases the likelihood the hazardous waste will be mismanaged, treated, or disposed of in a manner that results in increased threats of harm, or actual harm, to human health and the environment. In sum, a hazardous waste determination is essential to proper management of hazardous wastes from cradle to grave.

As described in Section III above, Prime had information available to it from the time of the fire and obtained more information over the ensuing weeks indicating strongly that once a waste, the paint material they were transporting would be a regulated hazardous waste. This alone should have triggered Prime to make a hazardous waste determination, whether based on this available information or by conducting testing. Prime did neither, and EPA (through NEIC) eventually conducted tests showing that the waste was regulated because of its ignitibility and levels of chromium.

Prime's failure to make a hazardous waste determination resulted in transportation of burned drums containing hazardous waste that was not labeled, manifested, or placarded, and hauled by an unauthorized trucking company, which severely increased the risk of exposure to people and the environment if an accident or spill occurred during transportation over 300 miles of interstate. Prime's failure also put the transporters at high risk and the fact that the drums' integrity was significantly compromised further increased risk to handlers and the environment in case of another accident.

Prime's failure to make a hazardous waste determination then resulted in the storage of the burned drums of hazardous waste, most of which were open with missing bung caps, for over 300 days at the Facility, stored in a burned trailer that was covered only by a tarpaulin and exposed to the harsh outdoor elements of Salt Lake City, Utah. Prime's mismanagement of the burned drums of paint waste created a substantial potential for harm to human health and the environment including to personnel at the Facility.

Taking into account the specific facts of this matter, a major potential for harm is warranted.

EXTENT OF DEVIATION

Prime's failure to make a hazardous waste determination was itself a complete deviation from the requirement. It also directly resulted in substantial noncompliance with the entire program for almost a year, and unnecessarily created substantial risks of harm to humans and the environment. This failure to properly characterize the waste clearly jeopardizes the integrity of the RCRA program. Therefore, the selection of a major extent of deviation is appropriate.

PENALTY ASSESSMENT MATRIX

EPA analyzes and relies on case-specific factors to select a dollar figure within a particular matrix cell. The types of factors that may be considered include the seriousness of the violation relative to other violations falling within the same matrix cell, the environmental sensitivity of the area threatened by the violation, efforts at remediation or the degree of cooperation by the violator, the size and sophistication

of the violator, the number of days of violation, and other relevant matters. According to the RCPP, using the gravity-based penalty matrix for violations that occurred between December 6, 2013, and before November 2, 2015, the major potential for harm/major extent of deviation penalty cell has a penalty range of \$28,330 to \$37,500.

Taking into account the factors described in the RCPP and the size of the company, a penalty at the midpoint of the penalty cell was selected, \$32,915. EPA did not select the bottom of the cell because Prime is a large national trucking company that hauls hazardous materials and has the resources necessary to make a proper hazardous waste determination when necessary. Prime made no attempts to properly characterize and manage the burned drums of hazardous waste from the time of the fire until EPA-CID investigation, approximately 300 days later in August 2016. In addition, Prime received instruction in November 2015, from IDEQ on how to handle the waste from the fire, including contaminated soil along the highway at the site of the fire, but never tried to properly manage the burned drums that went to Utah. EPA did not select the top of the cell because Prime cooperated with EPA CID's investigation and disposed of the 32 drums of paint waste as hazardous waste at a licensed treatment, storage or disposal facility.

Multi-day Penalty: Multi-day penalties are generally considered mandatory for days 2 through last date the violation continues, up to a generally applied maximum of 180 days, for all violations with a gravity-based designation of major-major. EPA, however, has concluded that it is appropriate in this matter to view Prime's hazardous waste determination violation as independent and non-continuous; thus, EPA has not calculated a multi-day assessment for this violation.

Adjustment Factors: According to the RCPP, the following adjustment factors are to be considered before finalizing a gravity-based penalty amount: good faith, willfulness/negligence, history of compliance, ability to pay, environmental project credits, and other unique factors. Adjustments must be justified if applied. Please note that the analysis of the adjustment factors immediately below applies equally to each count, except where specifically noted in subsequent counts.

Willfulness and/or Negligence: The RCPP explains that "while 'knowing' violations of RCRA will support criminal penalties pursuant to section 3008(d), there may be instances of heightened culpability which may not meet the criteria for criminal action. In these cases, the penalty may be adjusted upward for willfulness and/or negligence." EPA proposes an upward adjustment to the gravity-based penalty for each count based on evidence of willfulness and/or negligence.

While assessing the degree of willfulness and/or negligence the following factors set forth in the RCPP were considered: Prime's full control over the events constituting the violation; foreseeability of the events constituting the violation; reasonable precautions against the events constituting the violation; whether Prime knew or should have known of the hazards associated with the conduct and whether the violator knew or should have known of the legal requirement that was violated.

Prime was contracted to haul hazardous materials. Because Prime is a large shipping company that routinely hauls hazardous materials, Prime should be aware of the dangers of shipping hazardous materials (and by extension hazardous waste). Once the hazardous materials caught fire and became unusable (as described by Prime, "a total loss"), the materials became solid waste. At that time, Prime, as the generator, was responsible for making a hazardous waste determination and then ensuring the proper transportation, storage, and disposal of the hazardous waste. By simply looking at the SDS sheets and bill of lading in the truck (accompanying the shipment), Prime should have been aware of the need

to make a waste determination for at least ignitability, or have decided to perform sampling for RCRA characteristic waste parameters (ignitability, corrosivity, reactivity, and toxicity).

Even if these documents were not clear enough, then certainly at some point during Prime's multiple interactions and communications with IDEQ, Prime should have been able to determine the waste was hazardous and then taken precautions to ensure the materials were handled correctly thereafter.

Records accompanying the materials shipment and records generated as a result of the fire response, the second residual waste and soils cleanup and improper disposal investigation at Idaho Waste Systems by IDEQ, all of which were shared with Prime at the time, support that Prime had knowledge in its possession that the wastes in the drums on the trailer likely were hazardous. Prime, though, continued to avoid compliance with any of the RCRA regulations, handling the waste for over 300 days without performing a waste determination and without managing it as hazardous wastes. For these reasons, EPA applied an upward adjustment of 10% for willfulness for each count.

Good Faith: No downward adjustment is given to Prime for efforts to comply or correct violations after the Agency's detection of the violations, since the amount set in the gravity-based penalty component matrix assumes good faith efforts by Prime to comply after EPA discovery of a violation. Thus, no justification for mitigation for good faith efforts to comply exists.

History of Compliance: According to the RCPP, the term "previous violation" includes "any act or omission for which the violator has previously been given written notification, however informal, that the Agency believes a violation exists." EPA has not identified previous violations which it views as warranting an upward adjustment for this factor.

Economic Benefit: EPA considers the least expensive means of compliance when calculating economic benefit. Although the SDS and other documents described above would serve as a reasonable basis for determining the drums contain hazardous waste it also is reasonable to assume that Prime would have decided to test the wastes in the drums since the labels were burned off, the paint had been in a fire, some of the drums had burst open and been disposed, leaving the remaining 32 drums to be of uncertain contents, thus requiring a waste determination. The least expensive way for Prime to correct this violation would have been to characterize their wastes using the toxicity characteristic leaching procedure (TCLP). The economic benefit asserted for these violations was estimated as avoided costs that will never be incurred by the Prime.

NEIC used XRF to determine that 20 of the 32 burned drums of strontium chromate primer. NEIC collected representative samples from 8 of the 20 burned drums of paint waste to conduct a TCLP analysis. Using TCLP, the representative samples were determined to be hazardous for ignitability (Flash Point < 140 F) and toxicity (chromium levels exceeding regulatory levels).

EPA estimated costs using figures from EPA's Unit Cost Compendium, Data and Algorithms for Estimating Costs Associated with "Cradle to Grave" Management of RCRA Solid and Hazardous Waste, September 30, 2000, and were adjusted to current costs using the online U.S. inflation calculator. An estimated cost of \$1,350 per TCLP sample was used for 8 samples, the same number of samples collected by NEIC, yielding an economic benefit of \$10,800 in avoided costs. This cost includes sample collection, shipment, analysis, and results report.

In this case, the total economic benefit for Count 1 is more than \$5,000; as a result, the \$10,800 economic benefit is included in EPA's penalty demand.

Recalculation of Penalty Based on New Information: No information has been received since the complaint was filed to warrant a recalculation for this count.

Count 2: Failure to Prepare a Manifest

According to 40 C.F.R. § 262.20(a)(1), 262.23, and 262.40, incorporated by reference at Utah Admin. Code R315-5-2-2.20(a), a generator who transports, or offers for transportation, hazardous waste for off-site treatment, storage, or disposal shall prepare a manifest (OMB Control number 2050-0039) on EPA Form 8700-22. A generator must prepare a manifest, provide a signed manifest for each offsite shipment of hazardous waste, and retain a manifest for three years. Use of the manifest system is necessary to ensure that all hazardous waste generated is designated for treatment, storage, or disposal in, and arrives at, treatment storage and disposal facilities for which a permit has been issued as required in RCRA. 42 U.S.C. § 6922(a)(5).

Prime's failure to prepare a manifest for Brett's Towing's transportation of the burned drums of hazardous waste from B&W's Lot to the Facility constitutes a violation of 42 U.S.C. § 6922(a)(5) and Utah Admin. Code R315-5-2-2.20(a).

Penalty Summary Table:

Count 2. Failure to prepare a manifest Utah Admin. Code R315-5-2-2.20(a)	
Gravity Based Penalty a. Potential for Harm: Major b. Extent of Deviation: Major c. Middle of the Penalty Matrix Cell	\$32,915
Multi-day Penalty	N/A
Total Gravity Based Penalty	\$32,915
Adjustment Factors • Good Faith • Willfulness/Negligence • History of Noncompliance • Other Unique Factors	
	N/A
	\$3,292
	+10%
	N/A
Total Base Penalty	\$36,207
Economic Benefit	\$0
Total Penalty	\$36,207

POTENTIAL FOR HARM

The generator of the hazardous waste offered for transport 32 drums of waste, at least 20 which were characteristically hazardous for chromium (D007) and ignitability (D001). Prime failed to prepare and retain hazardous waste manifests, in violation of R315-5-2-2.20(a). One count is considered here for the transport from the B&W's Lot to the Facility in Utah.

EPA's hazardous waste manifest system is designed to track hazardous waste from the time it leaves the point at which it was generated until it reaches the off-site waste management facility that will store, treat or dispose of the hazardous waste. The key component of the waste tracking system is the Uniform Hazardous Waste Manifest, a form required by EPA and the U.S. Department of Transportation for all generators who transport or offer for transport hazardous waste for offsite treatment, storage, recycling, or disposal. When completed, the form contains information on the type and quantity of the waste being transported, instructions for handling the waste, and signature lines for all parties involved in the disposal process, including the generator. Once the waste reaches its destination, the receiving facility is required to return a signed copy of the manifest to the generator, confirming that the waste has been received by the designated facility. Each party that handles the waste signs the manifest and retains a copy for themselves. This ensures critical accountability in the transportation and subsequent storage, treatment and disposal processes.

This violation posed a substantial risk of exposure of humans or other environmental receptors to the hazardous waste during and after transport, especially when considering the condition of the drums being transported, and that the driver for Brett's Towing likely was not trained to transport hazardous waste or respond to hazardous waste emergencies during transportation and did not secure the appropriate documentation (i.e., placards or SDS). This failure also had a substantial adverse effect on statutory or regulatory purposes or procedures for implementing the RCRA program. Without a manifest, which includes information on the type of wastes and instructions for handling it, there was substantial risk for waste mismanagement in the event of a spill or another fire during transport of the drums along the 306 miles of public highways. Both responders and the public were put at danger since information on the waste characteristics was not available to facilitate the swift implementation of appropriate measures to address a release, including, for example, setting evacuation or response zones and selection of personal protective equipment for responders.

Taking into account the specific facts of this matter, a major potential for harm is warranted.

EXTENT OF DEVIATION

The generator deviated from the requirements of the regulation to such an extent that none of the transportation and subsequent handling requirements were met resulting in substantial noncompliance which jeopardizes the integrity of the RCRA program. Proper manifesting of hazardous wastes, which allows tracking of the management of the wastes from "cradle to grave," is a core component of the RCRA program. Prime did not prepare a manifest and did not meet any of the regulatory requirements for waste tracking. Violations of regulatory requirements may have serious implications and merit substantial penalties where the violation undermines the statutory or regulatory purposes or procedures for implementing the RCRA program." The RCPP gives examples of this kind of regulatory harm, which includes "failure to prepare or maintain a manifest."

Taking into account the specific facts of this matter, a major extent of deviation is warranted.

PENALTY ASSESSMENT MATRIX

Using the gravity-based penalty matrix for violations that occurred after January 12, 2009 and before November 2, 2015, the major potential for harm/major extent of deviation penalty cell has a penalty range of \$28,330 to \$37,500. A penalty at the midpoint of the penalty cell was selected, \$32,915. Please see the explanation in the penalty assessment matrix section of Count 1 for selection of the midpoint of the penalty cell, because it is equally applicable here.

Multiple/Multi-day: Multi-day penalties are generally considered mandatory for days 2 through last date the violation continues, up to a generally applied maximum of 180 days, for all violations with a gravity-based designation of major-major. EPA, however, has concluded that it is appropriate to view Prime's specific manifest violation as independent and non-continuous; thus, has not calculated a multi-day assessment for this violation.

Adjustment Factors: EPA applied the same analysis for the adjustment factors discussed in Count 1 to this count.

Economic Benefit: The economic benefit for these violations is viewed as minimal and none is asserted for this count.

Recalculation of Penalty Based on New Information: No information has been received since the complaint was filed to warrant a recalculation for this count.

Count 3: Storage of Hazardous Waste Without a Permit or Interim Status

Section 3005 of RCRA, 42 U.S.C. § 6925(a), requires each person owning or operating a facility for the treatment, storage, or disposal of hazardous waste identified or listed under Subchapter C of RCRA to have a permit for such activities. Pursuant to Utah Admin. Code R315-3-1-1.1(a), no person shall own, construct, modify, or operate any facility for the purpose of treating, storing, or disposing of hazardous waste without first submitting, and receiving the approval of the State of Utah Executive Secretary for a hazardous waste permit for that facility.

On or about October 1, 2015, Prime received at least 20 burned drums of paint waste that was characteristic hazardous waste at the Facility triggering the operating requirements of Utah Admin. Code R315-7 and Utah Admin. Code R315-8 and the requirements for a permit. Between October 1, 2015, and August 3, 2016 (the date of EPA-CID preservation letter), Prime stored at least 20 burned drums of hazardous waste at the Facility without any form of authorization. The drums were stored in a compromised truck trailer from at least October 1, 2015, until they were shipped offsite on September 19, 2016. At no time has the State of Utah or EPA issued a RCRA permit to Prime to own and operate the Facility as a hazardous waste storage facility. Prime owned and operated a hazardous waste storage facility without a permit in violation of section 3005 of RCRA, 42 U.S.C. § 6925 and Utah Admin. Code R315-3-1-1.1(a). Consistent with the RCPP, the time frame considered for penalty calculation was capped at 180 days for this violation.

Penalty Summary Table:

Count 3. Storage of hazardous waste without a permit or interim status 3005 of RCRA, 42 U.S.C. § 6925 and Utah Admin. Code R315-3-1-1.1(a)	
Gravity Based Penalty a. Potential for Harm: Moderate b. Extent of Deviation: Major c. Middle of the Penalty Matrix Cell	\$16,767
Multi-day Penalty	\$2295 x179 days \$410,805
Total Gravity Based Penalty	\$427,572
Adjustment Factors • Good Faith • Willfulness/Negligence • History of Noncompliance • Other Unique Factors	
	N/A
	\$42,757
	+10%
	N/A
	N/A
Total Base Penalty	\$470,329
Economic Benefit	0
Total Penalty	\$462,056

POTENTIAL FOR HARM

The violation poses or may pose a significant risk of exposure of humans or other environmental receptors to hazardous waste or constituents; and/or, the actions have or may have a significant adverse effect on statutory or regulatory purposes or procedures for implementing the RCRA program. From October 1, 2015, through September 19, 2016, Prime stored hazardous waste in burned drums, in the remnants of a burned truck trailer at the Facility, covered only by a tarpaulin, without either a permit or “interim status.” If Prime had been able to achieve interim status for the Facility, Prime would have been aware of specific regulatory provisions for safe storage of hazardous waste. If Prime had obtained a storage permit from the State of Utah, the permit would have provided detailed provisions for the safe storage of the hazardous waste. Whether in the regulations or in a permit, RCRA storage requirements are designed to ensure the prevention and detection of releases of hazardous waste to the environment, and to protect persons coming into contact with the containers and wastes.

Prime’s storage of the hazardous waste in compromised, unlabeled drums with missing bung hole covers, dried paint on the exterior of drums, strong odors emitting from the open drums, in a compromised trailer, and stored at a Facility that did not meet any of the RCRA hazardous waste storage standards posed a significant risk of exposure of humans or other environmental receptors to hazardous waste or constituents and/or the actions have or may have a significant adverse effect on statutory or regulatory purposes or procedures for implementing the RCRA program.

The drums were stored outside without secondary containment. Because Prime failed to make a hazardous waste determination of the burned drums and failed to manage them as hazardous waste, it is logical to assume that workers were not informed that the drums contained hazardous waste and were not informed of measures to be taken in event of releases. Similarly, it is logical to assume that Prime did not conduct regular inspections of the drums to check their condition.

The SDS for the product, which Prime had in its possession prior to and after the fire, indicates that each container should be kept tightly closed; persons should not breathe the vapor or mists; the containers should be stored locked up and not stored at temperatures above 95 degrees Fahrenheit. The SDS goes on to state that the product should be protected from sunlight in a dry, cool, and well-ventilated area and not stored in unlabeled containers. The SDS also directs persons to use appropriate containment to avoid environmental contamination from leaks, spills, or venting.

Taking into account other specific facts of this matter which include the volume of the waste stored, the lack of nearby waterways, and storage of the trailer on a paved surface, a moderate potential for harm is warranted.

EXTENT OF DEVIATION

As more fully described immediately above, Prime received and stored hazardous waste in unlabeled drums in a compromised truck trailer that was burned and missing approximately half of its structure. Prime deviated from the requirements of the regulation to such an extent that none of the storage requirements that would form the core of a RCRA storage permit were met, resulting in substantial noncompliance which jeopardizes the integrity of the RCRA program.

Prime violated the storage permit requirements from the first day the hazardous waste was stored at the Salt Lake City yard, October 1, 2015, through the date of disposal in September 19, 2016.

Taking into account the specific facts of this matter, a major extent of deviation is warranted.

PENALTY ASSESSMENT MATRIX

Using the gravity-based penalty matrix for violations that occurred after January 12, 2009, and before November 2, 2015, the cell in the gravity-based penalty matrix for the first day of violation for a moderate potential for harm/major extent of deviation has a penalty range of \$14,120 to \$19,414. A penalty at the midpoint of the penalty cell was selected, \$16,767. Please see the explanation in Count 1 for the criteria used in selection of the midpoint of the penalty cell.

Multiple/Multi-day: This violation is appropriately viewed as multi-day. Evidence documents the first occurrence of this storage on October 1, 2015. Consistent with the RCPP, a cap of 180 days of violation was applied, despite the almost year-long storage without a permit at the Facility. For a moderate potential for harm and a major extent of deviation, the values in the penalty matrix cell range from \$706 to \$3,883. A mid-range value of \$2,295 was selected. Multi-day penalties are presumed appropriate for days 2-180 of violations with the moderate major gravity-based designation and "should be sought, unless case-specific facts overcoming the presumption for a particular violation" are documented in the case file.

Adjustment Factors: EPA applied the same analysis for the adjustment factors discussed in Count 1 to this count.

Economic Benefit: EPA considers the least expensive means of compliance when calculating economic benefit. The economic benefit for this violation includes any savings accrued from the delay in properly disposing of the hazardous waste at a permitted hazardous waste facility. Upon further consideration since the filing of the complaint, the delayed cost savings for Prime's disposal, following EPA-CID and

NEIC's inspections, using the actual disposal cost of \$19,711, were estimated and determined to be minimal relative to the gravity calculation.

No economic benefit is asserted for this count.

Recalculation of Penalty Based on New Information:

Upon further consideration, EPA reviewed the information in its possession regarding the disposal costs and the timeframe from initial storage until disposal, determining that the apparent savings likely were less than \$5,000. In light of this information, EPA determined that it is reasonable to forego the inclusion of the economic benefit for this count, thereby reducing the proposed penalty proposed in the Complaint.

Count 4. Failure to Properly Manage Containers

Pursuant to 40 C.F.R. § 265.173, incorporated by reference at Utah Admin. Code R315-7-16.4, (a) a container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste; and (b) a container holding hazardous waste shall not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. Between October 1, 2015, and August 3, 2016, Prime stored burned drums of hazardous waste that were left open with bung caps missing in violation of Utah Admin. Code R315-7-15-16.4. The post-fire condition of the drums created a circumstance where they were more likely to leak over time than a container that hasn't been through a fire.

Penalty Summary Table:

Count 4. Failure to properly manage containers Utah Admin. Code R315-7-15-16.4.	
Gravity Based Penalty a. Potential for Harm: Major b. Extent of Deviation: Major c. Middle of the Penalty Matrix Cell	\$39,712
Multi-day Penalty	N/A
Total Gravity Based Penalty	\$39,712
Adjustment Factors	
• Good Faith	N/A
• Willfulness/Negligence	\$3,971 +10%
• History of Noncompliance	N/A
• Other Unique Factors	N/A
Total Base Penalty	\$43,683
Economic Benefit	\$0
Total Penalty	\$43,683

POTENTIAL FOR HARM

The SDS for the product, which Prime had in its possession prior to and after the fire, indicates that each container should be kept tightly closed; persons should not breathe the vapor or mists; the containers

should be stored locked up and not stored at temperatures above 95 degrees Fahrenheit. The SDS goes on to state that the product should be protected from sunlight in a dry, cool, and well-ventilated area and not stored in unlabeled containers. The SDS also directs persons to use appropriate containment to avoid environmental contamination from leaks, spills, or venting. After the fire, Prime did not meet any of these conditions for the hazardous waste in the burned drums, or meet any of the hazardous waste drum requirements.

Even though the integrity of drums of ignitable paint was compromised during the fire, including bung hole covers popping out of the drums due to intense pressure from the heat, Prime did not overpack the drums or place the wastes in new drums before shipment. Prime also did not label the drums with the words “Hazardous Waste” and the date the wastes were placed into storage. Further, Prime did not ensure that the drums were closed. In fact, the EPA CID inspector noted strong odor/fumes and the drums were missing bung caps when they investigated the Facility approximately 10 months after the fire on August 2, 2016.

This violation posed a substantial risk of exposure of humans or other environmental receptors to hazardous waste or constituents and had a significant adverse effect on statutory or regulatory purposes or procedures for implementing the RCRA program.

The RCPP explains that when a violation involves the actual management of waste, a penalty should reflect the probability that a violation could have resulted in or has resulted in a release of hazardous waste or hazardous constituents or hazardous conditions such as a threat of exposure to hazardous waste or constituents. According to the RCPP, “[s]ome factors to consider include evidence of waste mismanagement (condition of containers). . . .” A larger penalty also is presumptively appropriate where the violation significantly impairs the ability of the hazardous waste management system to prevent and detect releases of hazardous waste and constituents. Violators should not be rewarded with lower penalties simply because the violation did not result in actual harm, or no evidence of harm has been identified. In this case, EPA does not have direct evidence of spillage or leakage during transportation over 300 miles or during the over 300 days of storage. And, despite evidence of venting, EPA does not have direct evidence of harm to receptors from the venting.

EPA also considers the potential seriousness of contamination: the harm which would result if hazardous waste or constituents were released to the environment, including quantity and toxicity of wastes if released, likelihood of transport by environmental media, proximity of receptor populations and sensitive environmental media. In addition to the TCLP results for ignitibility, the TCLP analysis documented levels of chromium between 36.8 and 352 mg/L, which levels exceed the regulatory level of 5 mg/L for toxicity. The burned drums were used to store 16,000 lbs of hazardous waste.

EPA also reviewed EPA’s environmental justice (EJ) database, EJSCREEN. EJSCREEN is an environmental tool that provides EPA with a nationally consistent approach to potential areas of EJ concern that may warrant further consideration. The screening tool includes 11 environmental indicators and 7 demographic indicators to identify communities living with the greatest potential for negative environmental and health effects. If the screening tool indicates that a selected area is in the 80th percentile or higher nationally or in the State, or the Demographic indicators show that the minority or low-income population is above the state average, this area is flagged as a potential EJ area.

In this case, the EJSCREEN indicated that the Facility is located in a potential environmental justice area because the minority and low-income populations are over the state average and the EJ index for Hazardous Waste Proximity is above 80 percent for the State. For the Facility area, all of the

environmental indicators reflected in the EJSCREEN are above 80th percentile for the State, including Particulate Matter, National-Scale Air Toxics Assessment (NATA) Air Toxics Cancer Risk and NATA Respiratory Hazard Index.

In particular, EPA has assessed environmental justice factors for the Facility and determined that the Facility is located in a populated area with significantly more particulate matter and ozone pollution than usual. The release of volatiles from the open drums into the air and the unmonitored storage without regular inspections of the containers for additional releases or leakage contributed to the local environmental stressors. The Facility also has a close proximity to Superfund sites, hazardous waste facilities, and wastewater discharge locations. These factors led to a determination that the drum storage at the Facility, particularly given the condition of the drums after the fire, including missing bung hole covers, exacerbated existing EJ concerns based on a combination of social vulnerability factors and environmental stressors.

Taking into account the specific facts of this matter, a major potential for harm is warranted.

EXTENT OF DEVIATION

The Facility received and stored hazardous waste in compromised burned drums, that were missing bung hole covers and had evidence of materials staining on the exterior of the drums, and which were not appropriately labeled, in a compromised truck trailer. Prime deviated from the requirements of the regulation to such an extent that most important aspects of the requirements were not met resulting in substantial noncompliance which jeopardizes the integrity of the RCRA program.

Taking into account the specific facts of this matter, a major extent of deviation is warranted.

PENALTY ASSESSMENT MATRIX

A penalty at the midpoint of the penalty cell was selected, \$39,712. Please see the explanation in Count 1 for the criteria used in selection of the midpoint of the penalty cell.

Multiple/Multi-day: Multi-day penalties are considered mandatory for days 2-180 for all violations with a major-major gravity-based designation. Even though EPA has some evidence from the fire response that the drums had vented and were missing bung caps, because EPA is not certain that the drums identified as venting or missing bung covers at the time of the fire response are the exact drums missing bung caps at the Facility at the time of the inspections, this count is reasonably viewed as independent and non-continuous; thus, there is no multi-day assessment for this violation.

Adjustment Factors: EPA applied the same analysis for the adjustment factors discussed in Count 1 to this count.

Economic Benefit: The economic benefit asserted for these violations is viewed as minimal and none is asserted for this count.

Recalculation of Penalty Based on New Information: No information has been received since the complaint was filed to warrant a recalculation for this count.

Count 5: Failure to Obtain an EPA ID Number

Pursuant to 40 C.F.R. § 264.11, incorporated by reference at Utah Admin. Code R315-8-2-2.2, every facility owner or operator shall obtain an EPA identification number by applying to the State Executive Secretary using EPA form 8700-12 ("Notification of Regulated Waste Activity"). Prime owned and operated the Facility and stored at least 20 drums of hazardous waste at the facility between October 1, 2015 and September 19, 2016. Prime's storage of at least 20 burned drums of hazardous waste at the Facility prior to obtaining an EPA identification number constitutes a violation of Utah Admin. Code R315-8-2-2.2.

Count 5. Failure to obtain an EPA ID number Utah Admin. Code R315-8-2-2.2	
Gravity Based Penalty a. Potential for Harm: Major b. Extent of Deviation: Major c. Middle of the Penalty Matrix Cell	\$39,712
Multi-day Penalty	N/A
Total Gravity Based Penalty	\$39,712
Adjustment Factors	
• Good Faith	N/A
• Willfulness/Negligence	\$3,971
• History of Noncompliance	+10%
• Other Unique Factors	N/A
	N/A
Total Base Penalty	\$43,683
Economic Benefit	\$0
Total Penalty	\$43,683

POTENTIAL FOR HARM

All persons who generate, transport, recycle, treat, store, or dispose of hazardous waste are required to notify EPA of their hazardous waste activities. EPA ID numbers are simply obtained by filing EPA Form 8700-12, Notification of Regulated Waste Activity. A facility storing hazardous waste must obtain a US EPA ID number before shipping hazardous waste offsite.

Prime's noncompliance with this requirement directly increased the threat of harm to human health and the environment. Attainment of an EPA ID number for a hazardous waste storage facility ensures that facilities can be tracked and authorized for the proper treatment, storage and disposal of hazardous wastes. Further, it allows regulators to assess whether safe and legal hazardous waste management activities are being conducted at the facility. This is a critical component in tracking the management of the wastes from "cradle to grave," which is a core component of the RCRA program. Prime's failure to obtain an EPA ID number, therefore directly increased the risks of harm to humans and the environment.

Violation of this requirement may have serious implications and merits substantial penalty as it undermines the statutory or regulatory purposes or procedures for implementing the RCRA program.

Taking into account the specific facts of this matter, a major potential for harm is warranted.

EXTENT OF DEVIATION

Prime did not obtain an EPA ID number.

This ID number identifies each handler of hazardous waste on hazardous waste manifests and other paperwork. RCRA Subtitle C regulations do not distinguish between the generation or storage of waste on an ongoing basis and the one-time generation and storage of wastes in the necessity and assignment of EPA ID numbers.

Failure to notify as a generator or storage facility and obtain an EPA ID number significantly undermines the RCRA program. Identification numbers are an essential part of the RCRA program, being assigned to a specific location. Prime did not have an EPA identification number while storing hazardous waste and did not obtain one before they offered hazardous waste for offsite transport for either the transport to the Facility from Idaho or for the offsite transport from the Facility to Heritage Environmental in Arizona for ultimate disposal. Failure to obtain an EPA ID number caused significant harm to the integrity of the RCRA regulatory program.

Prime's failure to notify the state of Utah that it was storing hazardous waste substantially deviated from a requirement of the RCRA facility and waste tracking program.

Taking into account the specific facts of this matter, a major extent of deviation is warranted.

PENALTY ASSESSMENT MATRIX

Using the gravity-based penalty matrix for violations that occurred after November 2, 2015, for the first day of violation for a major potential for harm/major extent of deviation, the penalty cell has a penalty range of \$35,299 to \$44,124. A penalty at the midpoint of the penalty cell was selected, \$39,712. Please see the explanation in Count 1 for the criteria used in selection of the midpoint of the penalty cell.

Multiple/Multi-day: Multi-day penalties are generally considered mandatory for days 2 through last date the violation continues, up to a generally applied maximum of 180 days, for all violations with a gravity-based designation of major-major. EPA, however, has concluded that it is appropriate to view Prime's failure to obtain an EPA ID number as independent and non-continuous; thus, no multi-day assessment for this violation was calculated.

Adjustment Factors: EPA applied the same analysis for the adjustment factors discussed in Count 1 to this count.

Willfulness/Negligence: EPA assessed an upward adjustment of 10% for this factor. EPA considered the following in addition to the information contained in the willfulness analysis in Count 1. Since Prime holds an EPA ID number from Missouri, they are aware of the requirement to obtain an EPA ID number for a facility to handle hazardous waste. Based on SDS sheets, and IDEQ's communications regarding the second cleanup of the fire site with hazardous waste identified in the soil, Prime should have been aware that the burned drums contained hazardous waste (or performed a hazardous waste determination to confirm that they did not), and clearly should have notified the state and obtained an identification number to ensure proper storage and management of the waste. In fact, Premium, on behalf of Prime, obtained an EPA ID number for the residual waste and soils as part of the second cleanup in Idaho and the ultimate disposal at U.S. Ecology on December 29, 2015.

Economic Benefit: The economic benefit asserted for these violations is viewed as minimal and none is asserted for this count.

Recalculation of Penalty Based on New Information: No information has been received since the complaint was filed to warrant a recalculation for this count.

Linda S. M. Jacobson
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202 US
Daytime Phone: 303-312-6503
Email: jacobson.linda@epa.gov

Education: Master of Science, Civil Engineering
Colorado State University

Master of Science, Chemical Engineering
University of Louisville

Bachelor of Science, Chemical Engineering
University of Kentucky

U.S. EPA, Region 8 Experience:

January 1988-Present: Environmental Engineer.

October 1995-Present: Inspector, State Oversight Officer, RCRA Project Manager.
Region 8 CERCLA Off-Site Rule Coordinator (since Spring 2016).

Duties include inspection, enforcement, state oversight, and technical duties.

- 1) **Inspection:** Coordinates, plans, and conducts hazardous waste program compliance inspections and manages associated records. Drafts inspection documentation and reports to support compliance determinations. Reviews noncompliance reports and conducts follow up with regulated entities per program protocols. Oversees and evaluates compliance of facilities. Identifies potential violations and discusses enforcement concerns and housekeeping practices with the facility during the inspection and at the time of the inspection close-out. Provides compliance assistance in a timely and effective manner. Couples violation identification with provision of compliance assurance information to the regulated facilities, which range in size and complexity of operation. Conducts inspection follow up with phone calls and emails as well as information to improve owner and operator waste management practices and ensure timely return to compliance.
- 2) **Enforcement:** Develops, initiates, and manages informal and formal hazardous waste and other program enforcement actions to address violations. Develops cases, including gathering and analyzing pertinent facts, establishing the elements of proof, and developing penalty calculation and narrative justification. Develops enforcement options to determine appropriate program response. Works with attorneys to consistently draft clear, effective, and defensible enforcement documents. Calculates penalties and penalty justifications in enforcement matters and assists with penalty negotiations, all in accordance with statutes, regulations, and EPA guidance. Reviews submittals provided in response to enforcement actions including process diagrams, monitoring reports, sampling plans and reports. Performs field oversight of sampling or implementation of selected interim measures. Represents EPA in technical calls and meetings, public meetings and meetings with counties, concerned citizens

- 3) **Oversight and Partnerships:** Conducts oversight of state hazardous waste enforcement program(s) for Montana, Wyoming, and South Dakota, to evaluate quality and effectiveness and ensure national and regional consistency. Develops and maintains state and tribal partnerships. Conducts state evaluations and develops associated reports to ensure deadlines are consistently met. Conducts assigned joint and oversight inspections and works with state on identified issues to improve state inspections. Receives and manages citizen complaints regarding waste management. Supports and facilitates Tribal hazardous waste program capacity building, consistent with Agency guidance and policies.
- 4) **Technical Duties:** Serves as technical point of contact for the hazardous waste program, applying a broad knowledge of conventional and non-conventional engineering/scientific principles to define problems and develop solutions to compliance problems. Develops and maintains expert technical knowledge in assigned technical lead activities, including coal combustion residue enforcement and the CERCLA Off-Site Rule. Develops knowledge of and provides technical assistance and compliance assistance, as requested, on program regulations, policies, directives, and guidance to others.

February 1992 – August 1993: Oversight officer and Pretreatment Inspector in the NPDES program. Duties included leading inspections, evaluating compliance, initiating enforcement actions and evaluation and assessment of proposed penalties, oversight of North Dakota's NPDES program; and serving as a member of the Water Indian Network.

January 1988 – Feb. 1992: Remedial Project Manager on Region 8 Rocky Mountain Arsenal Superfund site.

Awards:

- Best Published Technical Paper 1990
- RPM of the Quarter 6/1991
- Superfund Team of the Year 1991
- Team of the Year 1994
- Bronze Medal 1994
- Bronze Medal 1997
- Bronze Medal 2010
- Gold Medal 2010

Job Related Training:

- Introduction to Stack Testing/Air Sample Analysis, 6/6-6/8/2005
- Working Effectively with Tribal Governments, 1/18 and 1/19/2006
- Alternative Covers for Landfills, 11/28-11/30/2006
- Hydrogeology and Contaminant Transport, 12/11-12/14/2007
- Risk Assessment, 2010
- Ethanol Manufacturing & Regulatory Issues, 5/2011
- Quality Assurance, 3/17/12
- Contracting, 3/20/2012
- Hazardous Waste Transportation and Disposal, 12/2012
- Region 6 RCRA Workshop, 7/22-2/24/2014
- Radiation Webinar, 2/23/2015
- LNAPL Plume Delineation, 4/7 and 4/8/2015

MARSIM Radiation Training, 2/23-2/27/2015
Process Based Inspection Training (online), 10/15/15
Inspections at Federal Facilities (online), 10/16/15
Annual Records Management Training, 10/20/15
RCRA CBI Training, 10/22/15
Groundwater High-Resolution Site Characterization, March 22 and 23, 2016
Petroleum Vapor Intrusion: Fundamentals of Screening, etc., May 3, 2016
Region 6 National RCRA Inspector/Enf Officer Training, June 14-16, 2016
Manager of Landfill Operations, July 2016
Hazardous Waste Generator Improvements Rule Workshop, February 2017
Remedy Selection for Contaminated Sediments, February 14, 2017
Working Effectively with Tribal Governments, September 5, 2017
Advanced RCRA Inspector Workshop, February 2018
Remedial Project Manager 201, February 2018
Management Standards for HW Pharmaceuticals, February 2019
PFAS Contamination Workshop, February 2019
Sampling for Hazardous Materials, June 2019
Basic Environmental Geophysics, September 2019
McCoy's RCRA Training, September 2020
Risk Assessment Modeling and Risk Management, October 2020
RCRA CBI Training, 11/1/20

IDAHO WASTE SYSTEMS
PO BOX 1386
MOUNTAIN HOME, ID 83647

000000 cash

02	168067			Debi	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
09/28/15	09/28/15	12:55	13:04		
REFERENCE		ORIGIN			
B&W					

Manual Gross Wt.		76800	LB	Inbound - Cash ticket		
Scale 1 Tare Wt.		40920	LB			
Net Weight		35880	LB			
QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
17.94	TON	liquids	45.00	807.30	0.00	807.30
<div style="position: relative;"> 342-2541 fwd </div>						

This is to certify that this load
does not contain any hazardous material.

Load screened at site 2 by; (when applicable)
208-796-2727 Office number

343-6247

SIGNATURE 

NET AMOUNT
807.30
TENDERED
807.30
CHANGE
0.00
CHECK NO.

SHIPPER PROVIDED SHORT FORM BILL OF LADING & INTERMODAL CERTIFICATION

Not negotiable - Domestic

All parties hereto and their assigns are familiar with, and agree, that this bill of lading is subject to: (1) the contract terms and conditions of the Uniform Domestic Straight Bill of Lading as set forth in the National Motor Freight Classification, and (2) the applicable lawfully filed tariffs and classifications in effect as of the date hereon.

CONTAINER PACKING CERTIFICATE DECLARATION: It is declared that the packaging of goods into the container/vehicle has been carried out in accordance with the applicable provisions of 49CFR and the IMDG Code.

SHIPPER'S B/L NO. 0811B65356
LOAD ID NO. CAP00709220

AT LOC. 0811 SPRINGDALE, PA 15144 09-24 15

PHONE 724-274-7900

CONSIGNEE TO:

PPG INDUSTRIES LOC1301-COEK

C/O BUSHNELL'S WAREHOUSE

2720 NW 35TH AVENUE

PORTLAND

OREGON

(503) 227-3519

57210-0000

Dist Number: 001344803

CARRIER: PRIME, INC.

CAR/VEHICLE INTL NO.

143320

ORDER/INVOICE NUMBER: 30972-01-06-01/08124 26782-01-03-01/04609 36754-01-01-01/04612

Seal # 4124168

QUANTITY
BULK TOTE DRUM PAIL BOX

*** GROUND SHIPMENT ***
DESCRIPTION OF ARTICLES

Weight in LBS (Sub. to Com.)
PLACARD NON
MATERIAL PLACARD

32

RD UN1263 PAINT 3 PGIII
(NO: strontium chromate)

17,682

36

UN1263 PAINT 3 PGIII

19,945

2

UN1263 PAINT 3 PGII

106

PAINT - NOT REGULATED

TOTAL PIECES: 74

NUMBER OF PALLETS: 19

WEIGHT: 1105 LBS

TOTAL WEIGHT OF SHIPMENT: 40,743 LBS

WEIGHT BY COLUMN: 37,734 1,904

MULTIPLE PO NUMBERS: STEELSCAPE STOCK SAPA STOCK

Receiving Location

Receiving Hours

8AM-1PM

SPECIAL INSTRUCTIONS:

72 DRUMS ON 18 PALLETS & 2 PAILS ON A PALLET
TIME-CRITICAL SHIPMENT! CARRIER MUST CALL 24 HOURS
IN ADVANCE FOR DELIVERY APPT IF MORE THAN 5 PALLET
503-227-3519.
IF REQUIRED, DELIVERY APPT MUST BE MADE FOR DAY OF
EXPECTED ARRIVAL OR NEXT DATE AT THE LATEST.

OFFER 4 Flammable Liquid - Class 3 PLACARDS

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PPG INDUSTRIES, INC.

PPG COATINGS Shipper

Permanent post-office address of shipper: 125 COLFAX ST.

FOR USE IN EMERGENCIES INVOLVING SPILL, FIRE, LEAK, EXPOSURE

- CALL CHEMTREC -
Call Toll Free 1-800-424-9300 or Call Collect 1-703-527-3887

DRIVER'S SIGNATURE INDICATES APPLICABLE D.O.Y.
PLACARDS WERE OFFERED, EMERGENCY RESPONSE
INFORMATION IS IN THE VEHICLE AND IMMEDIATELY
ACCESSIBLE, AND PACKAGES ARE BLOCKED AND
STACED IN ACCORDANCE WITH 49 CFR SECTION 177.234

RECEIVED IN APPARENT GOOD
ORDER-EXCEPTIONS NOTED.

Carrier

B&W Wrecker - 000118

Next BOL ver. 3.0

PAGE 01/01

IDAHOWASTESYSTEMS

BM WRECKER

2087962729

11:56AM

10/22/2015

2083436247

RECEIVED

10/22/2015

11:51AM

2083436247

10/22/2015

11:51AM

2083436247

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-M473

Case Title:

Prime, Inc

Subject of Report:

IDEQ Inspection Report on Prime, Inc

Reporting Office:

Boise, ID, Resident Office

Activity Date:

January 7, 2016

Reporting Official and Date:

Darin J. Mugleston

Resident Agent in Charge

12-JAN-2016, Signed by Darin J. Mugleston

Approving Official and Date:

Edward W. Owens

Assistant Special Agent in Charge

15-JAN-2016, Approved by Edward W. Owens

Assistant Special Agent in Charge

SYNOPSIS

On January 7, 2016, Natalie Clough, Hazardous Waste Compliance Manager, Waste Management and Remediation Division, Idaho Department of Environmental Quality (IDEQ), Boise, ID, provided IDEQ's inspection report for Prime Inc. (Prime).

DETAILS

On January 7, 2016, Natalie Clough, Hazardous Waste Compliance Manager, Waste Management and Remediation Division, IDEQ, Boise, ID, provided, via email, Reporting Agent IDEQ's inspection report on Prime. The inspection report details the incident on September 21, 2015, wherein a semi-truck operated by Prime was driving through Idaho, hauling approximately 72 drums of 2 pails of paint for PPG Industries (PPG). While passing through southwest Idaho, the truck experienced mechanical issues leading to the trailer catching fire. As the emergency phase of the incident ended and the cleanup phase began, Prime hired B & W Wrecker Service (BWS) to handle the cleanup. During the cleanup, Prime and BWS failed to perform any hazardous waste characterization of the paint related waste. Material Safety Data Sheets (MSDSs) show the paint had a flashpoint of less than 140 degrees Fahrenheit making the paint a hazardous waste once no longer a usable product. Prime and BWS classified the paint waste as non-hazardous. BWS then transported and disposed of approximately 35,880 pounds of paint-related hazardous waste at Simco Road Regional Landfill (SRRL) Mayfield, ID, as non-regulated/non-hazardous waste. IDEQ's Inspection Report is attached.

ATTACHMENT

IDEQ Inspection Report on Prime, Inc, dated 09_27_2015

This document contains neither recommendations nor conclusions of the EPA.
It is the property of the EPA and is loaned to your agency;
it and its contents are not to be distributed outside your agency.

Prime, Inc 000028

HWMA/RCRA INCIDENT INVESTIGATION NARRATIVE REPORT

Date of Incident: September 27, 2015

Responsible Parties: Prime Inc.
Trucking Company

B&W Wrecker Service
Towing Company

Idaho Waste Systems
Disposal Facility

EPA Identification Number: IDR000206219

Physical Address: 2 Miles East of Hammett, Idaho, on West-Bound Interstate
84, Mile Post 114

Mailing Addresses: Prime Inc.
2740 North Mayfair
Springfield, MO 65803

B&W Wrecker Service
20 South Garden Street
Boise, ID 83705

Telephone Numbers: David White, Prime Inc. (417) 521-3830
Safety Supervisor

B&W Wrecker Service (208) 342-2541

Idaho Waste Systems (208) 796-2727

Report Prepared By: Maureen Vincenty
Hazardous Waste Science Officer
Boise Regional Office
Idaho Department of Environmental Quality (DEQ)

Background Information:

Prime Inc. (Prime) is a trucking company based out of Springfield, MO specializing in refrigerated, flatbed, tanker, and intermodal trucks. On September 27, 2015 a semi-truck operated by Prime was driving through Idaho westbound on I-84 headed towards Portland, OR

hauling 72 drums and 2 pails of product paint shipped by PPG Industries (PPG). The truck's load was estimated 40,000 pounds in weight.

While passing through Glenns Ferry, the truck experienced mechanical issues leading to the trailer catching fire at milepost 114 (Site). As a result of the fire, multiple drums of paint ruptured, releasing paint onto the side of the road and the road itself. The Idaho State Police (ISP) arrived at the scene and called the incident into Idaho State Communications. As the emergency phase of the incident ended and the cleanup phase began, Prime hired B&W Wrecker Service (B&W) to handle the cleanup. Prime and B&W failed to perform any hazardous waste characterization of the paint-related waste. The material safety data sheets (MSDSs) of the paint show each of the four paint products had a flashpoint of less than 140 degrees Fahrenheit making the paint a hazardous waste that would exhibit the characteristic of ignitability (EPA waste code D001) once no longer a usable product. Additionally, the MSDS for one of the paints, Universal Urethane Yellow Primer, indicates it contains barium chromate at levels that could potentially cause it to exhibit the characteristic of toxicity for barium (D005) and/or chromium (D007).

On September 28, 2015, B&W transported and disposed of 35,880 pounds of hazardous waste at the Simco Road commercial municipal solid waste landfill operated by Idaho Waste Systems (IWS) as non-regulated/non-hazardous waste.

The State Communications Hazmat Report is included as Attachment 1. The Idaho State Police Incident Report is included as Attachment 2. The Bill of Lading is included as Attachment 3. The Idaho Waste Systems Invoice is included as Attachment 4. The Material Safety Data Sheets are included as Attachment 5. A Photo Log is included as Attachment 6. Hazardous Waste Manifests and Analytical Data are included as Attachment 7.

Purpose:

The purpose of this incident review/records review investigation report was to determine Prime's and B&W's compliance status with the Resource Conservation and Recovery Act (RCRA), the Idaho Hazardous Waste Management Act (HWMA) and the Idaho *Rules and Standards for Hazardous Waste* in regards to the management of paint waste resulting from the truck fire incident which occurred on September 27, 2015.

Incident:

On September 27, 2015 a truck operated by Prime was in route to Portland, Oregon carrying a load of paint products from PPG. While passing though Glenns Ferry, Idaho, the truck experienced mechanical failures resulting in a trailer fire at westbound milepost 114 on I-84. ISP and the Regional Response Team for Region 4 (RRT 4) responded to the scene (see Photos 1 – 16). The incident was reported to Idaho State Communications. The Hazmat Report from State Communications mentioned ISP was working to get a cleanup crew on site. The Idaho Department of Environmental Quality (DEQ) Boise Regional Office (BRO) was notified of the incident after the initial call.

On October 14, 2015 staff from DEQ BRO spoke with ISP to discuss the incident and confirm cleanup of the incident site was complete and no additional threat to human health or the

environment remained. ISP mentioned Prime hired B&W to perform the cleanup activities of all the incident-related waste. ISP expressed their concern over Prime using B&W as the cleanup contractor stating they did not believe a towing company had adequate training to manage the type of waste produced from this truck fire containing drums of paint.

On October 16, 2015 Mark Dietrich (DEQ Technical Services Administrator and I drove to the Site in Glenns Ferry to perform a visual inspection. We observed residual soft, yellow, paint waste remaining along the side of the road (see Photos 17 – 23).

On October 19, 2015 I spoke with Sandy Derrick (Driver) and Rick Lee (Manager) from B&W to ask questions about the cleanup procedures performed at the Site after the accident. B&W operated under the assumption the waste from the incident was not hazardous and did not perform a hazardous waste determination on the waste. When questioned, Rick stated they were not qualified to perform environmental cleanups and did not know how to conduct hazardous waste determinations, but expressed desire to learn how to become certified to expand their business operations for future work.

On October 21, 2015 I spoke with PPG. Following the conversation, PPG provided the MSDSs for the four different types of paint products present on the truck at the time of the accident. All four paint products had a flash point of below 140 degrees Fahrenheit making them characteristic for ignitability and carrying the D001 code once they become a waste. The Universal Urethane Yellow Primer also potentially exhibited the characteristic of toxicity for barium and/or chromium. The product-specific information is summarized in the table below:

Product Name	Product Code	Gallons	Quantity	Units	Weight (lbs)	Flash Point (°F)
Duranar EZ Lemon Yellow	UC56609	10	2	Pails	106	60
FG CLR PC3200 4	B123C24	200	4	55-Gallon Drums	1904	120
Universal Urethane Yellow Primer	UC56609	1600	32	55-Gallon Drums	17683	112
6431D BACKR 4	137D40	1800	46	55-Gallon Drums	19945	84

On October 21, 2015 DEQ staff spoke with Prime's insurance representative, David White (the company is self-insured), and questioned Prime about their hiring of B&W to perform the Site cleanup. Prime stated they were under the impression none of the accident-related waste was hazardous. DEQ staff informed Prime that paint remained at the Site, observed during the October 16, 2015 visit, and this waste needed to be handled appropriately by a contractor knowledgeable of environmental regulations and capable of performing a hazardous waste determination resulting in appropriate disposal. Prime ensured DEQ that an environmental contractor would be hired to handle the remaining waste at the Site.

On October 22, 2015 I went to IWS to ask questions about the waste from the accident. IWS

provided an invoice from the waste brought by B&W showing 35,880 pounds of “liquid” waste was accepted. When I questioned IWS about acceptance criteria, IWS stated B&W said the waste was nonhazardous and IWS did not ask for any MSDSs or analytical data for supporting documentation. The liquid waste was solidified and disposed of in the landfill.

On November 17, 2015 I spoke with Premium Environmental (Premium), hired by Prime to conduct the remaining cleanup of the Site. Premium hired H2O Environmental (H2O) to handle the waste profiling and disposal of remaining waste at the Site. Sampling was conducted on November 18, 2015. Waste characterized as hazardous for chromium by exceeding the RCRA limit of 5 milligrams per liter (mg/L) with a result of 18.5 mg/L. H2O transported the hazardous waste to US Ecology in Grand View, Idaho for disposal on December 29, 2105.

On November 30, 2015 DEQ staff was contacted by Premium to inquire about obtaining an EPA ID number and stated the waste from the incident found at the Site characterized as a hazardous waste for chromium in addition to carrying the D001 for ignitability.

Summary:

During cleanup activities at the Site, approximately 35,880 pounds of excavated paint waste and accident-related debris were transported to IWS by B&W for disposal. IWS is a municipal solid waste landfill. A generator of any solid waste is required to perform a hazardous waste determination on the waste prior to disposal per IDAPA 58.01.05.006 [40 CFR § 262.11]. Prime failed to perform a hazardous waste determination on the accident-related waste sent to IWS. The following apparent violations were determined to have occurred:

Violation No. 1

Legal Provision Violated: IDAPA 58.01.05.006, Idaho Rules and Standards for Hazardous Waste; [40 CFR 262.11]

40 CFR 262.11 states in relevant part:

“A person who generates a solid waste...must determine if that waste is a hazardous waste...”

1. During cleanup activities at the Site, over 35,000 pounds of waste containing paint from the truck trailer was taken to IWS without any waste characterization. Prime failed to perform an adequate hazardous waste determination for the waste disposed of at IWS.

Violation No. 2

Legal Provision Violated: Idaho Code § 39-4408 (1)

Idaho Code § 39-4408(1) states:

“No person shall treat or store hazardous waste, nor shall any person discharge, incinerate, release, spill, place, or dispose any hazardous waste in such a manner that the waste, or any constituent thereof, may enter the environment, unless the department has issued said person a permit or a variance as required for the specific activity involved or exempted the activity from permit requirements.”

2. On September 28, 2015, 35,880 pounds of liquid paint waste was disposed of at IWS from the incident site. No waste profiling was performed on the waste prior to disposal. MSDSs show that all four paint products had a flashpoint of below 140 degrees Fahrenheit and consequently characterize as a hazardous waste for ignitability. Waste profiling of residual paint waste at the Site performed on November 18, 2015 showed paint was characteristic for chromium with results of 18.5mg/L. A generator of hazardous waste who generates more than 2,200 pounds of hazardous waste in a calendar month is regulated as a Large Quantity Generator (LQG). IWS is not permitted to accept LQG hazardous waste.



Maureen Vincenty
Hazardous Waste Science Officer
Boise Regional Office
Idaho Department of Environmental Quality

Date

11/8/16

Idaho State Communications Center

Hazmat

H-2015-00193

Date/Time: 09/27/2015 03:18
 Caller: Trooper Brennan
 Agency: ISP Region 4

Callback #:
 Agency Callback #: (208) 736-3060

Location: Highway I-84 MP: 115 - 115 WB
 County: Elmore County, ID
 Release Date/Time: 09/27/2015 03:18
 Primary Product ID: Paint (No) Additional Chemicals
 Markings/Numbers:
 Placard #: 1263
 UNDOT:
 Amount Released: 37000 pounds
 # of Injuries: 0
 # of Exposures: 0

Situation Status

Threat Level: Severe
 Spiller Name:
 Spiller Address:
 Spiller Phone:

En route:
 On Scene:
 Returning:
 In Service:

Attributes: Container/Vehicle Damage, Release In Progress, Transportation Incident

Site Conditions

Weather Condition: strong wind to the east
 Surface Water & Distance:
 Distance to Dwelling:
 Other Area:
 Emergency Personnel at Scene: ISP, Elmore SO, ITD
 Incident Commander Contact Info: Dep Chuck Pickering; Elmore Dispatch
 Released Into: Pavement

Conference Call

Initial Conference Call: 09/27/2015 03:53
 Classification: Level II
 Classified By: White, Autumn
 Date/Time: 09/27/2015 04:10

Date/Time	Person	Agency	Method	Status
09/27/2015 03:28	Autumn White	Bureau of Homeland Security	Cell Phone	Acknowledged
09/27/2015 03:28	Bobby Dye	DEQ Twin Falls	Cell Phone	Acknowledged
09/27/2015 03:37		Health District Region 4 - Central District Health	Pager Cap Code	Paged
09/27/2015 03:37	Tim Russo-4656	RRT Region 4 Boise	Main Office	Acknowledged
09/27/2015 03:40	Mike Reno	Health District Region 4 - Central District Health		Returned Call
09/27/2015 03:41	Vicky	Elmore SO	Main Office	Acknowledged
09/27/2015 03:46	Brad Richy	BHS Director	Cell Phone	Left Message

Idaho State Communications Center

Hazmat

H-2015-00193

09/27/2015 03:47	Brad Richy	BHS Director	Home Phone	Acknowledged
09/27/2015 03:49	Darrel Riedinger	RRT Region 4 Boise		Returned Call
09/27/2015 03:51	Dan Bryant	ITD District 3		Returned Call

Notifications

Date/Time	Name	Agency	Method	Status	Contacted By
09/27/2015 04:43	Kristen Jacobson- LERA	ISP Region 3	Main Office	Acknowledged	Jones, Kari
09/27/2015 03:53	Dan. Bryant	ITD District 3	Work Phone	Acknowledged	Jones, Kari
09/27/2015 04:45	Matt Carr	EPA Region 10	Main Office	Acknowledged	Jones, Kari
09/27/2015 04:47		Fish and Game	Email	Emailed	Jones, Kari
		Region 3			
09/27/2015 04:48		Department of Agriculture	Email	Emailed	Jones, Kari
09/27/2015 04:48		Water Resources	Email	Emailed	Jones, Kari
09/27/2015 04:48		TSA	Email	Emailed	Jones, Kari
09/27/2015 04:48	Brad Richy	BHS Director	Home Phone	Acknowledged	Jones, Kari

Notes

Date/Time	Note	Created By
09/27/2015 03:29	Trooper Brennan advised limited information of hazmat.	Jones, Kari
09/27/2015 03:30	Initial Conference: Autumn White - BHS Hazmat Bobby Dye - DEQ Twin Falls Kari Jones - State Com	Jones, Kari
09/27/2015 03:30	Kari gave basic information to conference participants, and set up a bridge call for 0353. Autumn requested Richy be notified.	Jones, Kari
09/27/2015 03:40	Full Conference Call: Mike Reno - Health District 4 (HD) Autumn White - BHS Hazmat Bobby Dye - DEQ Darrel Riedinger - Regional Response Team 4 (RRT 4) Derik Janousek - Fire Chief with King Hill Rural Fire- Incident Commander (IC) Dan Bryant - Idaho Transportation Department District 3 Kari Jones - State Com	Jones, Kari
09/27/2015 03:53	Incident Commander advised a semi hauling 72 drums and 2 pails of paint was on fire estimating a total of 40,000 pounds. Several drums, likely plastic, had ruptured releasing paint onto the road. It was contained in the bar ditch on the side of the road and on the road itself. There is a creek nearby, but it's a quarter mile away and uphill from the bar ditch. Both directions of I-84 are currently blocked. He is requesting state assistance.	Jones, Kari
09/27/2015 04:00	RRT 4 advised they are able and willing to help, asked how many of the drums have ruptured. Incident Commander advised probably most of them, several have fallen out the back of the trailer and ruptured, but the rest probably had the tops melted off.	Jones, Kari
09/27/2015 04:03	IC confirmed the tractor was disconnected from the trailer, so there was no other leaks, and no risk of fire spreading at this time. Dan will check into the closest back hoe for RRT 4 to use if needed to get the paint out of the ditch, and he advised once the fumes and smoke went down, the other side of the interstate could be opened back up. RRT also agreed, there shouldn't be any problems with toxicity, so once the visual hazards were gone, it should be safe to open at least half the interstate.	Jones, Kari

Idaho State Communications Center

Hazmat

H-2015-00193

09/27/2015 04:05	IC gave directions to RRT 4 on the best approach to the scene, and that staging is at the paved crossover at the 112. RRT 4 advised they would need some sort of tanker truck to get the paint picked up, and RRT 4 doesn't have one. Dan with ITD 3 advised he didn't have one either. Dan will work on getting one through the truck company. IC confirmed the truck company hadn't been notified yet, but would have dispatch do that. It was confirmed Autumn, Dan, and IC's dispatch would work on contacting the trucking company and arranging which cleanup crew would be called.	Jones, Kari
09/27/2015 04:08	Autumn re-capped including giving RRT 4 permission to respond, and Kari asked for spiller information. IC advised they have it and would call State Com with it after the conference call.	Jones, Kari
09/27/2015 04:10	Autumn classified it as a Level II, Bobby concurred.	Jones, Kari
09/27/2015 04:24	Derik called spiller information - Shipper's name PPG Industries, care of Bushnell's Warehouse, 2720 NW 35th Ave, Portland OR, 97210. 503-227-3519. Don't have insurance yet.	Jones, Kari
09/27/2015 04:34	Derik called with insurance information, trucking information; Truck company- Prime Inc, 2740 N Mayfair, Springfield Missouri, 65803. Truck #95AN7R, Insurance Company - RLI Insurance, Policy #LET0010124.	Jones, Kari
09/27/2015 05:37	Dan Bryant called to confirm someone had called in with the insurance information, advised him yes.	Jones, Kari
09/27/2015 06:17	Region Response Team 4 requesting a follow up conference call with the Incident Commander, ISP, RRT 4, BHS and DEQ. Call set for 0625	Armbruster, Shandy
09/27/2015 06:25	Follow Up Conference Call:	Armbruster, Shandy

Autumn White- BHS Hazmat Duty Officer
 Bobby Dye- DEQ Twin Falls
 Darrel Reidigner- Region Response Team 4
 Collin Bonner- Idaho State Police
 Derik Janousek- King Hill Rura Fire Dept/ IC

Darrel Reidigner advising RRT 4 is on scene and there is no active leak. What was not burned was contained to the barrow pit and there is no water nearby. ISP is working to get a clean up crew on site.

At 0630, Autumn White advising incident will remain at a Level II and Bobby Dye agrees.

Communications Specialists

Type	Name
Primary	Jones, Kari
Supporting	Denney, Kris

DRIVER/VEHICLE EXAMINATION REPORT

Aspen 3.0.0.17

IDAHO STATE POLICE/MCSAP
COMMERCIAL VEHICLE SAFETY
700 S STRATFORD RD
MERIDIAN, ID 83642-6202
Phone: (208)884-7220 Fax: (208)884-7192

Report Number: ID3700006692
Inspection Date: 09/27/2015
Start: 04:59 AM MT End: 8:27:30 AM MT
Inspection Level: II - Walk-Around
HM Inspection Type: Non-Bulk

NEW PRIME INC
PO BOX 4208
SPRINGFIELD, MO 65808
USDOT#: 00003706
MC/MX#: 140665
State#:

Phone#: (417)866-0001
Fax#:

Location: GLENN'S FERRY, ID
Highway: I-84
County: ELMORE, ID

MilePost: 114

Origin: SPRINGDALE, PA

Destination: PORTLAND, OR

Driver: DRAKE, STEVEN D

License#: [REDACTED]

State: AL

Date of Birth: [REDACTED]

CoDriver: DUCK, ANGELA J

License#: [REDACTED]

State: AL

Date of Birth: [REDACTED]

Shipper: PPG INDUSTRIES

Bill of Lading: 0811B65356

Cargo: PAINT

VEHICLE IDENTIFICATION

Unit	Type	Make	Year	State	Plate #	Equipment ID	VIN	GVWR	CVSA #	CVSA Issued #	OOS Sticker
1	TT	FRHT	2015	MO	95AN7R	651146	3AKJGLD58FSFN3414	52,000			
2	ST	WANC	2014	MO	26A172		1JJV532B4EL788978	65,000			

BRAKE ADJUSTMENTS: No Brake Measurements Required For Level 2

VIOLATIONS

Vio Code	Section	Unit	OOS	Citation #	Verify	Crash	Violations Discovered
396.3A1	396.3(a)(1)	2	Y		U	N	Inspection, repair and maintenance of parts & accessories: HUB/BRAKE ASSEMBLY CAUGHT FIRE WITH HAZMAT LOAD CAUSING HM RESPONSE

HazMat: 3 Flammable

Placard: Yes

Cargo Tank:

Special Checks: No Data for Special Checks.

Pursuant to the authority contained in I.C. 67 2901A (IDAPA 11.13.01.016 and 11.13.01.019), I hereby declare vehicle(s) followed by a "Y" in the out of service column of this report "OUT OF SERVICE." No person shall remove the Out of Service Stickers applied to this/these vehicle(s), or operate such vehicle(s), until the out of service defects have been repaired and the vehicle(s) have been restored to safe operating conditions.

NON-REGULATED/EXEMPT INTRASTATE MOTOR CARRIERS:

Pursuant to authority contained in Idaho Code 49-235, this vehicle or combination of vehicles has been found to be in an unsafe condition. I hereby declare vehicle(s) with defects followed by a "Y" in the Out of Service (OOS) column of this report to be parked for repairs. No person shall operate any vehicle after receiving this notice until the vehicle and its equipment has been placed in proper repair or adjustment and otherwise made to conform to Idaho Code Title 49.

I certify that the violations listed in the "OUT OF SERVICE" section of this report have been satisfactorily completed as of the date indicated. Failure to return this report with the required certification can result in penalties up to \$1,000 per day for each day the violation continues, up to a total of \$10,000.

Signature Of Repairer X: _____ Facility: _____ Date: _____

CARRIER CERTIFICATION: The undersigned certifies that all violations on this report have been corrected and action taken to ensure compliance with the Idaho Code, Motor Carrier Safety and HM Regulations, insofar as they are applicable to motor carriers and drivers. This certification MUST BE SIGNED by the Motor Carrier and RETURNED WITHIN 15 DAYS. Failure to make all repairs listed on this notice may subject the driver to disqualification and/or fines up to \$2,500.00. Employers may also be subject to fines up to \$10,000.00.

Signature Of Motor Carrier X: _____ Title: _____ Date: _____

Report Prepared By:
COLIN BONNER

Badge #:
2654

Copy Received By:
STEVEN DRAKE

Page 1 of 1



00003706 ID ID3700006692

(Printed Name) 000037

**SHIPPER PROVIDED SHORT FORM BILL OF LADING &
INTERMODAL CERTIFICATION**
Not negotiable - Domestic

FROM:



PPG INDUSTRIES, INC.
PPG COATINGS

All parties hereto and their assigns are familiar with, and agree, that this bill of lading is subject to: (1) the contract terms and conditions of the Uniform Domestic Bill of Lading as set forth in the National Motor Freight Classification, and (2) the applicable tariff (and tariffs and classifications in effect as of the date hereon).

CONTAINER PACKING CERTIFICATE DECLARATION: It is declared that the packaging of goods into the container/vehicle has been carried out in accordance with the applicable provisions of 49CFR and the IMDG Code.

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding:

SHIPPER'S B/L NO. 0811B65356

AT LOAD ID NO. CAP00709220
LOC, 0811 SPRINGDALE, PA 15144 09-24 15

PHONE 724-274-7900

SHIPMENT REFERENCE NO. 04826 PAGE 01 OF 01

CUSTOMER ORDER NO. AND RELEASE NO ** SEE BELOW **

CONSIGNEE TO:

PPG INDUSTRIES LOC1301-CORX

C/O BUSIDELL'S WAREHOUSE
2720 NW 35TH AVENUE
PORTLAND
OREGON 97210-0000
(503) 227-3519

Dun Number: 001344803

DELIVERY DATE: 00-00-00

FREIGHT PREPAID
IF PREPAID, MAIL FREIGHT BILL AND COPY 2 OF BILL-OF-LADING TO:

PPG Industries Inc.-Descartes Support
One PPG Place - 35th Floor Logistics
PITTSBURGH, PA 15272

Charge to:

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

PPG INDUSTRIES, INC.
PPG COATINGS

(Signature of consignor)

CARRIER: PRIME, INC.

CAR/VEHICLE INTRL NO. 143320

Seal # 4124168

ORDER/INVOICE NUMBERS: 30972-01-06-01/98124 36752-01-03-01/94609 36754-01-01-01/94612

QUANTITY
BULK TOTE DRUM PAIL BOX

**** GROUND SHIPMENT ****
DESCRIPTION OF ARTICLES

weight in LBS (Sub. to Corr.)
PLACARD NON
MATERIAL PLACARD

32 HQ UN1263 PAINT 3 POIIX
(HQ: strontium chromate)

17,683

36 UN1263 PAINT 3 POIIX

19,945

2 UN1263 PAINT 3 POIIX

106

4 PAINT 2 NOT REGULATED

1,904

TOTAL PIECES: 74

NUMBER OF PALLETS: 19 WEIGHT: 1105 LBS

TOTAL WEIGHT OF SHIPMENT: 40,743 LBS

WEIGHT BY COLUMN: 37,734 1,904

MULTIPLE PO NUMBERS: STEELSCAPE STOCK SABA STOCK

Receiving Location

Receiving Hours : 8AM-1PM

SPECIAL INSTRUCTIONS:

72 DRUMS ON 18 PALLETS & 2 PAILS ON A PALLET
TIME-CRITICAL SHIPMENT! CARRIER MUST CALL 24 HOURS
IN ADVANCE FOR DELIVERY APPT IF MORE THAN 5 PALLET
503-227-3519.
IF REQUIRED, DELIVERY APPT MUST BE MADE FOR DAY OF
EXPECTED ARRIVAL OR NEXT DATE AT THE LATEST.

OFFER 4 Flammable Liquid - Class 3 PLACARDS

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

PPG INDUSTRIES, INC.

PPG COATINGS Shipper, *pharon Doherty*

Permanent post-office address of shipper, 125 COLFAX ST.

FOR HELP IN EMERGENCIES INVOLVING SPILL, FIRE, LEAK, EXPOSURE

CALL CHEMTREC

Call Toll Free 1-800-424-9300 or Call Collect 1-703-527-3887

DRIVER'S SIGNATURE INDICATES APPLICABLE D.O.T. PLACARDS WERE OFFERED. EMERGENCY RESPONSE INFORMATION IS IN THE VEHICLE AND IMMEDIATELY ACCESSIBLE. AND PACKAGES ARE BLOCKED AND BRACED IN ACCORDANCE WITH 49 CFR SECTION 177.334

RECEIVED IN APPARENT GOOD ORDER-EXCEPTIONS NOTED

Carrier,

, SPRINGDALE

, PA 15144

Net180L ver 3.0

PrimeLance 000036

IDAHO WASTE SYSTEMS
PO BOX 1386
MOUNTAIN HOME, ID 83647

000000 cash

02	168067					Debi
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF	
09/28/15	09/28/15	12:55	13:04			
REFERENCE			ORIGIN			
B&W						

Manual Gross Wt.	76800	LB	Inbound - Cash ticket
Scale 1 Tare Wt.	40920	LB	
Net Weight	35880	LB	

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
17.94	TON	liquids	45.00	807.30	0.00	807.30
<div style="position: relative; height: 100px;"> 343-2541 fick </div>						

This is to certify that this load
does not contain any hazardous material.
Load screened at site 2 by; (when applicable)
208-796-2727 Office number

343-
6247

SIGNATURE

NET AMOUNT
807.30
TENDERED
807.30
CHANGE
0.00
CHECK NO.

Law Enforcement Sensitive
 Do Not Release
 EPA-CID Loan - Return Upon Completion

Printed 000039

SAFETY DATA SHEET



Date of issue/Date of revision 7 July 2015
Version 3

Section 1. Identification

Product name : Ä!" #" ! \$%&\$'(#) \$&&(*
Product code : 7899;,
Other means of identification : #+, -,- /01023
Product type : &/45/63

Relevant identified uses of the substance or mixture and uses advised against

Product use : >65@A/-0SS0C-./+?@3
Use of the substance/
mixture : 7+-, /?DB <-/?,@3-/?/?DMA206 R-, 2A/-@
Uses advised against : #+, -SS0C-1023

Supplier : <=< >65@A/2@BC3
(?2 <=< <0-C2
</,@15ADEB F8GHG
Emergency telephone : IJFGKJLJM8F8I 3 N3K
number : I8FJK9J8MFLG17-3-6-K
:FMO::M::MGFMJ:I'2P/C+K
Technical Phone Number : IHGJKGHJMH;::IN<I!>#=# Ä" &\$B<" K OQ -3R3MBQ S3R3\$NT

Section 2. Hazards identification

OSHA/HCS status : TE/@R-, 2A/-0@C+?@/62A26` -A6+5@X,E2(Na" a` -A6 7+R R5?/C-./+? N,-?6- A6
IG; 7UI F.F:3 FG::K3
Classification of the : U&" "" V&\$ &W>ÄN M7-, 2D+AXG
substance or mixture " 7 T \$ T(Y7>T) I+A-0M7-, 2D+AXG
NZ# 7(!(N< # [> T" T< # M7-, 2D+AXG
N\$!>(N \$) \$ Ä" "" = \$[\$) \$ >!> T" T< # M7-, 2D+AXG"
7" !7> #(= \$#>7>T) M7-, 2D+AXG
T(Y7 T(!\$ <!(Ä 7T< # I ?1+A? CE/06M7-, 2D+AXG
N<\$7>U7 T" != \$ T(!= " # T(Y7>T) !!\$ <\$" T\$Ä \$Y<(N!\$ KM7-, 2D+AXG
<2AC2?D2 +\ ,E2 R/P5A2C+?@/?D+ \ /?DA26/2,I@K\ 5?] ?+^ ? ,+P/CXQGH3_

GHS label elements

Section 2. Hazards identification

Hazard pictograms



Signal word

: **Danger**

Hazard statements

: Highly flammable liquid and vapor.
 Harmful if swallowed.
 Causes serious eye irritation.
 Causes skin irritation.
 Suspected of damaging the unborn child.
 Suspected of causing cancer.
 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response

: Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage

: Store locked up. Store in a well-ventilated place. Keep cool.

Disposal

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

: Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. Avoid contact with skin and clothing. Wash thoroughly after handling. Emits toxic fumes when heated.

Hazards not otherwise classified

: Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture

: Mixture

Product name

: DURANAR EZ LEMON YELLOW

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
E2?2BF?M605+A+BR+S+R 2A -, /R+?X?/C]20,/, -?/5 R +P/62X200^ ,+0522 GMB,E+PXFMRX02EX0-C2,-, 2 GM15,PX,E-?+0 PX02?2 6/R2,EX0SEE-0-, 2 2,EX012? 2?2	bF: McG8 bF: McG8 bFL McG: bF: McG8 bOMc; b93OMcO& b8 McF: bF3GMcF3H	GJ:LHMH;M; O::HMFOM; F:OMOOML F:OM98M9 FFFMH9MG FLL:MG:MH FLFMFFML F::MJFMJ

N V C+62@2SA2@ @51@C2@^ /E+5, A2D/@A267" N #5R 12A@3

" ?XC+?C2?A- /+? @E+^?-@- A-?D2/@+ SA+2C,G+?V62?,- 0,X+A/@52 ,+ 1-, CE.-A- /,+?3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

\ /?D2@+?BAA,, /+?B?X ,XS2 +\ +.2A2PS+@5A2@RS,+R @+ \ +.2A2PS+@5A2C5A5A/?D+AS2A@/@\ ,2A5@2+\
 ,E/@A+65BC+?;C, - <(\N(# 7(#T!(&7\$ #T\$! B\$'\$!= \$ #7) ! ((' (! <a) N>?>" # /RR 26/-, 20XDE-. 2
 N-\ 2,XÄ-, - NE22, /?+AR, /+? -. -/0-1023#2.2A D/.2 - ?XE/?D1XR+5,E,+ -? 5?C+?@C/+5@C+?.50@DS2A@+?:

Description of necessary first aid measures

- Eye contact** : IR +.2 C+?;C, 027@2BAAD2,C+S/5@0X/E C02-B1A2@E- ,2AE+6/?D,E2 2X206@
-S-A, \+A-, 02-@F: R/?5,2@?6 @22]RR 26/-, 2 R26/C-0-6./C23
- Inhalation** : !2R +.2 ,+ \A2@EA3Z22S S2A@+?AR -?6 -, A2@? +?, 1A2, E/?DB\ 1A2-E/?D/@
/AA2D50+AA\ A2@A+AXAA2@C5A@BA./62 -A,/VC/-0A2@S/A+? +A+PX02?1X,A-/26
S2A@+??203
- Skin contact** : !2R +.2 C+?;R /?-, 26 C0-E/?D-?6 @E+2@3-@E@J?, E+A+5EX^ /E @+ -S-?6 ^-, 2A
+A5@2A2GD?/?26 @J? C02-?@2A3+ #(T 5@2@+0.27@+A,E/?2A@
- Ingestion** : \ @^ -0+^26B@22]R 26/C-0-6./C2/RR 26/-, 20X?6 @E+^,E/@C+?;/?2A+A0-120Z22S
S2A@+?AR -?6 -, A2@A+ #(T /?65C2.+R //?D3

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : 7-5@2@A/+5@X /AA,, /+?3
- Inhalation** : #+] ?+^ ? @/D7C-?, 2\2C@+ACA/C-0E-` -A6@3
- Skin contact** : 7-5@2@A/? /AA,, /+?3 Ä2\-, /?D,+ ,E2 @J?3
- Ingestion** : a-AR \50\ @^ -0+^263

Over-exposure signs/symptoms

- Eye contact** : " 6. 2A@DRS,+R @R-X /?C0562E2\+00+/?DQ
S-/? +A/AA,, /+?
^-, 2A/?D
A26?2@@

Section 4. First aid measures

- Inhalation** : " 6. 2A@2RS,+R@R-X /?C0562E2\+00+/?DQ
A265C262,-0^2/DE
/?CA2-@2\2,-062-, E@
@P02, 0R-0+AR, /+?@
- Skin contact** : " 6. 2A@2RS,+R@R-X /?C0562E2\+00+/?DQ
/AA,,/+?
A26?2@@
6AX2@@
CAC] /?D
A265C262,-0^2/DE
/?CA2-@2\2,-062-, E@
@P02, 0R-0+AR, /+?@
- Ingestion** : " 6. 2A@2RS,+R@R-X /?C0562E2\+00+/?DQ
A265C262,-0^2/DE
/?CA2-@2\2,-062-, E@
@P02, 0R-0+AR, /+?@

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : TA2-, @RS,+R-, /C-00B 7+?, -C, S+/@+?A2-R2?, @S2C/@/RR26/-,20X\ 0-AD2
45-?, /,/2@E-. 2 122? /?D2@26 +A?E-0263
- Specific treatments** : #+ @S2CC,A2-R2?,3
- Protection of first-aiders** : #+ -C,/+? @E-002 , -] 2? /? +0/?D-?X S2A@+?A/@+?A',E+5, @5,102 ,A-/?D3> R-X
12 6-?D2A+5@+ ,E2 S2A@+SA+ /6?D-/6, + D/.2 R+5,EM,MR-5,E A2@5@Q+?3

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : @26AXCE2R/C-00CO2, ^ -, 2A@SA-X+DK+A\+R 3
- Unsuitable extinguishing media** : Ä+ ?+, 5@2', 2Ae23

Specific hazards arising from the chemical

- : a/DEX\0-RR-102045/6 - ?6 .- S+A3? - VA2+A\ E2-,26B- SA2@2/?CA2-@2\00-CC5A
-?6 ,E2 C+?;/?2AR-X 15A@B/, E,E2 A/@+ - @51@24522PS0+@/+?3? +\ ,+ @2^2A
R-X CA2-2 VA2+A2PS0+@/E2`-A63

Hazardous thermal decomposition products

- : Ä2C+RS+@/h? SA+65@R-X /?C0562E2\+00+/?DR-, 2A/-@Q
C-A1+?6/+P/62
C-A1+?R+?+P/62
E-0+D2?-,26 C+RS+5?6@

Special protective actions for fire-fighters

- : <A+RS,0X@+02 ,E2 @2?2 1XA2R+./?D-00S2A@+?A+R,E2 ./C/?X+\ ,E2/?C/2?, \,
E2A2/@ VA23#++ -C,/+? @E-002 , -] 2? /? +0/?D-?X S2A@+?A/@+?A',E+5, @5,102
,A-/?D3'+. 2 C+?;/?2A@A+RVA2-A2- \,E/@C-? 12 6+?2 ^/,E+5, A/@ @2^-, 2A
@SA-X] 22S VA2M2P+@2C+?;/?2A@+03

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters : UA2MDE2A@@E+5062-A-SSA+SA/2, SA+2C/. 2 245/SR2?, -? 6 @2M6?, -/?26 1A2-E/?D -SS-A-, 5@N7V" K^ /,E- \500-C2N5/2C2+S2A-26 /? S+@/,2 SA2@5A2R+623

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : #+ -C,/ +? @E-002, -] 2? /?+0/?D-?X S2A@+?A^ /,E+5, @5,102 ,A-/?D3 \$.- C5-,2 @5A5?6/?D-A2-@3Z22S5??2C2@-@X-?6 5?SA+2C26 S2A@?20A+R 2?,2A/?D3+ ?+, ,+5CE+A^ -0] ,EA+5DE@S026R-, 2A/-0 NE5, +\ -00D?//+? @+5AC2@3 #+ \0-A2@BR]/?D+A\0-R2@? E-` -A6-A2-3 " .+ /6 1A2-E/?D.- S+A+AR/@3 <A+./62 -6245- ,2 .2? ,/0, /+?3 * 2-A-SSA+SA/2, A2@S/A^ E2? . 2? ,/0, /+? /@?-6245-, 23 <5, +? -SSA+SA/2 S2A@+?SA+2C/. 2 245/SR2?,3

For emergency responders : \ @S2C/-0/@26-E/?D/@A245/A26+ 62-0^ /,E, E2 @S/002B-] 2 ?+,2 +\ -?X /?+AR, /+? /? N2C/+? O+? @5,102-?6 5?@5,102R-, 2A/-0N22 -0@+E2/?\+AR, /+? /? fU+A+?+M 2R2AD2?C52A@+??20f

Environmental precautions : " .+ /6 6/@S2A@- \ @S026R-, 2A/-0?6 A5?+ -?6 C+?;C, ^ /,E @+ /0B, 2A^X@BA-/?@ -?6 @2?2A@S\+AR, E2 A202-?, -5, E+A/2@ \, E2 SA+65CE-@C5@262?./A+?R2?,-0 S+@/ +? I@^ 2A@B, 2A^X@B/0+A-AK3

Methods and materials for containment and cleaning up

Small spill : N,+S2-J \ ^ /,E+5, A/@+2 C+?;/?2A@A+R@S/002-3 @2 @S-A]MSA+??+0@?6 2PS0+@/+?MSA45/SR2?,3 \ /6,2 ^ /,E^ -, 2A-?6 R+S5S\ ^ -, 2AM@5023" 02A?-/ .20XB +A\ ^-, 2AM/?@+0510@+A1 /,E-? /?2A,6AXR-, 2A/-0?6 S0C2 /? -? -SSA+SA2, ^ -@2 6/@S+@00?;/? 2A \ /@S+@02 /- - 002?@26-@,2 6/@S+@00? ,A-C+A3

Large spill : N,+S2-J \ ^ /,E+5, A/@+2 C+?;/?2A@A+R@S/002-3 @2 @S-A]MSA+??+0@?6 2PS0+@/+?MSA45/SR2?,3 " SSA+CA202@2A+R5S^ /?63 <A2.2?, 2?,AX?+, @2?2A@I ^ -, 2AC+5A2@B @2R2?, @+AC+?V?26 -A2-@3* -@E@S/002@?+, -? 2\052?,,A2-R2?, S0-?, +ASA+C226@+00^ @3+?,-/? -?6 C+02C@S/002 ^ /,E ?+?M6R15@,10B -1@+A12?R-, 2A/-02D3@-?6B-A,EB2 ARC502 +A6/-, +R-C2+5@2-A,E-?6 S0-C2? C+?;/?2A\+A6/@S+@-0C+A6/?D+ 0-C-0A2D50+?@?2 N2C/+? FLK3\ /@S+@02 /- - 002?@26-@,2 6/@S+@00?A-C+A37+?,-R /?-, 26 -1@+A12?R-, 2A/-0R-X S+@2E2 @-R2 E-` -A6-@,E2 @S/002SA+65C3, #+, 2Q@2N2C/+? F \+A2R2AD2?C5+?;C, /?+AR, /+? -?6 N2C/+? FL \+A^ -@,2 6/@S+@-03

Section 7. Handling and storage

Precautions for safe handling

Protective measures : <5, +? -SSA+SA2,S2A@-0 SA+2C/. 2 245/SR2?, I@2N2C/+? OK3" .+ /6 2PS+@5A2 +1,-/? @S2C/-0@A5Q+?@12\+A25@3 " .+ /6 2PS+@5A5A?D SA2D? -?CX \A+ ?+, E-?602 5?,/0-00@-2,XSA2C-5,+?@E-2 122? A2-6-? 6 5?62A@+63 \A+ ?+, D2 /? 2X2@ +A+? @J? +AC0-E/?D3 \A+ ?+, 1A2-E2.-S+ A+AR/@3 \A+ ?+, /?D2@3 @2 +?X^ /,E -6245- ,2 .2? ,/0, /+?3 * 2-A-SSA+SA/2, A2@S/A^ E2? . 2? ,/0, /+? /@?-6245-, 23 \A+ ?+, 2?,2A@+A-D2-A2-@-?6 C+?X?26 @S-C2@02@-0245-, 20X.2?, /0-263 Z22S /? ,E2 +A/D/0 C+?;/? 2A+A-? -SSA+.26 -0,2A?- / .2 R-62 \+R - C+RS-, /102R-, 2A/-0] 2S, /DEXC0+@2E2? ?+, /? 5@23N,+A2-?6 5@2^ -X \+A+RE2-, B@S-A@BS2? \0-R2 +A -?X +,E2AD?//+? @+5AC2@2 2PS0+@/MSA+202CA/C-0.2?, /0-/?D0DE/?D-?6 R-, 2A/-0E-?60?DK245/SR2?,3 @2 +?0X?+?M@S-AD,++@03T-] 2 SA2C-5,+?-AX

Section 7. Handling and storage

Advice on general occupational hygiene

R2-@5A2@-/?@,202CA+@,/C6/@E-AD2@SRSXC+?;/?2A@A2;/? SA+65CA2@/652
-?6 C-? 12 E-` -A6+5@A+ ?+, A25@2+?,-/? 2A3
: \$-,/?DBA/?]?D- ?6 @R]/?D@E+5012 SA+@//,26 /? -A2-@^ E2A2E/@R-, 2A/-0@
E-?6Q26B@+A26-?6 SA+C2@2@ * +A2A@E+506^ -@EE-?6@?6 \-C2 12\A 2-,/?DB
6A/?]?D-? 6 @R]/?D3!2R +.2 C+?;R /?-, 26 C0E/?D-?6 SA+2C/. 2 245/SR2?, 12\A2
2?,2A/?D-,/?D-A2-@3N22 -0@N2C/+? O\A-66/, /+?-0/?\AR, /+? +? EXD/2?2
R2-@5A2@3

Conditions for safe storage, including any incompatibilities

: N,+A2/? - CGA6-?C2^/,E 0+C-AD50/+?@3N,+A2/? - @2DA2,26 -? 6 -SSA+26 -A2-3
N,+A2/? +A/D/?0C+?;/? 2ASA+2C26 \A+R6/A2C@5?0/D@, - 6A3C++0?6 ^ 20M.2?/0-26
-A2-B-^ -X \A+R/?C+RS-,/1Q R-, 2A/-@ @2N2C/+? F:K-?6 \++6 -?6 6A? 3 N,+A2
0+C26 5S3\$0R/?-, 2 -00D?//+? @+5AC2@2S-A-,2 \A+R+P/6/?DR-, 2A/-@322S
C+?;/?2A,/DE,0XC0+@2@6 @2-025?/0A2-6X\A5@23? +?,-/?2A@E-, E-.2 122?
+S2?26 R5@,12 C-A\500A2@2-0266 j2S, 5SA/DE,+ SA2.2, 02-J-D23 A+ ?+, @+A2/?
5?0-1206 C+?;/?2A@3@2 -SSA+SA/2 C+?;/?R 2?, ,+ -. +/6 2?./A+?R2?, -0
C+?;R /?-, /+?3

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<p>\$,E2?2BFBFM605+A+MBR+S+OR 2A</p> <p>-, /R+?X?/C]20/, -?/5 R +P/62X200^</p> <p>,+0522</p> <p>GM2,E+PXFME,REX02EX0-C2,-, 2</p> <p>GM15,PX,E-?+0</p> <p>PX02?2</p>	<p>OSHA PEL (United States). T* " QF8 RD[Rg T* " Q8 RD[RgU+ARQ2@S/A-102 T* " QF8 RD[RgU+ARQT+,-0 65@,</p> <p>ACGIH TLV (United States). T* " Q L RD[RgU+ARQ2@S/A-102 T* " QF: RD[RgU+ARQT+,-0 65@,</p> <p>OSHA PEL (United States). T* " Q38 RD[RgB-@N1K T* " Q38 RD[RgB-@N1KU+ARQT+,-0 65@,</p> <p>ACGIH TLV (United States). T* " Q3GRD[RgU+ARQT+,-0 65@,</p> <p>OSHA PEL (United States, 2/2013). T* " QF RD[RgB-@#/KOE+5A@3</p> <p>OSHA PEL Z2 (United States, 2/2013). " < Q8: : SSRF: R/?5,2@3 7\$ &Q:: SSR T* " QG:: SSR OE+5A@3</p> <p>ACGIH TLV (United States, 4/2014). T* " QG: SSR OE+5A@3</p> <p>IPEL (PPG, 4/2009). T* " Q8: SSR</p> <p>ACGIH TLV (United States, 4/2014). T* " QG: SSR OE+5A@3</p> <p>OSHA PEL (United States, 2/2013). Absorbed through skin. T* " QGJ: RD[RgOE+5A@3 T* " Q8: SSR OE+5A@3 ACGIH TLV (United States, 4/2014).</p>

Section 8. Exposure controls/personal protection

6/R2,EX0SEE-0-,2

2,EX012?2?2

NT\$&Q8F RDJRgF8 R/?5,2@3
 NT\$&Q8: SSR F8 R/?5,2@3
 T* " QJLJ RDJRgOE+5A@3
 T* " QF:: SSR OE+5A@3
OSHA PEL (United States, 2/2013).
 T* " QJL8 RDJRgOE+5A@3
 T* " QF:: SSR OE+5A@3
ACGIH TLV (United States, 4/2014).
 T* " Q8 RDJRgOE+5A@3
OSHA PEL (United States, 2/2013).
 T* " Q8 RDJRgOE+5A@3
ACGIH TLV (United States, 4/2014).
 T* " QG: SSR OE+5A@3
OSHA PEL (United States, 2/2013).
 T* " QJL8 RDJRgOE+5A@3
 T* " QF:: SSR OE+5A@3

Key to abbreviations

"	= " CC2S,102 'P/R5R <2-]	N	= <+2?,-0 @/?-1 @+A8?
" 7= a	h " R2AC-? 7 +? \2A2C2+ \ = +.2A?R2?, -0 265@A/-0aXD2?/@@3	N!	h !2@SA-+AX@2?@/-, /+?
7	= 72/0?D&R/,	NN	= NJ/? @2?@/-, /+?
U	= U5R2	NT\$&	= NE+A,2AR\$PS+@520R/, .-052@
>\$&	h 2,2A?0<2AR@/@1\$FS+@52&R/,	TÄ	= T+,-065@,
(Na"	= (CC5S-/+?-0N\ 2,X-?6 a2-0,E" 6R/?/@A-/+?3	T&i	h TEA2@# &R/, i -052
!	h !2@SA-102	T* "	= T/R2 * 2/DE,26 " .2A-D2
%	h (Na" G;7 U! F;F:3FG:: N51S-A,%MT+FC-? 6 a-` -A6+5@N51@/?C2@		

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : 2 ,E/@SA+65CC+?,-/?@/?DA26/2,@/ ,E 2PS+@5A2R,@B2A@+0B* +AJS0-C2
 -, R+@SE2A2A1/+0D/C-OR+?/,+A/?DR-X 12 A245/A26+ 62,2AR?2 ,E2 2\2C/.2?2 @@
 ,E2 .2 ?,/0, /+? +A+,E2AC+?A+R2-@5A2@6[+A,E2 ?2C2@X, +5@2A2@S/AAX
 SA+2C/.2 245/SR2?,3 !2\ 2A2?C2@E+5062 R-62 ,+ -SSA+SA-2 R+?/,+A?D@-?6-A6@3
 !2\ 2A2?C2+ ?-, /+?-0 D56-? C26+C5R2?,@+AR 2,E+6@+A,E2 62,2AR?-, /+? +\
 E-` -A6+5@51@C2@/00-0@+12 A245/A263

Appropriate engineering controls : @2+?0X /E-62 45-, 2 . 2?/,0, /+?3 @2 SA+2@?C0+@50B+C-2PE-5@,2?, /0, /+? +A
 +,E2A2?D?22A/?DC+?A+0@] 22S^ +A2A2PS+@5A+ -/A1+A?2C+?;R /?-?, @120^ -?X
 A2C+R2?626 +A@, 5,+AXOR/,@3TE2 2?D?22A/?DC+?A+0@+?226 ,+] 22S D-@B
 .-S+ A+A65@G+?C2?A-/+?@120^ -?X 0+^2A2PS0+@/OR/,@3@2 2PS0+@/MSA++\
 .2?, /0-/+? 245/SR2?,3

Environmental exposure controls : \$R/@@/+1@R.2?, /0-/+? +A^ +A] SA+C2@245/SR2?, @E+5062 CE2C26 ,+ 2?@5A2
 ,E2XC+RS0X /E ,E2 A245/A2R?,@+ \ 2?./ A+?R2?, -0 SA+2C/+? 02D@0/+?3 2? @+R
 C-@2@5R2 @5112A@B2A@A2?D/?2A/?DR+6/VC-/+?@+ ,E2 SA+C2@245/SR2?,
 ^ /012 ?2C2@X, + A265C2R/@@/+?@CC2S,102 0220@3

Individual protection measures

Hygiene measures : * -@EE-?6@B+A2-AR@?6 \-C2 ,E+A+5DE0X2AE-?60?DCE2RC-0SA+65@B2\+A2
 2-, /?DB@R]/?D-? 6 5@/?DE2 0-, +AX?6 -, ,E2 2?6 +\ ,E2 ^+ A]/?DS2A/+63
 " SSA+SA2,,2CE?/452@E+5062 5@26+ A2R+ 2 S+2?, /-0XC+?;R /?- ,26 C0-E/?D3
 * -@EC+?;R /?- ,26 C0-E/?D12\+A2 A25@/?D3?@5A2-, 2X2^ -@E@, /+?@?6 @-2,X
 @E+^2A2 C0+@2 ,E2 ^+ A]@, /+? 0C- /+?3

Eye/face protection : 7E2R /C-0@S0-@E-DD2@3

Skin protection

Section 8. Exposure controls/personal protection

Hand protection	: 7E2R/C-0MA2@/0/RS2A./5@D0+2@C+RS0X?D^/E-? -SSA+26 @,?6-A6 @E+5062 ^+A?-, -00/R2@?E2? E-?60?DCE2RC-0SA+650@/- A/@/@@2?, /?6/C-,2@E/@@ ?2C2@/03 7+?@/62A/?E2 S-A-R2,2A@S2C/26 1X,E2 D0.2 R-?5\ -C,5A2A@E2C] 65A/?D@2E-, ,E2 D0+2@-A2 @/0A2;//?D,E2/ASA+2C/. 2 SA+S2A@3; @E+5062 ?+,26 ,E-, ,E2,/R2 ,+ 1A2-],EA+5DE+A-?X D0+2 R-, 2A/-R-X 12 6\2A2?,\+A6\2A2?, D0+2 R-?5\ -C,5A2A@? ,E2 C-@2+ R/P5A2@B?@/0D+ \ @.2A-0@51@C2@E2 SA+2C/+? ,/R2 +\ ,E2 D0+.2@C-??+, 12 -CC5A-20X2@R-, 263
Gloves	: U+ASA+0+?D26AA2S2-26 E-?60?D5@2E2\+00^/?D,XS2 +\ D0+.2@Q !2C+R R2?626Q15,X0A5112A
Body protection	: <2A@+?SA+2C/. 2 245/SR2?, \+A,E2 1+6X@E+5062 @2C26 1-@26+? ,E2,-@] 12/?D S2A+AR26 -?6 ,E2A/@/?+.026 -?6 @E+5062 -SSA+26 1X- @S2C/0/12\+A2 E-?60?D,E/@SA+65C,* E2?,E2A2@ A/@\ /D?//+? \+R@, /C202C/CX^ 2-A-?, /M @, /CSA+2C/. 2 C0+E/7D3U+A,E2 DA2-2@SA+2C/+? \+R @, /C6/@E-AD2@B+E?D @E+5062C0562?, /M@/C+.2A-0@B+, @?6 D0.2 @3
Other skin protection	: " SSA+SA2,\+ ,^ 2-A-?6 -?X -66/ ,/+?-0@] ?SA+2C/+? R2-@5A2@E+5062 @2C26 1-@26+? ,E2,-@] 12/?DS2A+AR26 -?6 ,E2A/@/?+.026 -?6 @E+5062 -SSA+26 1X- @S2C/0/0/12\+A2E-?60?D,E/@SA+65C,
Respiratory protection	: !2@S/A+A@202G? R5@.12 1-@26+?] ?+^ ? +A-?, /C/S-,26 2PS+@5A2.20@B2 E-^ -A6@-\ ,E2 SA+65C,?6 ,E2 @-2 ^+A]/?D0R/,@+ ,E2 @2026 A2@S/A,3\ ^ +A2A@ -A2 2PS+@26+ C+?Q?,A-/+?@1+. 2 ,E2 2PS+@5A2R,B,E2XR5@5@2SSA+SA/2B C2A/26 A2@S/A,3@2 - SA+S2A0X26B-/AS5A/X?D+A-/AM26 A2@S/A,AC+RS0X?D ^/E-? -SSA+.26 @,?6-A6 \- A/@-@/@2?, /?6/C-,2@E/@/@2C2@-AX

Section 9. Physical and chemical properties

Appearance

Physical state	: &/45/63
Color	: #+, -- /01023
Odor	: #+, -- /01023
Odor threshold	: #+, -- /01023
pH	: #+, -- /01023
Melting point	: #+, -- /01023
Boiling point	: mLH3H07 lnF::l UK
Flash point	: 70+@2C5S0839I 7 I9:l UK
Auto-ignition temperature	: #+, -- /01023
Decomposition temperature	: #+, -- /01023
Flammability (solid, gas)	: #+, -- /01023
Lower and upper explosive (flammable) limits	: &+^2A0F_
Evaporation rate	: :3O; I15,X0-C2,-, 2 h FK
Vapor pressure	: F3] <- IFFFR R aDKjA++R,2RS2A-5A2k
Vapor density	: #+, -- /01023
Relative density	: F3G9
Density (lbs / gal)	: F:38G
Solubility	: ?@+0520? ,E2 \+00^/?DR-, 2A/-@Q+06^ -, 2A3

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water	: #+, -,- /01023
Viscosity	: Z/?2R-, /CIJ:I 7 IF:JI UK0m3GFCRf@mGFCNK
Volatility	: HF_ I.[.KB8G3O_ I^ ^ K
% Solid. (w/w)	: JH3G

Section 10. Stability and reactivity

Reactivity	: #+ @S200,2@6-, - A2026 ,+ A2-C/, /X-.-/ 0-10 \+A,E/@SA+65C+A/, @/?DA26/2?@3
Chemical stability	: TE2 SA+65C/, @, 1023
Possibility of hazardous reactions	: ?62A ?+AR0 C+?6//+?@ \ @+A-D2-?6 5@2B-` -A6+5@A2-C/, +?@ /0?+, +CC5A3
Conditions to avoid	: * E2? 2PS+@26+ E/DE ,2R S2A-5A2@R-X SA+65CZ-` -A6+5@2C+RS+@/? SA+65@3 I2\ 2A,+ SA+2C/, 2 R2-@5A2@/26 /? @20+?@H-?6 O
Incompatible materials	: Z22S - ^ -X \A+R, E2\+00+/?DR-, 2A/-@+ SA2.2? @A+?D2P+E2ARCA2-C/, +?@Q +P/6/?D- D2? @ @A+?D-0-0@ @A+?DC/6@
Hazardous decomposition products	: Ä2C+RS+@/? SA+65@R-X /?C0562E2\+00+/?DR-, 2A/-@QA1+?R+?+P/62B-A1+? 6/+P/6B@R] 2B+P/62@ \ ?/, A+D2?3

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
E2?2BF8M605+A+MB E+R+S+0R2A ,+0522	&Ä8: (A-0 &78: >?E-0, /+? i -S+A &78: >?E-1, /+? i -S+A &Ä8: Ä2AR-0 &Ä8: (A-0 &Ä8: Ä2AR-0	!-, !-, !-, !-11/, !-, !-11/,	9: D|| D J; D|| Rg O::: SSR O8; D|| D 9L9 RD|| D n8 D|| D	M J E+5A@ J E+5A@ M M M
GM2,E+PXMFM2EX02EX0 -C2,-, 2	&Ä8: (A-0 &Ä8: Ä2AR-0 &Ä8: (A-0 &78: >?E-0, /+? =-@8 &78: >?E-0, /+? i -S+A &Ä8: Ä2AR-0 &Ä8: (A-0 &Ä8: (A-0	!-, !-11/, !-, !-, !-, !-11/, !-, !-,	O8LGRD|| D GG: RD|| D G8: RD|| D 99H: SSR 8::: SSR nF3HD|| D J3L D|| D	M M M J E+5A@ J E+5A@ M M
GM15,P2,E-?+0 PX02?2	&Ä8: (A-0 &Ä8: Ä2AR-0 &Ä8: (A-0 &78: >?E-0, /+? =-@8 &78: >?E-0, /+? i -S+A &Ä8: Ä2AR-0 &Ä8: (A-0 &Ä8: (A-0	!-, !-11/, !-, !-, !-, !-11/, !-, !-,	90:: RD|| D J::: SSR FH0D|| D L3 D|| D	M M M J E+5A@ M M
6/R2,EX0SEE-0-,2 2,EX012?2?2	&Ä8: (A-0 &78: >?E-0, /+? i -S+A &Ä8: Ä2AR-0 &Ä8: (A-0	!-, !-, !-11/, !-,		M J E+5A@ M M

Section 11. Toxicological information

Conclusion/Summary : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Irritation/Corrosion

Conclusion/Summary

Skin : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Eyes : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Respiratory : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Sensitization

Conclusion/Summary

Skin : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Respiratory : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Mutagenicity

Conclusion/Summary : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Carcinogenicity

Conclusion/Summary : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Classification

Product/ingredient name	OSHA	IARC	NTP
40522	M	L	M
GM15,PX2,E-?+0	M	L	M
PX02?2	M	L	M
2,EX012?2?2	M	GV	M

Carcinogen Classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: Known to be a human carcinogen; Reasonably anticipated to be a human carcinogen

OSHA: +

Not listed/not regulated: -

Reproductive toxicity

Conclusion/Summary : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Teratogenicity

Conclusion/Summary : TE2A2-A2 ?+ 6-, - -. -/0-102 +? ,E2 R/P5A2/,@20\

Specific target organ toxicity (single exposure)

Name	Category
,+0522	7-, 2D+AX
6/R2,EX0SEF-0-, 2	7-, 2D+AX

Specific target organ toxicity (repeated exposure)

Name	Category
,+0522	7-, 2D+AX
GM15,PX2,E-?+0	7-, 2D+AX
6/R2,EX0SEF-0-, 2	7-, 2D+AX
2,EX012?2?2	7-, 2D+AX

Section 11. Toxicological information

Target organs : 7+?, -/? @R-, 2A/-0 E/CEC-5@2@R -D2 ,+ ,E2\+00^/?D+AD-?@10++6BA-/3
 7+?, -/? @R-, 2A/-0 E/CEC-X C-5@2@R -D2 ,+ ,E2\+00^/?D+AD-?@106?2X@B5?D@B2
 ?2A.+5@2@R B,E2 A2SA+65C2 @2@R B0/2AE2-AB@S02270R SE-,/C@2@R B
 D-@A+/?@/?-0,A-CB5SS2A2@S/A+AXA-CB@/?B1+?2 R-AA+^B2?A-0?2A.+5@2@R
 I7#N KB-A@2X2B02?@AC+A?2-3

Aspiration hazard

Name	Result
,+0522 2,EX012?2?2	" N<?" T? # a" %!Ä M7-, 2D+AX " N<?" T? # a" %!Ä M7-, 2D+AX

Information on the likely routes of exposure

Potential acute health effects

Eye contact : 7-5@2@2A/+5@X2 /AA,,/+?3
Inhalation : #+] ?+^ ? @/D7C-?, 2\2C@+ACA/C-0E-` -A6@3
Skin contact : 7-5@2@2/? /AA,,/+?3 Ä2\-, /?D,+ ,E2 @/?
Ingestion : a-AR\50\ @^ -0+^263

Over-exposure signs/symptoms

Eye contact : " 6. 2A@2@RS,+R@R-X /?C0562E2\+00+/?DQ
 S-/? +A/A,,/+?
 ^-, 2A/?D
 A26?2@@
Inhalation : " 6. 2A@2@RS,+R@R-X /?C0562E2\+00+/?DQ
 A265C262,-0 ^ 2/DE
 /?CA2-@2\2,-0 62-, E@
 @202; 0R-0+AR, /+?@
Skin contact : " 6. 2A@2@RS,+R@R-X /?C0562E2\+00+/?DQ
 /AA,,/+?
 A26?2@@
 6AX2@@
 CAC] /?D
 A265C262,-0 ^ 2/DE
 /?CA2-@2\2,-0 62-, E@
 @202; 0R-0+AR, /+?@
Ingestion : " 6. 2A@2@RS,+R@R-X /?C0562E2\+00+/?DQ
 A265C262,-0 ^ 2/DE
 /?CA2-@2\2,-0 62-, E@
 @202; 0R-0+AR, /+?@

Delayed and immediate effects and also chronic effects from short and long term exposure

Conclusion/Summary : TE2A2-A2 ?+ 6-, - - /0-102+? ,E2 R/P5A2/,@20\$PS+@5A2+ C+RS+?2?, @+0?, - S+A
 C+?C2?A- /+?@? 2PC2@+ ,E2 @, 26 +CC5S-/+?02PS+@5A2R, R-X A2@50,-6. 2A@:
 E2-QE2\2C@@5E-@R5C+5@2R1A-?2-?6 A2@S/AAX@2R /AA,,/+?-?6 -6. 2A@2
 2\2C@+? ,E2] /6?2X@B/2A-?6 C2?A-0?2A.+5@2@R3 NXR S,+R@-?6 @/D?@C0562
 E2-6-CE2B6/`/?2@2@B/D52BR5@60-A^ 2-] ?2@2@+ @/?2@2@B/? 2PA2R2 C-@2@
 0+@2@C+?@65@?2@2@80.2?,@R-X C-5@2@R2 +\ ,E2-1+2 2\2C@1X-1@+AS+?
 ,EA+5DE2 @J?3 TE2A2@@+R2 2./62?C2,E-, A2S2-26 2PS+@5A2+ +AD-?/@02?,
 -S+ A@? C+R1/?-, /+? ^ /,EC+?@?, 0+5 ?+/@2C? C-5@2DA2;2AE2-A/?D0-@E-?
 2PS2C26 \A+R2PS+@5A2 ?+/@20+?23? @S0-@E25,E2 2X2@E2 0/4/6 R-X C-5@2
 /AA,,/+?-?6 A22A@/102R -D23 ?D2@+? R-X C-5@2?-5@2B6/-AAE2-?6 .+R/ /?D3

Section 11. Toxicological information

TE/[Q-] 2@?,-CC+5?B^E 2A2] ?+^ ?B620X26 -?6 /RR 26/-,2 2\2C@-?6 -0@+CEA+?/C
2\2C@+ \ C+RS+???,@A+R @E+M2AR-?6 0-?DM2AR2PS+@2AIX+A-0E-0-,/+? -? 6
62AR-0A+52@+ \ 2PS+@5A26 2X2 C+?-,C,3

Short term exposure

Potential immediate effects : TE2A2-A2 ?+ 6-, - -. -/0-102+? ,E2 R/P5A2/,@20\

Potential delayed effects : TE2A2-A2 ?+ 6-, - -. -/0-102+? ,E2 R/P5A2/,@20\

Long term exposure

Potential immediate effects : TE2A2-A2 ?+ 6-, - -. -/0-102+? ,E2 R/P5A2/,@20\

Potential delayed effects : TE2A2-A2 ?+ 6-, - -. -/0-102+? ,E2 R/P5A2/,@20\

Potential chronic health effects

General : 7-5@2@-R -D2 ,+ +AD-?@EA+5D5A+0?D26+AA2S2-26 2PS+@5A2-A+0+?D26A
A2S2-26 C+?-,C, C-? 62\-, ,E2 @]? -? 6 02-6 ,+ /AA,,/+?BCA-?/?D- ?6[+A62AR-, /,/@3
Carcinogenicity : N5@S2Q6 + \ C-5@/?D-?C2A !/@] + \ C-?C2A62S2?6@+? 65A-/+? -? 6 02.20+ \
2PS+@5A23

Mutagenicity : #+] ?+^ ? @/D7C-?, 2\2C@+ACA/C-0E- -A6@3

Teratogenicity : N5@S2Q6 + \ 6-R -D/?D,E2 5?1+A?CE/063

Developmental effects : #+] ?+^ ? @/D7C-?, 2\2C@+ACA/C-0E- -A6@3

Fertility effects : #+] ?+^ ? @/D7C-?, 2\2C@+ACA/C-0E- -A6@3

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
(A0 A2AR-0 ?E-0, /+? ID-@2@ ?E-0, /+? I.-S+A@K ?E-0, /+? I65@@-?6 R/@@K	F909BIRD] D JHGO3RD] D G:OFF3 SSR JL3GRDP 83JO RDP

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
GM2,E+PXFIM2,EX02EX0 -C2,-, 2 6/R2,EX0SEE-0-,2 2,EX012?2?2	" C52 &78: F9FRD]PUA2@E, 2A " C52 &78: 8:: :: ,+ 9:: :: nD]PUA2@E ^ -, 2A " C52 &78: F8: ,+ G:: RD]PUA2@E, 2A	U@E U@E&2S+R/@R-CA+@E/A5@ U@E&2S+R/@R-CA+@E/A5@) +5?D+ \ ,E2 X2-A	;9 E+5A@ ;9 E+5A@ ;9 E+5A@

Persistence and degradability

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
0522	M	M	!2-6/0 X
GM15,PX,E-?+0	M	M	!2-6/0 X
PX02?2	M	M	!2-6/0 X
2,EX012?2?2	M	M	!2-6/0 X

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
0522	GBIL	O&G	0+^
GM15,PX,E-?+0	:389	M	0+^
-C2,-, 2			
GM15,PX,E-?+0	:3OF	M	0+^
PX02?2	L3F9	H3 ,+ FO8	0+^
6/R2,EX0SEE-0-, 2	F3	M	0+^
2,EX012?2?2	L3F8	H;3JL	0+^

Mobility in soil

Soil/water partition coefficient (K_{oc}) : #+, -,- /01023

Section 13. Disposal considerations

Disposal methods : TE2D2?2A-/++ ^ @,2 @E+5062 - +/626 +AR/?R/' 26 ^ E2A2.2AS+@@/1020S+@-0 +\,E/@SA+65C@+05?@?6 -?X1XMSA+65C@E+506 -00,R2@C+RS0X'/E,E2 A245/A2B?,@\ 2?./A+?R2?, -0 SA+2C/+? -?6 ^ -@2 6/@S+@3D/@04? -?6 -?X A2D/+?-0+C-05 ,E+AXA245/A2B?,@3\/@S+@2 @5AS0570 ?+?MA2C1-10SA+65C@ ./- - 0C2?@26-@,2 6/@S+@0+?A-C+A3* -@2 @E+506+, 12 6/@S+@26 5?,A2-26 ,+ ,E2 @2?A5?02@60XC+RS0?, ^/,E,E2 A245A2R2?,@+ \ - 005, E+A/2@'/,E e5A/@6/C,3 * -@2 S-C]-D/?D @E+5062 A2C0263?C/?2A-/++ +A0-?6V0@E+506?X12 C+?@/62A26 ^ E2? A2C0/?D@+, \2-@/102 TE/@R-, 2A/-0?6 /,@C+?,-/?2AR5@,12 6/@S+@26 /? - @-2 ^ -X3 7-A2 @E+5062 ,-]2? ^E2? E-?60?D2RS/26 C+?,-/?2A@E-, E-.2 ?+, 122? C02-?26+AA/?@265,3 \$RSXC+?,-/?2A@A0/?2A@-X A2;/? @+R SA+65CA2@52@3 i -S+A\+R SA+65CA2@52@R-X C2-, 2 - EDE0X0-RR-102 +A2PS0+@/-2R+@SE2A2 /?@/62E2 C+?,-/?2A3A+ ?+, C5B^ 206+ADA/?6@26C+?,-/?2A@?02@62XE-.2 122? C02-?26,E+A+5DE0X,2A?-0X " .+/6 6/@S2A@-\ @/02 R-, 2A/-0?6 A5?+\ -?6 C+?-C, ^/,E @+R -, 2A^X@BA-/?@?6 @2^2A@3

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

Product code UC56609

Date of issue 7 July 2015

Version 3

Product name DURANAR EZ LEMON YELLOW

14. Transport information

	DOT	IMDG	IATA
UN number	#FG9L	#FG9L	#FG9L
UN proper shipping name	<" #T	<" #T	<" #T
Transport hazard class (es)	L	L	L
Packing group	>	>	>
Environmental hazards	#+3	#+3	#+3
Marine pollutant substances	#+, -SS0C-1023	#+, -SS0C-1023	#+, -SS0C-1023
Product RQ (lbs)	FGJ89	#+, -SS0C-1023	#+, -SS0C-1023
RQ substances	IPX02?B,+0522K	#+, -SS0C-1023	#+, -SS0C-1023

Additional information

DOT : <-CJ -D2 @/2@@E/SS2? 45-?, /, /2@2@? ,E2 SA+65CA29A,102 45-?, /,X-A2 ?+, @51e2C+ ,E2 !W IA2S+A102 45-?, /,XK,A-?@+A,, /+? A245A2P2?,@3

IMDG : #+?2 /62?,N263

IATA : #+?2 /62?,N263

Special precautions for user : **Transport within user's premises:** -0^-X@A-?@S+A? C0+@26+?;/?2A@E-, -A2 5SA/DE,? 6 @2C2A\$?@5A2E-, S2A@+?@?@S+A?D,E2 SA+65,] ?+^ ^E-, ,+ 6+ /? ,E2 2. 2?, +\ -? -C062?, +A@/0-D2

Section 15. Regulatory information

United States

United States inventory (TSCA 8b) : " 00C+RS+???,@A2 0@26 +A2P2RS,263

U.S. Federal regulations :

SARA 302/304

SARA 304 RQ : #+, -SS0C-1023

Composition/information on ingredients

#+ SA+65C@^2A2\+5?63

SARA 311/312

Classification : U/A2E-` -A6
 R26/-, 2 I-C5,2KE2-0E E-` -A6
 A20-X26 ICEA+?/CE2-QE E-` -A6

Composition/information on ingredients

United States

Page: 14/16

Printed on 000053

CX07 Page 26 of 105

Section 15. Regulatory information

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard	
§,E2?2BF M605+A+M1BR+S+0R2A	) 2@3	#+3	#+3	#+3	#+3	M
-,/R+?X?/C]20,/,-?/5 R +P/62X200^	#+3	#+3	#+3	) 2@3	#+3	M
,+0522	) 2@3	#+3	#+3	) 2@3	) 2@3	M
GM2,E+PXMFMREX02EX0-C2,-, 2	) 2@3	#+3	#+3	#+3	#+3	M
GM15,P2,E-?+0	) 2@3	#+3	#+3	) 2@3	) 2@3	M
PX02?2	) 2@3	#+3	#+3	) 2@3	#+3	M
6/R2,EX0SE-E-0-, 2	#+3	#+3	#+3	) 2@3	) 2@3	M
2,EX012?2?2	) 2@3	#+3	#+3	) 2@3	) 2@3	M

SARA 313

Supplier notification	Chemical name	CAS number	Concentration
§, /R+?X?/C]20,/,-?/5 R +P/62X200^		O::HMFOM;	F: ML:
,+0522		F:OMOOML	F: ML:
GM15,P2,E-?+0		FFFMH9MG	8 MF:
PX02?2		FL:MG:MH	8 MF:
6/R2,EX0SE-E-0-, 2		FLFMFFML	8 MF:
2,EX012?2?2		F::MJFMJ	:38 MF3

N" I" LFL ?+, /C-./+?@R5@?+, 12 62,-CE26\A+R, E2 NÄN - ?6 -?X C+SXD- ?6 A26/@/15/+? +\, E2 NÄN @E-00C0562
C+SXD- ?6 A26/@/15/+? +\, E2 ?+, /C2-, -CE26, + C+S/2@+ \, E2 NÄN @51@2452XA26/@/15263

Additional environmental information is contained on the Environmental Data Sheet for this product, which can be obtained from your PPG representative.

California Prop. 65

WARNING: TE/SA+65CC+?/?@- CE2RC-0] ?+^ ? ,+, E2 N,- 2 +\ 7 - 0/A?/-,+ C-5@2C-?C2A?6 1/AE 62\2C@+A+,E2A
A2SA+65C2 E-AR3

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : L o Flammability : L Physical hazards : :
I o KM/EA+?/C2\2C@

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health : L Flammability : L Instability : :

Date of previous issue : 4/15/2015

Organization that prepared the MSDS : \$aN

Product code UC56609

Date of issue 7 July 2015

Version 3

Product name DURANAR EZ LEMON YELLOW

Section 16. Other information

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

▣ Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.

Law Enforcement Sensitive
Do Not Release
EPA-CID Loan - Return Upon Completion

United States

Page: 16/16

Printed Name 000055

SAFETY DATA SHEET



Date of issue/Date of revision 23 June 2015

Version 4

Section 1. Identification

Product name : 6431D BACKR 4
Product code : 137D40
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Industrial applications.
Use of the substance/mixture : Coating. Paints. Painting-related materials
Uses advised against : Not applicable.

Supplier : PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

Emergency telephone number : (412) 434-4515 (U.S.)
(514) 645-1320 (Canada)
01-800-00-21-400 (Mexico)

Technical Phone Number : (724) 274-7900 (SPRINGDALE, PA) 8:00 a.m. - 5:00 p.m. EST

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 36.3%

GHS label elements

Hazard pictograms :



United States

Page: 1/15

Printed Name_000056

Section 2. Hazards identification

Signal word : #,<B1>

Hazard statements : T/Q Q,0/1 /45.6 ,<6 -,R*>2
&,5=1= =1>.*5=1V1 6,Q ,B12
J5=R1@16 *Z @,5= .<B@, <@2>
L,V @,5=16>* \=. <1== ,<6 6.^ .<1==2
L,V @,5=16,Q ,B1 # *>B, <= -C>*5BCR>*?<B16 *>>1R1,46 1MR*5>12

Precautionary statements

Prevention

: A0+< =R1@.,k=>5@*<= 01Z>1 5=12 #* <+<C,<6/1 5<+/,// =,Z1+V R>1@,5*=< C,-1
011<>1,6 ,<6 5<61>=&62 ` 1,> R>*4@+1 B/-1 =2` 1,> 1V1 *> Z@1R>*4@*2
` 1,> R>*4@+1 @/*@<B2' 11R,\ ,V Z*Q C1,+?C*+=5>Z@1=Z,R,>[=?*R1< Z,Q 1= ,<6
+C1>.B<+ <=5>@1>2* =Q*[.<B2I=1 1MR/*=. *+R>*Z/1@*@,/?1 <+/,+<B?/.BC+<B
,<6 ,// Q,+1>.,/HC,<6/B 145.RQ1<2 I=1 *<V <*<H=R,>[<B #*/=2 S,[1 R>1@,5*,>V
Q1,=5>1=,B,.<=+ =++ .@.=@,>B12' 11R@*,<1> +BQV@/162I=1 *<V *5+6**>= *>
.< , \ 1/H-1<#,+16 ,>1,2 #* <+>0>1,+C1-,R*>2

Response

: 1+Q16.@,/, +1<+* <.Z*5 Z1/5<1 1/2 ;T 1MR*46 *> @* <@*16P : 1+Q16.@,/
,+1<+* <2 ;T ;)_ % 30#P (1Q *-1 R1>=* <# Z1=C,> ,<6 [11R@*Q>+0/1 Z>0>1,+C.B2
&,// , 9A;JA) &O)S O(*>RCV.@.,<Z*5 Z1/5<1 1/2 ;T-A) J' ;) F*>C,>GIB,[1 *ZZ
.QQ16.,+1V,/@ * <+Q .<,+16 @/*@.<B2 (<=1 =[.< \ .C\ +1>*>=C*1>2 ;T ;) OWQJP
(.<=1 @,5*5=V\ .C\ ,+1>Z>=1-1>./Q.<54=2 (1Q *-1 @* <+@#1<=1=?Z.R>14<+,<6
1,=V # 6*2 &* <+<51>.<=<B :QQ16.,+1V@,//, 9A;JA) &O)S O(*>RCV.@.,<2

Storage

: J#>1/*@16 5R2J#>1.< , \ 1/H-1<#,+16 R/,@12 11R@**/2

Disposal

: #.=R*=1 *Z@* <+<# ,<6 @* <+<1> .< , @*6,<@1\ .C, // /*@/?>1B*,< / ?<+,*< / ,<6
.<+<+<+,*< / >1B5/,+* <=

Supplemental label elements

: (1R1,+16 1MR*=51 # C.BC-R*> @* <@> ,+* <= Q,V @,5=1.>+,* < *Z-C1>1R.>,*>V
=V-#Q ,<6 R1>Q<1<+>0>.,< ,<6 <1>.*5= =V-#Q 6,Q ,B12;<C,/, +* < *Z-,R* >X1>=* /
@* <@1*+* <=,0*-1 -C1>1@*Q1<616 1MR*=51 /Q .# @,5=1=C1,6,@C1=?
6>* \ =.<1==<6 <5=1, ,<6 Q,V /1,6 # 5<@* <= @.*5=<1=>61,+C21-component
mixtures: Z>Q,61 C61 .=>1/1,=1665>.<B@5>.<B2>Q,61 C61 Q,V @5=1
.>>1-1>=.0/1Z1@*? .=>+<B# -C1Q5@*5=Q1Q0>,<1= ,<6 Q,V @,5=1=[.<
=1<= .+,* <2%* .6 @* <+@# .C=[.< ,<6 @/*@.<B2 ,=C -C*>*5BC/VZ4>C,<6/<B2
QQ.#M.@5Q1=\C1<C1,+162

Hazards not otherwise classified

: 9>*/<B16 *>>1R1,46 @* <+@>Q,V 6>V=[.< ,<6 @,5=1.>+,* <2

Section 3. Composition/information on ingredients

Substance/mixture : L.M5>1

Product name : Ä!"# \$%&' (

Ingredient name	%	CAS number
Ä*/-1<+<,RC-C, FR1*15QG1,-V ,>*Q 2 +<+<. 5Q 6.*M.61 EH05*MM-C,<*/ 05+<H"H*/ <,RC-C,/1<1 EHQ1-CVR>*R,<H"H*/	a"K HbED a"8 HbED a! Hb!27 aE2 Hb! a" Hb! a" Hb"2D	Ä 7 EHN HD "! Ä!HÄ7H7 ""H7ÄHE 7"H!ÄH! N"HE8H! 7KHK!H"

JIS @*61=>1R>1+<+<50=<+<@1= \ .C*5>+1B.=+16&%J)5Q 01>=2

Section 3. Composition/information on ingredients

%V@*<@1x;#*<=C*\< ,= , >,<B1.=# R>*4@<Z61<+,./.*>.=651 # 0,+@G,>.,+.*<2

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

;Z.<B1=#<?>.,+.*<?,<V \R1*Z*-1>1MR*=5>†>=VQR#Q =*Z*- 1>1MR*=5>*@@@55>.<B*> R1>=.⇒,Z#>5=1 *Z
+C.=R>*65@@*;<@+ 9A;JA) &A)S (A 3 &O) SQ(?OLO(: O)& W(A AL A(9_WJ;&,%)QQ16.,+1/McC,- 1
J,Z1#V#,+, JC11+<Z>Q,+.*< ,-,./,0/12)1-1> B.-1 , <V€.<B0VQ*5+C*# , < 5<@*=<@.*5> @*<5/=<BR1>=*<2

Description of necessary first aid measures

- Eye contact** : &C1@Z> ,<6 >1Q*-1 , <V@*;<@+1<=1=2QQ16.,+1/VZ5=C1V1=\ .C>5<<.<B ,+1>Z>
,+ /1, =+D Q.<5#<? 11R.<B 1V1/6= *R1<2J 11[.QQ16., #1 Q16.@,/, #1<+*<2
- Inhalation** : (1Q *-1 # Z1=C,>2' 11RR1>=*< ,>Q ,<6 ,+>1=2;Z<+0>1,+C.<B?Z0>1,+C.<B.=
.>>1B5/,> .Z>1R.> ,>V,>>1=*>@>=R*- 61 ,>+Z@.,/1=R ;< *>*MB1<0V@.,<16
R1>=*<<1/2
- Skin contact** : (1Q *-1 @*;<Q .,<+16 @/*G.<B ,<6 =C*1=2 ,=C =[,<+C*5BCM\ .C=* ,R ,<6 \ ,+1>
>5=1>1@B<.^16 =[,< @/1,<1>#)A S 5=1 =*/-1<+*=>+C.<<+>2
- Ingestion** : ;Z=,/ / * 16?>11[Q16.@,/, 6- @1QQ16.,+1/V,<6 =C* \ C.=@*;<+<1> *> /,0 1/2' 11R
R1>=*< ,>Q ,<6 ,+>1=2#*)A S .<65@1*Q .+<B

Most important symptoms/effects. acute and delayed

Potential acute health effects

- Eye contact** : &,5=1= =1>.*5=1V1 6,Q ,B12
- Inhalation** : &,< @,5=1@<+> ,/ <1>.*5= =V-#Q F&)J G61R>1=.*<2 L,V @,5=16>* \ =.<1==,<6
6.^.<1==
- Skin contact** : #1Z++<B* +C1=[.<2 L,V @,5=1=[.<6>V1==,<6 .>>.,+.*<2
- Ingestion** : &,< @,5=1@<+> ,/ <1>.*5= =V-#Q F&)J G61R>1=.*<2

Over-exposure signs/symptoms

- Eye contact** : %6-1>=1=VQR#Q = Q,V .<@/56#C1Z//\ .<BP
R,<
\ ,+1>.16<1==
- Inhalation** : %6-1>=1=VQR#Q = Q,V .<@/56#C1Z//\ .<BP
<,5=1, *> -*Q .+<B
C1,6,@C1
6>* \ =.<1==Z+.B51
6.^.<1==X1>+B*
5<@*=<@<=<1==
- Skin contact** : %6-1>=1=VQR#Q = Q,V .<@/56#C1Z//\ .<BP
R,< *> .>>.,+.*<
>16<1==
6>V1==
@>@.<B
0/=+>.<BQ,V *@@5>
- Ingestion** : %6-1>=1=VQR#Q = Q,V .<@/56#C1Z//\ .<BP
=#Q ,@CR,<=

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : ;< @,=1*Z.<C,/,+.*< *Z61@*QR*=.+*< R>*65@+<, Z>1?VQR*Q = Q,V 01 61/V 162 SC11MR*=16R1>=*<Q,V <116 # 01 [1R+5<61>Q 16.@,/=5>-1//,<@1Z> K C*5>=2
- Specific treatments** :)* =R1@@@1,1Q1<2
- Protection of first-aiders** :)* ,@*< =C,// 01 +[1< .<*/ -.<B,<V R1>=*<,/>.[*>\. C*5+=5.+0/ 1 @,.<B2;Z.+.=5=R1@6 +C,+ZQ1=,>1 =+//R>1=1<+C1>1=@1>=C*5/6\ 1,> ,< ,RR>*R>.,1 Q,=[*>=1/ZH@+,< 16 0>1,+C<B,RR, >,+5=2;+Q,V 01 6,<B 1>*5=# +C1R1>=*<R>*-.6<B,. 6 # B.-1 Q*5+CHHQ*5+C>1=5=@+.*<2 ` ,=C @*<Q .<,+16 @/C<B+C*>*5BCW\ .C\ ,+1> 01Z>1 >1Q*- .<B.*>1\1,> B*-1=2

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : I=1 6>V@C1Q@, /CO₂, \ ,+1>=R>,VFZBG*> Z,Q 2

Unsuitable extinguishing media : #* <*+5=1\ ,+1>e12

Specific hazards arising from the chemical

: T/Q Q,0/1 /45.6,<6 -,R*>2 ;< Z>1*>.ZC1,+16?, R>1=5>1.<@>1,=1. //**@@,<6 +C1@*<+<1>Q,V 05=>+C C1>.[*Z =50=1451<+1MR/=. *<2 d,R*>= Q,V ,@@Q5/,+1 .</\ *> @*<Z16,>1,= *> @,1/ , @*<=.61>,0/6.=+<@1# , =*5>@*Z .B<+*< ,<6 Z=C 0,@[2 (5<*Z Z# =1\1> Q,V @+1 Z>1* 1MR/=. *<C,^,>62 SC.= Q,+1>.,/. =#M.@# ,45,+ .@Z\ .C/*<B /,=+<B 1Z1@+2 T.>1\,+ 1>@<+Q .<,+16 \ .C +C.=Q,+1>.,/Q5=+01 @*<+<16 ,<6 R>1-<+16 Z*Q 01.<B 6.=@C,>B16 ,<V \ ,+1>\,V? =1\1> *>6>.,<2

Hazardous thermal decomposition products

: #1@*QR*=.+*< R>*65@+Q,V .<@/561C1Z// * .<BQ,+1>.,/=P @,>0*<6.*M.61 @,>0*<Q*<*M.61 <.+*B1<*M.61= Q1+ / *M.61XM.61=

Special protective actions for fire-fighters

: 9>*QR/V.=*/,+1 +C1 =@<1 0V>1Q*- .<B, / R1>=*<=Z*Q +C1-. @.<V*Z +C1.<@.6<+Z +C1>1.=, Z>12)* ,@*< =C, // 01 +[1< .<*/ -.<B,<VR1>=*<,/>.[*>\. C*5+=5.+0/ 1 @,.<B2L*- 1 @*<+<1>=Z*Q Z>1,>1, .ZC.=@,<01 6*<1 \ .C*5+>.=2 I=1 \,+ 1> =R>,V# [11RZ>1H1MR=16 @*<+<1>= @**/2

Special protective equipment for fire-fighters

: T.>1H2C4>=C*5/6\ 1,> ,RR>*R>.,1 R>*4@+1 145.RQ1<+,<6 =1/ZH@+., <16 0>1,+C<B ,RR,>,+5= FJ&\$ %G .C, Z// Z@1R.1@1R1>,+16 .<R*=.+1 R>1=5>1Q*612

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** :) * , @ # < = C , // 01 + [1 < . < * / - . < B , < V R 1 > = * < , / > . = [* > \ . + C * 5 + = 5 . + 0 / 1 + , . < B 2 O - , @ 5 , 4 = 5 > * 5 < 6 . < B , > 1 , = 2 ' 11 R 5 < < 1 @ 1 = ; > V , < 6 5 < R > * 4 @ 1 6 R 1 > < < 1 / Z * Q 1 < + > . < B 2 # * < * + # 5 @ C > \ , / [+ C > * 5 B C = R / 16 Q , + 1 > . , / 2 J C 5 + Z Z , // . B < + * < = * 5 > @ 1 = 2) * Z , > 1 = ? = Q * [. < B * > Z , Q 1 = . < C , ^ , > 6 , > 1 , 2 # * < * + 0 > 1 , + C 1 - , R * > * > Q . = 2 9 > * - . 61 , 6145 , + 1 - 1 < + / , + . * < 2 ` 1 , > , R R > * R > . , + > 1 = R . > , * > \ C 1 < - 1 < + / , + . * < . = . < , 6145 , + 12 95 + * < , R R > * R > . , 1 R 1 > = * < , / R > * 4 @ + 1 145 . R Q 1 < 2
- For emergency responders** : ; Z = R 1 @ , . / = 1 @ / * C < B . = > 145 . > 16 # 61 , / \ . C + C 1 = R . // B 1 ? + [1 < * + 1 * Z , < V . < Z > Q , + . * < . < J 1 @ * K * < = 5 . + 0 / 1 , < 6 5 < = 5 . + 0 / 1 Q , + 1 > . , = 2 J 11 , / = * + C 1 . < Z > Q , + . * < . < f T * > < * < H 1 Q 1 > B 1 < @ R 1 > = * < < 1 / 2

- Environmental precautions** : % * . 6 6 . = R 1 > # * Z = R . / 16 Q , + 1 > . , / , < 6 > 5 < * Z , < 6 @ * < + @ A . + C = * . / ? \ , + 1 > \ , V = ? 6 > . , < = , < 6 = 1 \ 1 > = 2 ; < Z > Q + C 1 > 1 / 1 - , < + , 5 + C * > . # = . Z C 1 R > * 65 @ G , = @ 5 = 16 1 < - . > * < Q 1 < + / R * / 5 + * < F 4 \ 1 > = 1 , + 1 > \ , V = ? = * . / * > . , > G 2

Methods and materials for containment and cleaning up

- Small spill** : J # R / 1 , [. Z . + C * 5 + > . = 2 L * - 1 @ * < , < 1 > = Z * Q = R . // > 1 , I = 1 = R , > [H R > * * Z * / = , < 6 1 M R * = . * < H R > * * Z 5 . R Q 1 < 2 # . / 5 + \ . C \ , + 1 > , < 6 Q * R 5 R Z , + 1 > H # 50 / 12 % # > < , + 1 / V ? * > . Z , + 1 > H . < = * / 50 ? , 0 = * > 0 \ . C < . < 1 > > 6 > V Q , + 1 > . , / , < 6 R / @ 1 . < , < , R R > * R > . , 1 \ , = + 1 6 . = R * = , / @ * < , < 1 > 2 # . = R * = 1 * Z - . , , / @ 1 < = 16 , = + 1 6 . = R * = , / @ * > , @ * > 2
- Large spill** : J # R / 1 , [. Z . + C * 5 + > . = 2 L * - 1 @ * < , < 1 > = Z * Q = R . // > 1 , 2 I = 1 = R , > [H R > * * Z * / = , < 6 1 M R * = . * < H R > * * Z 5 . R Q 1 < 2 % R R > * , @ G 1 / 1 , = 1 Z * Q 5 R I . < 62 9 > 1 - 1 < + 1 < > V . < # = 1 \ 1 > = ? \ , + 1 > @ * 5 > + = 20 , = 1 Q 1 < = * @ < Z < 16 , > 1 , = 2 ` , = C = R . // B 1 = . < # < 1 Z 51 < + > 1 , + Q 1 < + R / , < + * > R > * @ 116 = Z // * . = 2 & * < + . < , < 6 @ * / 1 @ * R . // B 1 \ . C < * < H @ 05 = + 0 / 1 ? , 0 = * > 01 < + Q , + 1 > . , / 1 B = < 6 ? 1 , > < ? 1 > Q @ 5 # * > 6 . , + * Q , @ * 5 = 1 , > + C , < 6 R / , @ 1 . < @ * < , < 1 > > Z > 6 . = R * = , / @ * > 6 . < B / * @ , / > 1 B 5 / , * < = F 41 J 1 @ * K " ! G 2 # . = R * = 1 * Z - . , , / @ 1 < = 16 , = + 1 6 . = R * = , / @ * < , @ * > 2 & * < + , Q . < , + 16 , 0 = * > 01 < + Q , + 1 > . , / Q , V R * = 1 + C 1 = , Q 1 C , ^ , > 6 , = + C 1 = R . // 6 R > * 65 @ 2 + 1 P = 11 J 1 @ * K " Z > 1 Q 1 > B 1 < @ @ * < , @ + . < Z > Q , + . * < , < 6 J 1 @ * K " ! Z > \ , = + 1 6 . = R * = , / 2

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : 95 + * < , R R > * R > . , 1 R 1 > = * < , / R > * 4 @ + 1 145 . R Q 1 < + F = 11 J 1 @ * < K G 2 % * . 6 1 M R * = 5 > 1 H * 0 + . < = R 1 @ , . < = 5 @ * < = 01 Z > 1 5 = 12 # * < * + C , < 6 / 1 5 < + / , // = , Z 1 + V R > 1 @ , 5 * < = C , - 1 011 < > 1 , 6 , < 6 5 < 61 > = * 62 # * < * + B 1 < . < 1 V I = * > * < = [. < * > @ / * C < B 2 # * < * + 0 > 1 , + C 1 - , R * > * > Q . = 2 # * < * + . < B 1 = 2 I = 1 * < / V \ . C , 6 145 , + 1 - 1 < + / , + . * < 2 ` 1 , > , R R > * R > . , 4 > 1 = R . > , * > \ C 1 < - 1 < + / , + . * < . = . < , 6145 , + 12 # * < * + 1 < + > = # > , B 1 , > 1 , = , < 6 @ * < Z 16 = R , @ 1 5 < / 1 = , 6145 , + 1 V - 1 < + / , + 162 ' 11 R . < + C 1 * > . B < , / @ * < , < 1 > * > , < , R R > * - 16 , / + 1 > < , + 1 Q , 61 Z * Q , @ * Q R , + 0 / 1 Q , + 1 > . , / ? [1 R + B Q V @ / * = 16 C 1 < < * + . < 5 = 12 J # > 1 , < 6 5 = 1 , \ , V Z * Q C 1 , + ? = R , > [= ? * R 1 < Z , Q 1 * > , < V * + C 1 > . B < . + * < = * 5 > @ 12 = 1 1 M R * = . * < H R > * * Z 1 @ * < , / F - 1 < + / , + . < B ? / B C : < B , < 6 Q , + 1 > . / C , < 6 / . < B G 145 . R Q 1 < 2 I = 1 * < / V < * < H = R , > [< B * # / = 2 S , [1 R > 1 @ , 5 * < , > V Q 1 , = 5 > 1 = , B . < = + 1 / 1 @ * = + . @ . = @ , > B 1 = 2 O Q R V @ * < , < 1 > = > 1 ; < R > * 65 @ 1 = . 651 , < 6 @ , < 01 C , ^ , > 6 * 5 = 2 # * < * + > 15 = 1 @ < + . < 1 > 2

Section 7. Handling and storage

Special precautions

: d,R*>= Q,V ,@Q5/,+1 .</^ \ * > @* < Z16 , >1, = * > @, -1/ , @* < .61>,0/16.=+<@1# ,
= *5>@ *Z.B< .# < , <6 Z, =C 0, @ [2 d, R*>= , >1 C1, - 1>+C, < , > , <6 Q, V =R>1,6, / * <B
Z**>=2 ; Z+C.=Q, +1> ., / . =R, >+*Z, Q5/+R/1 @ *QR* <1<+ =V= #Q? >1,6 +C1J, Z1+V#, +,
J C11F=Q> +C1 * +C1> @ *QR* <1<+ * > @ *QR* <1<+ = 01Z>1 0/1<6<B, = +C1>1=5/ *B
Q.M5>1Q, V C, -1 +C1C, ^, >6= *Z, // *Z. =R, >#2

Advice on general occupational hygiene

: O, +. <B? > . < [<B, <6 =Q* [. <B=C*56 01 R>* @. #6 . < , >1, = \ C1>1+C.=Q, +1> ., / . =
C, <6/16? =#>16, <6 R>* @1#62 ` * > [1> ==C*5/6 \ , =C C, <6= , <6 Z @1 01Z>1 1, +. <B?
6> . < [<B, <6 =Q* [. <B2 (1Q * -1 @ * < Q . < , +16 @ / * < B, <6 R>* 4 @ +1 145.RQ1<+01Z>1
1<+> . <B1, +. <B, >1, =2 J 11 , / =* J 1 @ * < KZ> , 66. +. * < / . < Z> Q, +. * < * < C \ B. 1<
Q1, =5>1=2

Conditions for safe storage, including any incompatibilities

: #* <+ =#>1, 0*-1 +C1Z//^ \ . <B+QR1>, 5>1PDg& FNDTG2J #>1 . < , @ @* >6, < @1+ C
/ * @, / >1B5/ . * < =2J #>1 . < , =1B>1B, #6 , <6 , RR>* -16 , >1, 2 J #>1 . < * > . B< , / @ * < , +<1>
R>* 4 @1#6 Z* Q 6. >1 @ =5< / . BC< , 6>V @ * / , <6 \ 1/ H-1< #, +16 , >1, ? , \ , V Z* Q
 . < @ * Q, +0/1 Q, +1> ., / =F11 J 1 @ * < "8G, <6 Z* 6 , <6 6> . { 2 J #>1 / * @ [16 5R2 O / Q. < , +1
 , // . B< + * < = *5> @1=2 1R, > , +1 Z* Q * M.6. ^ < BQ, +1> ., / =2' 11R @ * < , +<1> +BCA / @ / * =16
 , <6 =1, /16 5<+ / >1, 6VZ> 5=12 & * < +. <1> =+ C, < -1 011< * R1<16 Q5=+01 @, >15N
 >1=1, /16 , <6 [1R+5R> . BC# R>1- k+ /1 , [, B12 #* <+ =#>1 <5< /, 0 1/16 @ * < , +<1> =2
 l=1 , RR>* R> ., 4 @ * < , +<Q 1<+ # , - * .6. 1< - . > * < Q1<+ / @ * < , Q . < , +. * <2

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
J* / -1<+ <, RC-E, FR1>* /15QGQ1, -V , >* Q 2 +, < . 5Q 6. * M.61	) * <12 OSHA PEL (United States, 2/2013). S` %P'D QBXhK C*5>=2 > QPS*+, / 65=+
EH05MM+C, <*/	ACGIH TLV (United States, 4/2014). S` %P'8 QBXhK C*5>=2 ACGIH TLV (United States, 4/2014). S` %PE8RRQK C*5>=2
05+<H"H*/	OSHA PEL (United States, 2/2013). Absorbed through skin. S` %PE 8 QBXhK C*5>=2 S` %PD8RRQK C*5>=2 ACGIH TLV (United States, 4/2014). S` %PE8RRQK C*5>=2
<, RC-E, /1<1	OSHA PEL (United States, 2/2013). S` %P!88 QBXhK C*5>=2 S` %P'88 RRQ K C*5>=2 ACGIH TLV (United States, 4/2014). Absorbed through skin. S` %PDEQBQhK C*5>=2 S` %P'8 RRQK C*5>=2
EHQ +CVR>*R, <H"H*/	OSHA PEL (United States, 2/2013). S` %PD8QBQhK C*5>=2 S` %P'8 RRQK C*5>=2 ACGIH TLV (United States, 4/2014). S` %P'DE QBXhK C*5>=2

Section 8. Exposure controls/personal protection

S` %PD8RRQKC*5>=2
OSHA PEL (United States, 2/2013).
 S` %P!88 QBXhKC*5>=2
 S` %P'88 RRQ KC*5>=2

Key to abbreviations

%	= %@@1,0#1 L,M.Q5Q 91,[	J	= 9*+1<+/, /< ,0 =>R* <
%&: ;_	i %Q1>@,<8*<Z1>+@*Z: *-1><Q1<+/, /<65=>.,/ _VB1.<=>2	J(	i (1=R.,>,>#>V=1<=>+^,+. * <
&	= &1./.<B3.Q.+	JJ	= J[.< =1<=>+^,+. * <
T	= T5Q1	J SO3	= JC*+>+QOMR*=5>1/Q.,+/,5 1=
;9O3	i ;<+><.,/ 91>Q==.0'1 OMR*=5>13.Q.+	S#	= S*+/, 65=+
AJ_%	= A@@5R*%, / J,Z1+V,<6 _ 1/, /C%6Q.<=>+*,+* <2	S3d	i SC>1=06 3.Q.+d, /5 1
(	i (1=R.,>0/1	S` %	= S.Q1` 1.BC46 %>1>,B1
j	i AJ_% EN&T("N" 82E88 J50R,>+ HS*M@<6 _ , ^,>6* 5= J50=>+<@>=		

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : ;Z.C.=R>*65@@*,<= .16.4=>. .C 1MR*=5>1.Q.=?R1>=>./? \ *>[R/,@1
 ,+Q*=RC1>+>0.*/ B.,/Q*.<.*>.<BQ,V 01 >145.>16# 61+>Q.<1+C11Z @+1<1==*Z
 +C1-1<+/,+. * < *+C1>@*+Q1,=5>1=,<6X*+C1<1@1= V # 5=1>1=R.>+V
 R>*4@+1 145.RQ1<2 (1Z1>1<@1=C*5/601 Q,61 # ,RR>*R>.,+ Q*.<.*>.<B=>+<6,>6=2
 (1Z1>1<@# <+,*<.,/ B5.6,< @16*@5Q1<= Z> Q1+C*6=Z> +C1 61+>Q<+,*< *Z
 C,^,>6*5= =50=>+<@1=.,/ /, / =* 01 >145.>162

Appropriate engineering controls

: I=1 * <V\ .C. 61 45,+1 -1<+/,+. * <2 I=1 R>*@=1<@/*=5>4/?@./1MC,5=+1<+/,+. * < *
 +C1>1<B<11>.<B@+>= # [11R\]>[1>1MR*=5# # ,>0*>1 @*+Q .<+>= 01/*\ ,<V
 >1@*Q1<616 * >=+5#>V/Q. =2 SC11<B<11>.<B@*+>= /, / =* <116 # [11RB,=?
 -.R* >+> 65=+@<@1<+., * <= 01/*\ ,<V/*\ 1>1MR/*=-.1/Q. =2 I=1 1MR/*=. * <HR>*Z
 -1<+/,+. * < 145.RQ1<+

Environmental exposure controls

: OQ.==.*<=Z*Q -1<+/,+. * < * > \ * >[R>*@1=145.RQ1<+>C*5/601 @C1@# # 1<=5>1
 +C1V@*QR/V. .C +C1>145>1Q1<= *Z1<.>*<Q1<+/, R>*4@* <1B/=,+. * <2 ;<= *Q 1
 @,4=75Q1 =@5001>=Z/4>=> * >1<B.<11>.<BQ*6.Z@, #<= # +C1R>*@1=445.RQ1<+
 \ .// 01 <1@1=>V # >165@1Q.==.*<= # ,@R+0/ 1 /1-1/=2

Individual protection measures

Hygiene measures : ` ,=C C,<6=?Z>1>Q= ,<6 Z@1+C*5BC/VZ4>C,<6/<B @C1Q@./R>*65@+01Z>1
 1,+<B?>Q* [.<B.<6 5=<B+C1/,+ * >V,<6 ,+ +C11<6 *Z+C1* >[.<BR1>.*62
 %RR>*R>.,+1 @C<451=C*5/601 5=16 # >1Q*-1 R*+1<+/,/V @*+Q .<+>= 16 @/*<B
 ` ,=C @*+Q .<+>= 16 @/*<B01Z>1 >15=<B2<=5>1+C,+1V\ ,=C =+>+.*<= ,<6 =,Z1+V
 =C*1\ >=>1 @/*=1# +C1\ * >[=+>+.* < / * @, * <2

Eye/face protection

Skin protection

Hand protection

: &C1Q. @./H>1=,++?.QR1>-. *5= B/*- 1= @Q R/V<B\ .C,< , RR>*16 =+<6,>6 =C*5/601
 \ * >+ , / +Q1= \C1< C,<6/<B @C1Q@./R>*65@+Z .>[,= 1=Q1<+<6 @,4= +C. =
 <1@1=>V2 &* <= .61>.<B+C1 R,> Q 1+>=R1@. 16 0V +C1B*-1 Q,<5Z @5>1>@1@
 65>.<B5=1 +C,+C1 B/*-1= ,>1 =+//>1+> .<B+C1.R>*4@+1 R>*R1>1=2;+>C*5/601
 <+>16 +C,+C1 +Q1 # 0>1, [+C>*5BCZ> ,<V B/*- 1 Q,+1>.,/ Q,V 01 6.Z1>1<Z> 6.Z1>1<+
 B/*- 1 Q,<5Z @5>1>2 ;< +C1 @,=1*ZQ.M5>1=7@<= .+>B*Z=1-1>./ =50=+<@1=?+C1
 R>*4@* <+Q1 *Z+C1B/*-1= @<+>+ 01 , @, +1/V1=+Q,+162

Gloves

: T> R>*+<B16*> >1R1,46 C,<6/<B 5=1 +C1Z/*\ .<B +R1 *ZB/*-1=P

(1@*QQ1<616P< .>1 >5001>05+// >5001>

Section 8. Exposure controls/personal protection

Body protection	: 91>=*</ R>*4@+1 145.RQ1<+Z> +C10*6V =C*5/6 01 =1/1@16 0,=16 * < +C1+= [01.<B R1>ZQ16 ,<6 +C1>.=f. <-*/ -16 , <6 =C*5/6 01 ,RR>* -16 0V, =R1@. #+01Z>1 C,<6/.<B +C=R>*65@+ C1<+C1>1.= , >.[*Z.B<+* < Z*Q =++ .@/1@+@/A 1,> ,<+.H =++ .@R>*4@-1 @/C. B2 T* > +C1B>1,4+=R>*4@* < Z*Q =++ .@. =@,>B1=7@+C<B =C*5/6 .<@/561<+.H*+. @*-1> , / =?0**+= ,<6 B*-1 =2
Other skin protection	: %RR>*R> .1+Z*+ \ 1,> ,<6 ,<V ,66. +* < , / = [.<R>*4@* Q1,=5>1 =C*5/6 01 =1/1@16 0,=16 * < +C1+= [01.<BR1>ZQ16 ,<6 +C1>.=f. <-*/ -16 , <6 =C*5/6 01 ,RR>* -16 0V, =R1@. / .@1Z>1 C,<6/.<B +C=R>*65@+
Respiratory protection	: (1=R.> ,+> =1/1@* Q5=+01 0,=16 * < [<* \ < * > ,<+. @. R16 1MR*=5>11-1/= ?C1 C,^ ,>6= *Z +C1R>*65@*6 +C1=,Z1 * > [.<B/Q. = *Z +C1=1/1@16 >1=R.> ,>2;Z \ * > [1>= ,>1 1MR*=16# @* < @* > ,+* <= ,0*- 1 +C1 1MR*=5>1.Q. +C1VQ5=+5=1 ,RR>*R> .,4? @1>Z16 >1=R.> ,>2I= 1 , R>*R1>/Z+16? ,. >HR5V.ZB* ,. >H26 >1=R.> ,> @Q R/V<B \ .C ,< ,RR>* -16 =+<6,>6 .Z .>f ,= 1=Q1<+.<6.@,4= +C= .<1@1=,>V2

Section 9. Physical and chemical properties

Appearance

Physical state	: 3.45.62
Color	:)*+ ,-, ./,0/1 2
Odor	:)*+ ,-, ./,0/1 2
Odor threshold	:)*+ ,-, ./,0/1 2
pH	:)*+ ,-, ./,0/1 2
Melting point	:)*+ ,-, ./,0/1 2
Boiling point	: m1727Kg & Fr188gTG
Flash point	: &/*=16 @5REKXN& FK gTG
Auto-ignition temperature	:)*+ ,-, ./,0/1 2
Decomposition temperature	:)*+ ,-, ./,0/1 2
Flammability (solid, gas)	:)*+ ,-, ./,0/1 2
Lower and upper explosive (flammable) limits	: 3*\ 1>P2"]
Evaporation rate	: 82Ä F05W ,@1,+1I "G
Vapor pressure	: 82ÄD[9, F 2NQQ _BG<*Q +1QR1> ,5>1I
Vapor density	:)*+ ,-, ./,0/1 2
Relative density	: "2E"
Density (lbs / gal)	: "82"
Solubility	: ;<=*/50/1 .< +C1 Z//\ .<BQ,+1> .,/=P@/6 \ ,+1>2
Partition coefficient: n-octanol/water	:)*+ ,-, ./,0/1 2
Viscosity	: ' .<1Q,+ .@F 8g& F"8 gTGBr8E" @GX FrE" @JG
Volatility	: D8] F-XG?Ä2E] FX G
% Solid. (w/w)	: Ä!2DK

Section 10. Stability and reactivity

Reactivity	:) * =R1@#1=+6,+ , >1/,#6 # >1,@+.W,-, . /,0/1 Z> +C=R>*65@#> .# .16.1<#2
Chemical stability	: SC1R>*65@#=#0/12
Possibility of hazardous reactions	: l<61> <*>Q,/ @*<6t*<= *Z=#>,B1 ,<6 5=1?C,^,>6*5= >1,@*<= \ .// <+*@@5>2
Conditions to avoid	: ` C1<1MR*=16# C.BC +QR1>,5>1=Q,V R>*65@C,^,>6*5= 61@*QR*=.+< R>*65@#2 (1Z1># R>*4@+1 Q1,=5>1=/.=46 .<=1@*<= 7 ,<6 K2
Incompatible materials	: ' 11R, \ ,V Z>*Q +C1Z//\ .<BQ,+1>.,/= # R>1-1<#>#<B1M*E1>Q@>1,@*<=P *M.6.^<B, B1<#?=>#<B ,/ [,/. =?=>#<B,@.6=2
Hazardous decomposition products	: #1@*QR*=.+< R>*65@+Q,V .<@/56#C1Z//\ .<BQ,+1>.,/= @>0*< Q*<M.61?@,>0*< 6.*M.61?>Q*[1?>M.61=>Z<.#>B1<2

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
U*/-1<+<,RC-C, FR1>*/15QG? C1,- V,>*Q 2	3#D8 #1>Q,/	(,00.+	n!2ÄN! BXB	H
+t<. 5Q 6.*M.61	3#D8 A>,/	(,+	!2E BXB	H
EH05*MM +C,<*/	3#D8 A>,/	(,+	n!8 BXB	H
05t<H"H*/	3#D8 #1>Q,/	(,00.+	EE8QBXB	H
	3#D8 A>,/	(,+	ED8QBXB	H
	3&D8 ;<C,/,+.*< d,R*>	(,+	E 888 QBXh	C*5>=
	3&D8 ;<C,/,+.*< d,R*>	(,+	K888 RFQ	C*5>=
	3#D8 #1>Q,/	(,00.+	! 88 QBXB	H
<,RC-C,/1<1	3#D8 A>,/	(,+	7N8QBXB	H
	3#D8 #1>Q,/	(,00.+	nE8 BXB	H
	3#D8 A>,/	(,+	N8 QBXB	H
EHQ +CVR>*R,<H"H*/	3&D8 ;<C,/,+.*< d,R*>	(,+	ÄD88QBXBh	C*5>=
	3#D8 #1>Q,/	(,00.+	E BXB	H
	3#D8 A>,/	(,+	E Ä8 QBXB	H

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 *< +C1Q.M5>1.#1/2

Irritation/Corrosion

Conclusion/Summary

Skin : SC1>1,>1 <* 6,+ , - ,./,0/1 *< +C1Q.M5>1.#1/2

Eyes : SC1>1,>1 <* 6,+ , - ,./,0/1 *< +C1Q.M5>1.#1/2

Respiratory : SC1>1,>1 <* 6,+ , - ,./,0/1 *< +C1Q.M5>1.#1/2

Sensitization

Conclusion/Summary

Skin : SC1>1,>1 <* 6,+ , - ,./,0/1 *< +C1Q.M5>1.#1/2

Section 11. Toxicological information

Respiratory : SC1>1,>1 <* 6,+ , - ,./,0/1 * < C1Q.M5>1.≠1/2

Mutagenicity

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 * < C1Q.M5>1.≠1/2

Carcinogenicity

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 * < C1Q.M5>1.≠1/2

Classification

Product/ingredient name	OSHA	IARC	NTP
4<. 5Q 6.*M.61 EH05*MM+C,*/ <,RC-C,/1<1	H H H	E\$! E\$	H H (1,=* <,0/V ,<+.@.R#16 # 01 , C5Q,< @,>@*B1<2

Carcinogen Classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: Known to be a human carcinogen; Reasonably anticipated to be a human carcinogen

OSHA: +

Not listed/not regulated: -

Reproductive toxicity

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 * < C1Q.M5>1.≠1/2

Teratogenicity

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 * < C1Q.M5>1.≠1/2

Specific target organ toxicity (single exposure)

Name	Category
J*/-1<+<,RC-C, FR1>* /15QG01,-V ,>*Q 2 05+<H"H*/ EHQ+CVR>*R,<H"H*/	&,+1B*>V! &,+1B*>V! &,+1B*>V!

Specific target organ toxicity (repeated exposure)

Name	Category
EH05*MM+C,*/ <,RC-C,/1<1	&,+1B*>VE &,+1B*>VE

Target organs

: &* <+ ,<=Q,+1>.,/\ C.@@,5=1=6,Q ,B1 # C1Z//*\ .<B*>B,<=F0>.,<2
&* <+ ,<=Q,+1>.,/\ C.@@Q,V @,5=16,Q ,B1 # C1Z//*\ .<B*>B,<=F0/**6? [.6<1V=?
/5<B=?/-1>?R/11<7QRC,+@V=+Q?5RR1>1=R.>*>V@,@?=[.<?0*<1 Q,>>*\?
@1<+/,<1>.*5=V=+Q F&)J G1,>=?1V1?/1<=> @><1,2

Aspiration hazard

Name	Result
J*/-1<+<,RC-C, FR1>* /15QG01,-V ,>*Q 2	%J 9;(% S;A) _%j %q# H&,+1B*>V"

Information on the likely routes of exposure

Potential acute health effects

Eye contact : &,5=1= =1>.*5=1V1 6,Q ,B12

Inhalation : &,< @,5=1@<=> ,/<1>.*5=V=+Q F&)J G61R>1=.*<2 L,V @,5=16>*\ =.<1==,<6
6.^.<1==2

Skin contact : #1Z,++<B# C1=[.<2 L,V @,5=1=[.<6>V1==,<6 .>+.*<2

Section 11. Toxicological information

Ingestion : &,< @,5=1@<@>,<1>*5= \=4Q F&)J G61R>1=. *<2

Over-exposure signs/symptoms

Eye contact : %6- 1>=1=VQR*Q = Q,V .<@/561C1Z//\ .<BP
R,.<
\ ,+1>.16<1==

Inhalation : %6- 1>=1=VQR*Q = Q,V .<@/561C1Z//\ .<BP
<,5=1, * > - *Q .+<B
C1,6,@C1
6>* \ =.<1==Z+.B51
6.^.<1==X1>+B*
5<@* <= @ = <1==

Skin contact : %6- 1>=1=VQR*Q = Q,V .<@/561C1Z//\ .<BP
R,.< * > .>,>+.*<
>16<1==
6>V*1==
@>@>.<B
0/=4>.<BQ,V *@@5>

Ingestion : %6- 1>=1=VQR*Q = Q,V .<@/561C1Z//\ .<BP
=*Q ,@CR,.<=

Delayed and immediate effects and also chronic effects from short and long term exposure

Conclusion/Summary : SC1>1,>1 <* 6,+ , - ,./,0/1 * < +C1Q.M5>1. #1/2 1-component mixtures:
Z>Q,/61 C\61 . =>1/1,=1665>.<B@5>.<B2>Q,/61 C\61 Q,V @,5=1 .>1-1>=.0/1 1Z1 @>? =
.>,>+.<B # +C1Q5@*5=Q1Q0>,<1= ,<6 Q,V @,5=1[.<=1<=.A,+. * <2 OMR*=5>1#
@*QR*<1<+*=/- 1<+ . R*>@*<@1#+. * <= .< 1M@1#*Z +C1=++16 *@@5R,*< / 1MR*=5>1
/Q.+Q,V >1=5/+< ,6- 1>=1C1,/C1Z1 @+=5@, = Q5@*5=Q1Q0>,<1 ,<6 >1=R.>,*>V
=V=4Q .>,>+,*< ,<6 ,6- 1>=11Z1 @+* < +C1[.6<1V=?/-1>,<6 @1>+ / <1>.*5= =V=4Q2
JVQR*Q = ,<6 =.B<= <@/561C1,6,@C1B.^.<1==Z+.B51?Q5=@/,> \ 1, [<1==?
6>* \ =.<1==,<6? .< 1M*1Q1 @,=1?/*= *Z@* <= @ = <1==2J* /-1 <# Q,V @,5=1=*Q 1
Z +C1,0 - 1 1Z1 @+0V,0=*R+* < +C>*5BGC1 = [.<2 SC1>1. =*Q 1 1-.61<@1C,+
>1R1, #6 1MR*=5>1# * >B,< .@* /-1 <+ ,R * >= .< @* @ .<+,* < \ .C @* <= *+ / *56 <*. =1
@, <@,5=1 B>1, #>C1, > .<B/*= +C, < 1MR1@> Z*Q 1MR*=5>1# <*. =1 ,/*<1 2 ;Z
=R/, =C16. < +C1 1V1=?<C1/45.6 Q,V @,5=1.>+,* < ,<6 >1-1>=.0/16,Q ,B12 ;<B1=+* <
Q,V @,5=1<5=1,? 6.,>>C1, ,<6 - *Q .+<B2 SC.=+ [1= .<# ,@@*5+ C 1>1 [<* \ <?
61/, V16 ,<6 .QQ16., # 1Z1 @+ ,<6 ,/ = * @ >* < .@Z1 @+ *Z@*QR*<1<# Z*Q =C*>H1>Q
,<6 /*<BH1>Q 1MR*=5>1 0V*> ,/? .<C, /, +* < , <6 61>Q/ >*54= *Z 1MR*=5>1,<6 1V1
@* < @ 2

Short term exposure

Potential immediate effects : SC1>1,>1 <* 6,+ , - ,./,0/1 * < +C1Q.M5>1. #1/2

Potential delayed effects : SC1>1,>1 <* 6,+ , - ,./,0/1 * < +C1Q.M5>1. #1/2

Long term exposure

Potential immediate effects : SC1>1,>1 <* 6,+ , - ,./,0/1 * < +C1Q.M5>1. #1/2

Potential delayed effects : SC1>1,>1 <* 6,+ , - ,./,0/1 * < +C1Q.M5>1. #1/2

Potential chronic health effects

General : L,V @,5=16,Q ,B1 # * >B, <= +C>*5BCR>* <B16 * >>1R1, #6 1MR*=5>129> /* <B16 * >
>1R1, #6 @* < @ + @ , <61Z+ +C1 = [.< , <6 /1, 6 # .>,>+,* < ? @ > , @ < B , <6X> 61>Q , +. + = 2

Section 11. Toxicological information

Carcinogenicity	: J5=R1@6 *Z @,5=.<B@,<@2\.= [*Z @,<@1R1<6= * < 65>,+* < ,< 6 /1-1/ *Z 1MR*=5>12
Mutagenicity	:) * [<* \ <=.B<.Z@,<+1Z @+* > @* @,/C,^,>6=2
Teratogenicity	:) * [<* \ <=.B<.Z@,<+1Z @+* > @* @,/C,^,>6=2
Developmental effects	:) * [<* \ <=.B<.Z@,<+1Z @+* > @* @,/C,^,>6=2
Fertility effects	:) * [<* \ <=.B<.Z@,<+1Z @+* > @* @,/C,^,>6=2

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
A>/ #1>Q,/; ;<C,/+. * < FB,=1=G ;<C,/+. * < F-,R* >=G ;<C,/+. * < F65=, <6 Q.=#G	EKE"X QBXB ED"8E QBXB ND""8 RRQ "!D2Ä QBX !"2 7 QBX

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
EH05MM+C,<*/ 05+<H"H*/ <,RC-E,/1<1 EHQ+CVR>*R,<H"H*/	%@5+3&D8 n! 88 QBXT>1=Q,+ 1>	#,RC<., H#,RC<., Q,B<.	K C*5>=

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
EH05MM+C,<*/	H		(1,6./ V

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
EH05MM+C,<*/ 05+<H"H*/ <,RC-E,/1<1 EHQ+CVR>*R,<H"H*/	82K" 82KK !2! 82ZÄ	H H KD2' H	/*\ /*\ /*\ /*\

Mobility in soil

Soil/water partition coefficient (K _{oc})	:)*+ ,-, ./,0/1 2
---	--------------------

Section 13. Disposal considerations

Disposal methods

: SC1B1<1>,+* < *Z\,=+ 1 =C*5/6 01 , - *.616 * > Q.<Q.^16 \ C1>1-1>R*==.0/12#. =R*=/ *Z.C.=R>*65@#*/5+* <= , <6 , < V0VHR>*65@#C*5/6 , + , // +Q1= @Q R/M .C.C1 >145.>1Q<# *Z1<-.>* <Q1<+ / R>*4 @* < , <6 \ , =+1 6.=R*=/ , /1B.= / , +* < , <6 , <V >1B.* < , / * @ , / , 5 +C* > .V>145.>1Q<# 2 #.=R*=1 *Z=5>R/5<#6 <* <H>1 @ , / , 0/1R>*65@# - , , / .@1<=16, =+ 1 6.=R*=/ , @* < , @* > 2 ` , =+1 =C*5/6 * < + 01 6.=R*=16*Z5<# 1 , +16 # C1=1\ 1>5</1==Z/N @*QR / , <+ \ .C.C1>145>1Q1<# *Z , // , 5+C* > .4 = \ . Ce5> . =6 . @ < 2 ` , =+1 R , @ , B . < B =C*5/6 01 > 1 @ , / , 162< @ < 1 > , * < * > / , < 6 Z // =C*5/6 * < / V01 @ * < =.61>16 \ C1< > 1 @ , / . < B =C* + Z , =.0/12 SC.=Q , +1 > . / , <6 . = @ < + . < 1 > Q5 =+ 01 6.=R*=16*Z . < , =Z1 \ , V2 & , > 1 =C*5/6 01 + [1< \ C1< C , < 6 / . < B1QR +16 @ * < + . < 1 > =C , +C , -1 < * + 011< @ / 1 , < 16 * > . < = 16 * 5 + 2 OQR V @ * < + 1 > = * > / . < 1 > =Q , V > 1 < + = * Q 1 R > * 65 @ + 1 = 651 = 2 d , R > * Z * Q R > * 65 @ + 1 = 651 = Q , V @ + 1 , CBC / V , Q , Q , 0 / 1 * > 1MR / * = . - 1 , * Q = RC1 > 1 . < = .61 + C1 @ * < + 1 > 2 # * < * + @ 5A 1 / 6 * > B > . < 65 = 16 @ * < + . < 1 > = 5 < / 1 = = C1VC , -1 011< @ / 1 , < 16 + C * > * 5BC / V < 4 > < , // V2 % * . 6 6 . = R1 > # * Z = R . / 16 Q , +1 > . / , <6 > 5 < * Z , <6 @ * < , @ + \ . C = * . / ? \ , +1 > \ , V = ? 6 > . , < = , <6 = 1 \ 1 > = 2

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

14. Transport information

	DOT	IMDG	IATA
UN number	I)"EÄ!	I)"EÄ!	I)"EÄ!
UN proper shipping name	9%)S	9%)S	9%)S
Transport hazard class (es)	!	!	!
Packing group	...	...	...
Environmental hazards	)*2	W=2	)*2
Marine pollutant substances	)*+ ,RR/.@,0/12	FJ/- 1<+<,RC-C, FR1>* /15QG? C1,- V,>*Q ,+ .@?,RC-C, /1<1G	)*+ ,RR/.@,0/12
Product RQ (lbs)	!K!N2N	)*+ ,RR/.@,0/12	)*+ ,RR/.@,0/12
RQ substances	F<,RC@, /1<1?MVI<1G	)*+ ,RR/.@,0/12	)*+ ,RR/.@,0/12

Additional information

DOT : 9 , @ , B1 = *1 = C.RR16< 45 , < + . + 1 = / 1 = = C , < C1R>*65@+1R>+0/1 45 , < + . M , > 1 < * + = 50e1 @ * C1 (U F>1R>*0/1 45 , < + . M G > , < = R * > , + . * < > 145>1Q1<# 2

IMDG : SC1Q , > . < 1 R * // 5 + < + Q , > [. = < * + > 145 . > 16 C1< > , < = R * > 16 . < = . M = * Z nD3 * > nD [B2

IATA : SC11< - . > * < Q1<+ / VC , ^ , > 6 * 5 = = 50 = + < @ 1Q , > [Q , V , RR1 , > . Z > 145 . > 16 V * + C1 > > , < = R * > , + . * < > 1B5 / , + * < = 2

Special precautions for user : **Transport within user's premises:** / , V = > , < = R * > + < @ / * = 16 @ * < + 1 > = C , + , > 1 5R > . BC , * 6 = 1 @ 5 + 2 O < = 5 > 1 C , + R1 > = * < > > , < = R * > + < B + C1R > * 65 @ + 1 < * \ \ C , + # 6 * . < C11 - 1 < + * Z , < , @ @ 1 < + * > = R . / , B12

Section 15. Regulatory information

United States

United States inventory (TSCA 8b) : %/@*QR*<1<#,>1 /:=#6 *> 1M1QR#62

U.S. Federal regulations :

[SARA 302/304](#)

[SARA 304 RQ](#) :)*+ ,RR/.,0/12

[Composition/information on ingredients](#)

)* R>*65@#1>1 Z5<62

[SARA 311/312](#)

[Classification](#) : T.>1C,^,>6
;QQ16.,+1 F,@5#GC1,/+CC,^,>6
#1/,V16 F@C>*<. @G+CC,^,>6

[Composition/information on ingredients](#)

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
✓*/-1<+<,RC-€, FR1#*/15QG01,-V ,>*Q 2	W=2	)*2	)*2	W=	)*2
+†<.5Q 6.*M.61	)*2	)*2	)*2	)*2	W=2
EH05MM+€, <*/	W=2	)*2	)*2	W=2	W=2
05†<H"H*/	W=2	)*2	)*2	W=2	)*2
<,RC-€, /1<1	W=2	)*	W=2	W=2	W=2
EHQ+CVR>*R,<H"H*/	W=2	)*2	)*	W=2	)*2

[SARA 313](#)

Supplier notification	Chemical name	CAS number	Concentration
:	EH05MM+€, <*/	""H7ÄHE	" HD
	05†<H"H*/	7"H!ÄH!	" HD
	<,RC-€, /1<1	N"HE8H!	" HD

J%/% !"! <+Z@, #<= Q5=+<*+01 61†@C16Z*Q +C1J#J , <6 ,<V @*R#B, <6 >16.=*05#< *Z+C1J#J =C, // .<@/561
@*R#B, <6 >16.=*05#< *Z+C1<*+ .@1††@C16# @*R.#*Z+C1J#J =50=1451<A/>16.=*05#62

Additional environmental information is contained on the Environmental Data Sheet for this product, which can be obtained from your PPG representative.

[California Prop. 65](#)

WARNING: SC.=R>*65@@@*<#<= , @C1Q@, /<# <# +C1J††† *Z&, /Z><., # @,5=1@,<@2>

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : ! o **Flammability :** ! **Physical hazards :** 8

FoGH&C>.<. @1Z1@+

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

Product code 137D40

Date of issue 23 June 2015

Version 4

Product name 6431D BACKR 4

Section 16. Other information

National Fire Protection Association (U.S.A.)

Health : 3 Flammability : 3 Instability : 0

Date of previous issue : 6/5/2015

Organization that prepared
the MSDS : EHS

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships,
1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.

United States

Page: 15/15

Printed Name 000078

SAFETY DATA SHEET



Date of issue/Date of revision 3 July 2015
Version 4

Section 1. Identification

Product name : Ä !"# \$!%&" (
Product code : 67&%!&(
Other means of identification :)*+ ,-, ./0/1 2
Product type : ".34.52

Relevant identified uses of the substance or mixture and uses advised against

Product use : 854+:;./ ,RR/=,+.9:2
Use of the substance/
mixture : !*,+ .9?2 \$, . 9+2 \$, .9+9?F;1/,+15 Q,+1;./ :
Uses advised against :)*+ ,RR/=,0/12

Supplier : \$\$ 854+:;./1:<8=2
>91 \$\$ \$/,=1
\$.+04;?@<\$A 7B&C&

Emergency telephone number : D(7&E%(F(B7BDG2E
DB7(B(BF7%&' D!9,5,E
'7FJ"F"F&7F(" DK1L=*E

Technical Phone Number : DC&(B&C(FCM" D!\$#8) NA"O<\$AE JP ,2Q2FBP RQ2OHS

Section 2. Hazards identification

OSHA/HCS status : S@.:Q,+1;./ : =*9:51;15 @,^;5*4: 0U+@1>H_A _^ ;5 !*Q Q49.=,+*9 H+95, ;5
D&MÄ #7M7'27&"E2

Classification of the substance or mixture : Ä"A KKA 6"O "8T G8NH F!,+ 1?*;U %
HV8 !> ##> H8>)W8##8SAS8>) F!,+ 1?*;U &
HO#8> GH OXO NAKA OVOXO8##8SAS8>) F!,+ 1?*;U 7
!A #!8)> O)8!8 SX F!,+ 1?*;U &
H\$O!8Ä8 SA# OS ># A) S> Y88 SX DH "O OY\$> HG#OED),;= * += 1Z! =+ EF
!,+ 1?*;U %
H\$O!8Ä8 SA# OS ># A) S> Y88 SX D#OASON OY\$> HG#OEF!,+1?*;U &
\$1;=19+?1 *Z+@1Q.L4;1 =*9: .:+.9? *Z.9?;15.19-D:E*Z49[9\ 9 #L.=.tP('2 &]

GHS label elements

Section 2. Hazards identification

Hazard pictograms



Signal word

: **Danger**

Hazard statements

- : Flammable liquid and vapor.
- : Causes serious eye damage.
- : Causes skin irritation.
- : Suspected of causing cancer.
- : May cause drowsiness and dizziness.
- : May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash hands thoroughly after handling.

Response

- : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage

- : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal

- : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

- : Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. **1-component mixtures:** formaldehyde is released during curing. Formaldehyde may cause irreversible effects, is irritating to the mucous membranes and may cause skin sensitization. Avoid contact with skin and clothing. Wash thoroughly after handling. Emits toxic fumes when heated.

Hazards not otherwise classified

- : May form explosive peroxides. Hazardous reactions or instability may occur under certain conditions of storage or use. Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : K.L-4;1

Product name : Ä !"# \$!%&" (

Ingredient name	%	CAS number
Ä*/-19+9,R@,DR1# 14QE@1,-U,;*Q 2 &FD&F04+U1+@*L1@U=1+,+1 04+9F7F*/ &F1@U@1L,9F7F*/ H*/-19+9,R@,DR1# 14QE@.?.@,;*Q ,+= &FQ1+@R;*R,9F7F*/ 9,R@/191 7&F+Q1+@19^191	a7(Fb&B aB Fb7' a(FbB a%2FbB a& Fb% a& Fb% a7 Fb% a72%Fb&	I(C(&FM(FB 7&(F7CF(C7F%IF% 7'(FCIFC I(C(&FMBFI CJFJ%F7 M7F&'F% MBFI%FI

HG6 =*51: ;1R;1: 19+:40:+,9=1: \ .@*4;1?:+1;15 !A H)4Q 01;:2

A9U=*9=19+,+.9 :@*9 ,: , ;,9?1 : * R;*+1=+*9Z519+,./+U* ;: 541 * 0,+=@,;: ,+*92

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

8Z.9?1:.*9<.,;+.9<,9U +LR1*Z*-1; 1LR*:4;1 *; :UQR*Q: *Z*- 1;1LR*:4;1 *==4; 54;9? *; R1;...+: ,Z+1; 4:1 *Z
+@.:R;*54=+*=*9+,+, \$>8+>) !>)S #> " !O) SO#<OKO# O!) X#> >K ># \$ _X H88A) .QQ15.,+1/U@,-1
H,Z1+UN,+, H@11+9Z;Q ,+.*9 , - ,./,0/12)1-1; ?-1 , 9U@.97UQ*4+@* ,9 49=*9=.*4: *; =*9- 4/..9? R1;.*92

Description of necessary first aid measures

Eye contact	: !@1=[Z ,95 ;1Q*-1 , 9U=*9+,+/19:1:2 &Q15.,+1/UZ4:@1U1: \ .@499.9? \ ,+1; Z; ,+ /1, :+7BQ.94+<[11R.9 1U1/5: *R192H11[.QQ15.,+1 Q15.=, / , +19+*92
Inhalation	: #1Q*-1 * Z1:@,;2 V11RR1;.*9 \ ;Q ,95 ,+ ;1:28Z9*+0;1,+@9?<.Z0;1,+@.9?; .,;1?4/; *; Z1: R,;+;U ,;1: +*==4;< R,*- 51 ,;+.Z=, / ;1:R,; ,+*9 *; *LU?19 0U+,915 R1;.*991/2
Skin contact	: #1Q*-1 =*9+Q .9,+15 =/+@.9 ,95 :@*1:2` ,:@ :[.9 +@*4?@U\ .@*R ,95 \ ,+1; * ; 4:1 ;1=*29^15 :[.9 =/1,9:1;2 N*)> S 4:1 :*/-19+ : *; +@.991 2
Ingestion	: 8Z:\ / /*\ 15<:11[Q15.=, / , 5- =1.QQ15.,+1/U,95 :@*\ +@ =*9+,91; *; /,0 1/2V11R R1;.*9\,;Q ,95 ,+ ;1:2N*)> S .954=1-*Q .+9?2

Most important symptoms/effects acute and delayed

Potential acute health effects

Eye contact	: !,4:1 : :1;.*4: 1U1 5,Q ,?12
Inhalation	: !,9 =,4:1 =19+,/ 91;- *4: :U:+1Q D!)H E51R;1:..*92 K,U =,4:1 5;* \ :.91: ,95 5.^91:2
Skin contact	: !,4:1 : :[.9 ,;+.92 N1Z++9? * @1[.92
Ingestion	: !,9 =,4:1 =19+,/ 91;- *4: :U:+1Q D!)H E51R;1:..*92

Over-exposure signs/symptoms

Section 4. First aid measures

Eye contact	: A5-1;1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P R,.9 \ ,+1;.9? ;1591::
Inhalation	: A5-1;1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P 9,4:1, *; -*Q .+9? @1,5,=@1 5;* \ .91::WZ+.?41 5.^ .91::W1;+.* 49=*9:= .*4:91::
Skin contact	: A5-1;1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P R,.9 *; .;+.9 ;1591:: 5;U91:: =,;=[.9? 0/;+1;.9? Q,U *=4;
Ingestion	: A5-1;1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P :+*Q ,=@R,.9:

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Ø =,;1 *Z.9@,/+*9 *Z51=*QR*+.*9 R,*54=+ .9, Z;1<:UQR*Q : Q,U 01 51/U152 S@11LR*:15 R1;:*9 Q,U 9115 # 01 [1R+4951; Q15=,/ :4;-1. //,9=1 Z; (J @*4;:2
Specific treatments	:) * :R1=.Z= +1,+Q19+2
Protection of first-aiders	:) * ,=+.*9 :@,//01 +[19 .9*/- .9? ,9U R1;:*9,/ ;:[*; \ . @4+:4.+0/ 1 +,.9.9?2 8Z+. : :4: R1=+5 +@,+ZQ1: ,;1 : +//R;1:19<+@1;1=41; :@*4/5\ 1,; ,9 ,RR,*R;.,+1 Q,;[*; :1/ZF=9+,.915 0,1,+@9? ,RR, ,;+4. 8+Q,U 01 5,9? 1;*4: # +@1R1;:*9 R,*-5.9? ,.5 # ?-1 Q*4+@FFQ*4+@1:4:= .+.*92 ` ,:@ =*9+Q .9,+15 =/+@9? +@*;*4?@J\ .+@ ,+1; 01Z; 1;1Q*- .9? .+* ; 1,; ?* 1:2

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: G:1 5;U=@1Q=,/<CO ₂ , \ ,+1; :R;U DZE*; Z,Q 2
Unsuitable extinguishing media	: N* 9*+4:1 \ ,+1; e12

Specific hazards arising from the chemical

: Ä,Q Q,0/1 /34.5,95 -,R*;2 Ø , Z;1 *; .Z@1,45<, R1:: 4;1 .9=;1;1 \ .//*=4; ,95
+@1=*9+.91; Q,U 04;+<\.+@*1;:[*Z, :40:13419+ 1LR/*.*92 d,R*; Q,U
;==4Q4/,+1 .9/*\ *; =*9Z915,;1,; *; +,-1/ , =*9:51;0/1 5:;+9=1 # , :*4; =1*Z
.79.+*9 ,95 Z:@ 0,=[2 #49*ZZ# :1\1; Q,U =;1,+1 Z;1 *; 1LR/*.*9 @,^;52 S@.:
Q,+1,;/ : #L.= # ,34,+ .=/Z \ .+@*9? /;+ .9? 1Z=+2 Ä;1 \,+ 1; =*9+Q .9,+15 \ .+@
+@.:Q,+1,;/ Q4:+01 =*9+.915 ,95 R;1-19+15 Z*Q 01.9? 5:=@,;?15 # ,9U \ ,+1;\ ,U<
:1\1; *; 5,;.92

Section 5. Fire-fighting measures

Hazardous thermal decomposition products

: N1=*QR*.:+*9 R;*54=+ Q,U .9=/451+@1Z/*\ .9? Q,+1;./:P
 =,;0*9 5.*L.51
 =,;0*9 Q*9*L.51
 9.†*?19 *L.51:

Special protective actions for fire-fighters

: \$;*Q R#U.:*/,+ 1 +@ := 191 0U;1Q*- .9? ,//R1;:*9: Z*Q +@1.=.9.†*Z+@1.9=.519+.Z
 +@1;1.: , Z;12)* ,+=*9 :@,//01 †[19 .9-*/- .9? ,9UR1;:*9,/ ;: [*; \. +@*4+4.+0/ 1
 †,9.9 ?2 K*- 1=*9+,91;: Z*Q Z;1 ,;1, .Z+@.::=,9 01 5*91 \. +@*4;: [2 G:1 \,+ 1;
 :R;U † [11RZ;1F1R*:15 =*9+,91;: =**/2

Special protective equipment for fire-fighters

: Ä;1FZ@†: :@*4/5\ 1; ,RR;*R;,+1 R*+†=+ 1 134.RQ19+,9 5 :1/ZF#9+, .915 0;1,+@9?
 ,RR;,+ 4: DH6 AE\ .@ Z//Z=1FR.1=1*R1;,+15 .9 R*.:+1 R;1: 4;1 Q*512

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

:)* ,+=*9 :@,//01 †[19 .9-*/- .9? ,9UR1;:*9,/ ;: [*; \. +@*4+4.+0/ 1 †,9.9 ?2
 O, =4,+1 :4;: *495.9? ,;1;:2 V11R4991=1: ,;U ,95 49R*+1=+15 R1;:*991/ Z*Q
 19†;9?2 N* 9*+ †4=@*; \ ,/[+@*4?@R.//15 Q,+1;./ H@4*ZZ// .?9.†*9 :*4;=1:2
)* Z;1< :Q * [.9? *; ZQ 1: .9 @,^;5 ,;1,2 N* 9*+0;1,+@ - ,R*; *; Q.:+2 \$*-. 51
 ,5134, †1 -19 †/+.*92` 1; ,RR;*R;,+1 :1R;,+* ; \ @19-19†/+.*9 .: .9,51 34,+12 \$4+
 *9 ,RR;*R;,+ †1 R1;:*9,/ R*+†=+ 1 134.RQ19‡

For emergency responders

: Ø:R1=,./:15 =/*+@9? .: 134.,15 † 51,/ \ .@+@1R.// ?1<†[1 9*+1 *Z,9U .9Z;Q ,+*9
 .9 H1=+*9 J *9 :4. +0/1 ,95 49:4.† 0/1 Q,+1;./ :2 H11 ,/* +@1.9Z;Q ,+*9 .9 fÄ*; 9*9F
 1Q1;?19=UR1;:*991/†2

Environmental precautions

: A-* .55:R1;: ,/ *Z: R/15 Q,+1;./ ,95 ,49*ZZ,95 =*9+=+ \. +@*/< \ ,+1; \ ,U:<5; ,9:
 ,95 :1\ 1;: 8Z;Q +@1;1/1- ,9+ ,4+@*+†1: .Z+@1R,*54=+@,: =4:15 19-.,*9Q 19†/
 R*/4+*9 D:1\ 1;:< \ ,+ 1; \ ,U: :*/ / *; ,;E2

Methods and materials for containment and cleaning up

Small spill

: H†R /1, [.Z.+@4+;: [2 K*-1 =*9+,91;: Z*Q :R.// ,;1,2 G:1 :R; [FR;*Z*†/: ,95
 1LR/*: *9FR;*Z 134.RQ19‡ N.4† \ .@ ,+1; ,95 Q*R 4R.Z ,+1;F* /40/12 A/†;9,+.-1/Uk
 ; .Z,+ 1; .9/40/1<0*;0 \. +@9 .91;+5;UQ,+1;./ ,95 R/=1 .9,9 ,RR;*R;,+1 \ ,+ 1
 5.:R*./ =*9+,9 1;2 N.:R*1 *Z-., /:=19:15 \,+ 1 5.:R*./ =*9†,= †;2

Large spill

: H†R /1, [.Z.+@4+;: [2 K*-1 =*9+,91;: Z*Q :R.// ,;1,2 G:1 :R; [FR;*Z*†/: ,95
 1LR/*: *9FR;*Z 134.RQ19‡ ARR;*=@;1/1, :1 Z*Q 4R\ .952 \$;1-19+ 19†U.9† :1\ 1;:<
 \ ,+1; =*4;: 1<0;:1Q 19† *; =*9Z915 ,;1,2 ` ,:@ :R.// ?1: .9† ,9 1ZZ419+†1,+Q19+
 R/9+*; R,*=115 ,: Z//\ :2 !*9+ ,9 ,95 =*//1=+R.//?1 \ .+@9*9F≠Q 04:+.0/1<
 ,0*;019+ Q,+1;./ 122:95< 1;,+@<1;Q.=4/†1 *; 5.,+*Q ,=1*4: 1;,+@95 R/=1 .9
 =*9+,91; Z; 5.:R*./ ,=,*;5.9? † /*=,/ ;1?4/ ,+*9: D:11 H1=+*9 7%EÄ.:R*1 *Z-., ,
 /:=19:15 \,+ 1 5.:R*./ =*9†,= †;2 !*9+ ,Q .9,+15 ,0*;019+ Q,+1;./ Q,U R*1 +@1
 :;Q 1 @,^;5 ,: +@1R.//15 R,*54=‡)*+ 1P:11 H1=+*9 7 Z; 1Q1;?19=U=*9†,=
 .9Z;Q ,+*9 ,95 H1=+*9 7%Z; \,+ 1 5.:R*./2

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: \$4+*9 , RR;*R;.,+1 R1: *9,/ R*+1=+1 134.RQ19+D:11H1=+*9 JE2A-* .5 1LR*:4;1 F
*0+., 9 :R1=.,/ .9:;4=+*9: 01Z:1 4: 12 N* 9*+ @,95/1 49+/,// :Z 1+UR;1=,4+*9: @,-1
0119;1,5 .9 5 4951;+**52 N* 9*+?1+.9 1U1: *; *9 :[.9 *; =/*+@?2 N* 9*+0;1,+@
-,R* ; *; Q:.;+2 N* 9*+.9?1:+2 G: 1 *9/U\ .@.5 134,+1 -19+/,+.92` 1,; ,RR;*R;.,+1
;1:R;.,+*;; \@19 -19+/,+.9 :.9,51 34,+12 N* 9*+19+; :+*;;?1 ;,1: .95 =*9Z915
:R;=1: 49/1: .5134,+ 1/U-19+/,+152 V11R.9 @1*:.? .9, / =*9+., 91; *; ,9 ,RR;*-1 5
/,+1;9,+.-1 Q,51 Z*Q , =*QR,+0/1 Q,+1;./ <[1R++?@U=/*:15 \@19 9*+.9 4:12 H#;1
,95 4:1 \ ,U Z*Q @1,*R;:[:<*R19 Z,Q 1 *; ,9U *+@1:;?9.+*9 :*4;=12 G: 1
1LR/*: *9FR;*Z 1/1=+.,/ D-19+/,+.9?</?@? .95 Q,+1;./ @,95/9?E134.RQ19+2 G:1
*9/U 9*9F:R;[.9? #*/:2 S,[1 R;1=,4+*9;U Q1,4:1 : ,? .9+ 1/1=+*+.,+=5.:=@,;?1:2
OQR+U=*9+.,91; :;1+.,9 R,*54=+.,1:541 ,95 =,9 01 @,^;5*4:2 N* 9*+;14:1 =*9+.,9 1;2

Special precautions

: d,R*;; Q,U ,==4Q4/,+1 .9/*\ *; =*9Z915 ,;1: *; +,-1/ , =*9:51;0/1 5:.,+9=1 # ,
;*4;= 1 *Z.?9.+*9 ,95 Z: @ 0,=[2 d,R*;; ;1 @1,-1; +@9,; .95 Q,U :R;1,5 ,/*9?
Z**;2 K,U Z:Q 1LR/*:-1 R1;*L.51:2 V11R,\ ,U Z*Q =*Q 04;+0/1 Q,+1;./ :2 A-*5
:@*=[.95 Z:+=*92 A-*5 ,//R*::0/1 :*4;=1: *Z.?9.+*9 D:R;[*; Z,Q 1E2Z+@:.
Q,+1;./ : R;,+*Z, Q4/+R1=*QR*919+;U,+1Q<;1,5 @1H,Z1+UN,+ H@11DEZ; +@1
*+@1=*QR*919+; =*QR*919+ 01Z;1 0/195.9? ;. +@1,14/+9? Q.L#;1 Q,U @,-1 @+1
@,^;5: *Z,/* *Z.+ R;+2

Advice on general occupational hygiene

: O,+9?<5;9[.9? , 95 :Q * [.9? :@*4/5 01 R;* @.45 9,;1 : \ @1;1+@:Q,+1;./ :.
@,95/15<+*;;15 ,95 R;*+1: 15 *; [1: : @*4/5 ,@ @,95: 95 Z=1 01Z; 1 1,+9?<
5;9[.9? ,9 5 :Q * [.9?2 #1Q *-1 =*9+Q .9,+15 =/*+@.9?95 R;*+1=+1 134.RQ19+01Z;1
19+;9? 1,+9? ;,1:2 H11,/* H1=+*9 J Z; .55.+*9/ .9Z;Q ,+*9 *9 @0.191
Q1,4;1:2

Conditions for safe storage, including any incompatibilities

: N* 9*+;+*;;1 ,0*-1 +@1Z/*\ .9? +1QR1;+4;1P%Bb DMB#E2H#;1 .9,==*5,9=1 \.+@
/*=,/ ;1?4/+*9: H#;1 .9; :1?;1?;+ 15 .9 5 ,RR;*- 15 ;,1 2 H#;1 .9 *; .? .9, / =*9+., 91;
R,*+1=+15 Z*Q 5;1=+49/?@+9, 5;Uk=**/ ,95 \ 1/F-19+/,+15 ;,1,< \ ,U Z*Q
.9=*QR,+0/1 Q,+1;./ : D11 H1=+*9 7'E ,95 Z*5 ,95 5;9[2 H#;1 /=[15 4R2O/Q.9,+1
,/ .?9+*9 :*4;=1:2 H1R,;+1 Z*Q *L.5.^9? Q,+1;./ :2 V11R=*9+.,91; +?@U=/*:15
,95 ,1/15 49+/,+1,5U Z; 4:12 !*9+ ,91; +@,+@,-1 0119 *R1915 Q4;+01 =,;1Z4/U
;1:1/15 ,95 [1R+4R;?@# R;1-19+/, [,?12 N* 9*+;+*;;1 .9 49/0 1/15 =*9+.,91;:2
G:1 ,RR;*R;.,+1 =*9+.,9Q 19+; , - *5 19-;9Q 19+; =*9+Q .9,+*92

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
F*-19+9,R@@,DR1# 14QE@1,-U,*Q 2 &FD&F04+U1+@*L@1@U=1+,+1 04+9F7F*/	)*912)912 ACGIH TLV (United States, 4/2014). S` AP&' RRQJ @*4;:2 OSHA PEL (United States, 2/2013). S` AP%" Q?VhJ @*4;:2 S` AP7" RRQ J @*4;:2
&F1@L@1L,9F7F*/ H*-19+9,R@@,DR1# 14QE@.?.@+,*Q ,+= &FQ1+@R;*R,9F7F*/	)*912)912 ACGIH TLV (United States, 4/2014). S` AP7B&Q?VhJ @*4;:2

Section 8. Exposure controls/personal protection

9,R@@/191

7&F+,Q1+@19^191

S` APB' RRQJ @*4::2
OSHA PEL (United States, 2/2013).
 S` AP%" Q?W hJ @*4::2
 S` AP7" RRQ J @*4::2
ACGIH TLV (United States, 4/2014).
Absorbed through skin.
 S` APB&Q?W hJ @*4::2
 S` AP7' RRQJ @*4::2
OSHA PEL (United States, 2/2013).
 S` APB' Q?W hJ @*4::2
 S` AP7' RRQJ @*4::2
ACGIH TLV (United States, 4/2014).
 S` AP7&%Q?W hJ @*4::2
 S` AP&BRRQJ @*4::2

Key to abbreviations

A	= A=1R;0/1 K,L.Q4Q \$1,[	H	= \$*+19+; / :[.9 .0 ;R +*9
Al 8	i AQ1;.=,9 ! *9Z1;19=1 *Z *-1;9Q1 9+; 854+;., / _U?.19.:+2	H#	i #1:R.;, #;U;19; +^,+*9
!	= !1. /9? ".Q.+	HH	= H[.9 :19; +^,+*9
Ä	= Ä4Q1	HSO"	= H@*+4;Q OLR*4 ;1 /Q.+;./4 1:
8O"	i 8+1;9, / \$1;Q::0 /1 OLR*4 ;1 ".Q.+	SN	= S*+ / 54;+
>H_A	= >==4R,+*9, /H,Z1+U,95 _1/ +@A5Q.9.;+.*92	S"d	i S@:1.@5 ".Q.+d./4 1
#	i #1:R.;, 0/1	S' A	= S.Q1` 1.?@15 A-1;? 1
j	i >H_A &M!Ä# 7M727&' H40R;,+j FS*L.=,9 5 _ ^;5* 4: H40;+9=1.		

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : 8Z+@.:R;*54=+*9+;9: 9?;15.19+ \. +@1LR*4;1 /Q.+<R1;:* 9/<\ *;[R/;=1
 ,+Q*:R@1;1*; 0.*/* ?.= / Q*9.*;9? Q.U 01 ;134.;15 # 51+1;Q.91 +@11Z1=+-191:: *Z
 +@1-19+;+.9 *; *+@1;=*9+*/ Q1;4;1: ,95W; +@191=1::+U# 4:1 ;1:R.;+*;U
 R;*+1=+-1 134.RQ19+2 #1Z1;19=1:@*4/501 Q.51 # ,RR;*R;,+1 Q*9.*;9? :+95;5:2
 #1Z1;19=1 # 9,+*9, / ?4.5,9=15*=4Q 19+ Z; Q1+@*5: Z; +@ 51+1;Q.9,+*9 *Z
 @,^;54: :40: +9=1: \ / / ;* 01 ;134.;152

Appropriate engineering controls : G:1 *9/U\ .@51 34,+1 -19+;+.92 G:1 R;*1:: 19=/*4;1 < /*= / 1L@,4;+-19+;+.9 *;
 *+@1;19?911;9? =*9+*/: # [11R\ *;[1; 1LR*4;1 # ,;0*;91 =*9+Q .9,9+; 01/*\ ,9U
 ;1=*Q Q 19515 *; ,;+4#;U /Q.+2 S@119?911;9? =*9+*/: /:* 9115 # [11R?;<
 -,R* ; *; 54;+ =*9=19+;+.9: 01/*\ ,9U /*\ 1; 1LR/*.-1 /Q.+2 G:1 1LR/*.*9 FR;**Z
 -19+;+.9 134.RQ19+2

Environmental exposure controls : OQ::*9: Z*Q -19+;+.9 *; \ *;[R;*1:: 134.RQ19+;@*4/501 =@1=15 # 19:4;1
 +@1+*Q R/U .+@1;134.;1Q 19+ *Z 19-;.*9Q 19+; R*+1=+*9 /1?;./+.*92 8: *Q 1
 =, 1<ZQ1 :=;4001;< Z/4;: *; 19?911;9? Q*5.Z=+*9: # +@1R;*1:: 134.RQ 19+
 \ / 01 91=1:: ;U # ;154=1 1Q::*9: # ,==1R;0/ 1/1-1/2

Individual protection measures

Hygiene measures : ` ,;@ @,95:<Z;1;Q : ,95 Z=1 +@*;*4?@/V+1; @,95/9? =@1Q=, / R;*54=+<01Z;1
 1,+9?<:Q *[.9? ,9 5 4:9? +@1/-,+ *;U,95 ,+ +@1195 *Z+@1^ ; [.9? R1;*52
 ARR;*R;.,+1 +1=@9.341::@*4/501 4:15 # ;1Q*-1 R*+19+//U=*9+Q .9,+15 =/*+@.92
 ` ,;@ =*9+Q .9,+15 =/*+@.921Z; 1;14:9?2 O9:4;1 +@,+1U\ ; @: +,+.9: ,95 ;Z 1+U
 :@*1 ; ; 1 =/*:1 # +@1^ *;[:+,*9 /*=+.*92

Eye/face protection : !@1Q.=, / R/;:@ ?*??/1: ,95 Z= 1 :@.1/2

Skin protection

Section 8. Exposure controls/personal protection

Hand protection	: !@1Q=,/F;1::+,9+<.QR1;-.*4: ?/*- 1: =*Q R/U? \ .@9 , RR;*-15 :+,95;5 :@*4/5 01 \ *;9 ,+ ,// +Q1: \ @19 @,95/9? =@1Q=,/ R;*54=+ .Z ;:[,:: 1:: Q19+.95=,+1: +@::: 91=1:: ,;U2 !*9:51;9? +@ R;;Q 1+1: : R1=.Z5 0U+@1?/*-1 Q,94Z,= +;1;<=@1=[54;9? 4:1 +@,+@ ?/*-1: ;1 :+//;1+. 9.9? +@1.R;*+1=+ 1 R;*R1;+1:2 8: @*4/5 01 9*+15 +@,+@1+Q1 # 0;1,[+@,*4?@Z; ,9U ?/*- 1 Q,+1;./ Q,U 01 5.Z;19+Z; 5.Z;19+ ?/*- 1 Q,94Z,= +;1; 2 8 +@1=;1 *ZQ.L +;1;< =*9::+ .9? *Z: 1-1;./ :40;+,9= 1:< +@1 R;*+1=+*9 +Q1 *Z+@1?/*-1 : =,99*+ 01 , =+4;,+1/U1:+Q,+152
Gloves	: Ä*; R;*9?15 *; ;1R1,+15 @95/.9?<4:1 +@1Z//\ .9? +R1*Z?/*-1:P #1=*Q Q19515P04+U;4001;<9.+/1 ;4001;
Body protection	: \$1;:*9,/ R;*+1=+ 1 134.RQ19+Z; +@10*5U:@*4/5 01 :1/1=#5 0;15 *9 +@1+:[01.9? R1;Z;Q 15 ,95 +@1;:[: .9-*/-15 ,95 :@*4/5 01 ,RR;*- 15 0U, :R1=.,/.:+ 01Z;1 @,95/9? +@ R;*54=+ @19+@1;1: , ;:[*Z.?9.+*9 Z*Q :+,+=1/1=+.=.U\ 1; ,9+F :+,+=R;*+1=+ 1 =/*+@.92 Ä*; +@1?;1,+1:+ R;*+1=+*9 Z*Q :+,+=5.:=@,;?1:<=/*+@9? :@*4/5 .9=451 ,9+F:+,+=*-1;./ /:<0**+: ,95 ?/*-1 :2
Other skin protection	: ARR;*R;;+1 Z*+ \ 1; ,95 ,9U ,55. +*9, /:[,9R;*+1=+*9 Q1;4:1 :@*4/5 01 :1/1=#5 0;15 *9 +@1+:[01.9? R1;Z;Q 15 ,95 +@1;:[: .9-*/-15 ,95 :@*4/5 01 ,RR;*- 15 0U, :R1=.,/.:+ 01Z;1 @,95/9? +@. R;*54=+
Respiratory protection	: #1:R;;+* ;1/1=+*9 Q4:+ 01 0;15 *9 [9*\ 9 *; ,9+ =R;+15 1LR*:4;1 /1-1/< +@1 @,^;5: *Z+@1R;*54=+ ,95 +@1;Z1 *; [.9? /Q.+ *Z+@1:1/1=+15 ;1:R;;+* ;2 8\ *; [1: ;1 1LR*:15 # =*9=19+;+*9 ;0* 1 +@11LR*:4;1 /Q.+*+@1U4;+ 4:1 ,RR;*R;;+1< =1;+Z15;1:R;;+* ;2 G: 1 , R;*R1/UZ+15<.; R4;Z19? *; ,;FZ15 ;1:R;;+* ;=Q R/U? \ .@9 ,RR;*-1 5 :+,95;5 .Z ;:[,:: 1:: Q19+.95=,+1: +@. : 91=1::;U 2

Section 9. Physical and chemical properties

Appearance

Physical state	: ".34.52
Color	:)*+ ,-, ./,0/1 2
Odor	:)*+ ,-, ./,0/1 2
Odor threshold	:)*+ ,-, ./,0/1 2
pH	:)*+ ,-, ./,0/1 2
Melting point	:)*+ ,-, ./,0/1 2
Boiling point	: m%02Jg Dm" g ÄE
Flash point	: !/*:15 =4RRJ2JMg D7&'gÄE
Auto-ignition temperature	:)*+ ,-, ./,0/1 2
Decomposition temperature	:)*+ ,-, ./,0/1 2
Flammability (solid, gas)	:)*+ ,-, ./,0/1 2
Lower and upper explosive (flammable) limits	: "*\ 1;P7&]
Evaporation rate	: '2& D04W ,=1+,+1 i 7E
Vapor pressure	: '2IC [\$, DBQQ _?Ek**Q +QR1;,+4;1I
Vapor density	:)*+ ,-, ./,0/1 2
Relative density	: 72(
Density (lbs / gal)	: J2J
Solubility	: 8:*40/ 1 .9 +@ Z//\ .9? Q,+1;./ :P=*/5 \ ,+1;2

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water	:)*+ ,-, ./,0/1 2
Viscosity	: V.91Q,+. = D('g! D7'(gÄEEm2&7 =Q&WDm&7 =HE
Volatility	: B'] D-WE<(&2JC] D\WE
% Solid. (w/w)	: BCZ%

Section 10. Stability and reactivity

Reactivity	:)* :R1=.Z= #1:+ 5,+ , ;1/,+15 # ;1,=+.-.U,-. /,0/1 Z; +@ R;*54=+*; .+ .9?;15.19+2
Chemical stability	: S@1R;*54=+.: :+,0/12
Possibility of hazardous reactions	: G951; 9*;Q ,/ =*95.+*9: *Z: #;,?1 ,95 4:1< @,^,;5*4: ;1, = +*9: \ //9*+*=4;2
Conditions to avoid	: ` @191LR*:15 # @.@#QR1;,+4;1: Q,U,R;*54=1 @,^,;5*4: 51=*QR*:.+*9 R;*54=+2 #1Z1; # R;*41=+1 Q1,;4;1: /.:+15 9:1=+*9: C,95 J
Incompatible materials	: V11R,\ ,U Z*Q +@1Z//\ .9? Q,+1,./: # R;1-19 :+;*9? 1L*+@1;Q=;1,=+*9:P *L.5.^9? , ?19+< :+;*9? ,/[,/,:< : +*9? ,=5:
Hazardous decomposition products	: N1=*QR*:.+*9 R;*54=+ Q,U 9=/451 +@1Z//\ .9? Q,+1,./:P=;,0*9 Q*9*L.51<=;,0*9 5.*L.51<:Q [1<*L.51: *Z9, +*?192

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
H*/-19+9,R@#@,DR1#/ 14QE< @1,-U,;*Q 2	"NB' N1;Q,/	#,00.+	m72M%?W?	F
&FD&F04+U1+@*L#1@U ,=1+,+1	"NB' > ;,/	#,+	%& ?W?	F
	"!B' 8@, ,+.*9 N4:+: ,95 Q.:+:	#,+	C&B" Q?W h	(@*4;:
04+9F7F*/	"NB' N1;Q,/	#,00.+	B&B?W?	F
	"NB' > ;,/	#,+	IB" Q?W?	F
	"!B' 8@, ,+.*9 d,R*;	#,+	&(" Q?W h	(@*4;:
	"!B' 8@, ,+.*9 d,R*;	#,+	J" RQ	(@*4;:
	"NB' N1;Q,/	#,00.+	%(" Q?W?	F
	"NB' > ;,/	#,+	CM' Q?W?	F
&F1@1@1L,9F7F*/	"NB' N1;Q,/	#,00.+	7MC' Q?W?	F
	"NB' > ;,/	#,+	&B ?W?	F
H*/-19+9,R@#@,DR1#/ 14QE< /?@;*Q ,+=	"NB' N1;Q,/	#,00.+	%Q ?W?	F
	"NB' > ;,/	#,+	J(" Q?W?	F
&FQ1+@R;*R,9F7F*/	"!B' 8@, ,+.*9 d,R*;	#,+	IB" Q?W h	(@*4;:
	"NB' N1;Q,/	#,00.+	& ?W?	F
	"NB' > ;,/	#,+	&(' Q?W?	F

Section 11. Toxicological information

9,R@@/191	"NB' N1;Q,/	#,00.+	m&' ?V?	F
7&F+.Q1+@1019^191	"NB' >:/	#+	(M' Q?V?	F
	"!B' @@,/+.*9 d,R*;	#+	7J''' Q?VQh	(@*4;:
	"NB' >:/	#+	B ?V?	F

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Irritation/Corrosion**Conclusion/Summary**

Skin : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Eyes : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Respiratory : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Sensitization**Conclusion/Summary**

Skin : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Respiratory : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Mutagenicity

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Carcinogenicity

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Classification

Product/ingredient name	OSHA	IARC	NTP
9,R@@/191	F	&6	#1,;*9,0/U ,9+.=.R,15 # 01 , @4Q9 =,;=.9*?192

Carcinogen Classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: Known to be a human carcinogen; Reasonably anticipated to be a human carcinogen

OSHA: +

Not listed/not regulated: -

Reproductive toxicity

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Teratogenicity

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,./,0/1 *9 +@1Q.L4;1 .+1/Z

Specific target organ toxicity (single exposure)

Name	Category
H*/-19+ 9,R@@, DR1#/ 14QE@1,-U,;*Q 2	!,+ 1?*;U %
04+9F7F*/	!,+ 1?*;U %
&F1@1L,9F7F*/	!,+ 1?*;U %
H*/-19+ 9,R@@, DR1#/ 14QE@.?.*Q ,+.=	!,+ 1?*;U %
&FQ1@1R;*R,9F7F*/	!,+ 1?*;U %
7&F+.Q1+@1019^191	!,+ 1?*;U %

Specific target organ toxicity (repeated exposure)

Name	Category
&F1@1L,9F7F*/	!,+ 1?*;U &
9,R@@/191	!,+ 1?*;U &

Section 11. Toxicological information

Target organs : 9+ ,9: Q,+1;,\ \ @.=@4:1 5,Q ,?1 # +@1Z//\ .9? *;?,9:P 0;,,9< :[.9<=19+;/ 91;-*4: :U:+1Q D!)H E2
!9+ ,9: Q,+1;,\ \ @.=@,U =,4:1 5,Q ,?1 # +@1Z//\ .9? *;?,9:P 0/**5< [.591U< /49?< /.-1;<@1;,*4RR1;1:R.;+*;U +;=+<1;,: <1U1</19: *; =*;91,< +1:1:2

Aspiration hazard

Name	Result
H*/-19+9,R@@,DR1#/14QE@1,-U,*Q 2 H*/-19+9,R@@,DR1#/14QE@1,-U,*Q ,+=	AH\$8#A S8) _Aj A#N F!,+ 1?*;U 7 AH\$8#A S8) _Aj A#N F!,+ 1?*;U 7

Information on the likely routes of exposure

Potential acute health effects

Eye contact : !,4:1 : 1;,*4: 1U1 5,Q ,?12
Inhalation : !,9 =,4:1 =19+;/ 91;-*4: :U:+1Q D!)H E51R;1:..*92 K,U =,4:1 5,*\ :.91:: ,95 5.^91::2
Skin contact : !,4:1 : [.9 ;,+.*92 N1Z++9? # +@1[.9
Ingestion : !,9 =,4:1 =19+;/ 91;-*4: :U:+1Q D!)H E51R;1:..*92

Over-exposure signs/symptoms

Eye contact : A5-1;:1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P R,.9 \ ,+1;9? ;1591::
Inhalation : A5-1;:1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P 9,4:1 ,* ; -*Q .+9? @1,5,=@1 5,*\ :.91::WZ+.241 5.^91::W1;+?* 49=*9:= *4:91::
Skin contact : A5-1;:1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P R,.9 *; ,;,+.*9 ;1591:: 5;U91:: =,;=[.9? 0/;+1;9? Q,U *=4;
Ingestion : A5-1;:1 : UQR*Q : Q,U .9=/451+@1Z//\ .9?P :+*Q ,=@R,.9:

Delayed and immediate effects and also chronic effects from short and long term exposure

Conclusion/Summary : S@1;1;1 9* 5,+ , - ,/0/1 *9 +@1Q.L#;1 .+1/ZZ 1-component mixtures:
Z;Q ,/51 @51 : ;1/1;15 54;9? =4;9?2A*;Q ,/51 @51 Q,U =,4:1 ;;1-1;:0/ 1 1Z)=+<.: ;,+.*9? # +@1Q4=*4: Q1Q0;91: ,95 Q,U =,4:1 : [.9:19:;+^,+.*92 OLR*;4;1 # =*QR*919+*;/- 19+-, R*; =*9=19+;+.*9: .9 1L=1: : *Z+@1;+15 *==4R,+*9/ 1LR*;4;1 /Q.+Q,U ;1:4/+ .9,5- 1;:1 @1,/1Z)=+ :4=@: Q4=*4: Q1Q0;91 ,95 ;1:R.;+*;U :U:+1Q ;;,+.*9 ,95 ,5- 1;:1 1Z)=+ *9 +@1[.591U< /.-1; ,95 =19+;/ 91;-*4 : :U+1Q2 HUQR*Q : ,95 :.79: .9=/451@15,=@15.^91::< Z+.741<Q4:=4/; \ 1, [91::< 5,*\ :.91:: ,95< .9 1L+1Q 1 =,;1: </*: : *Z=*9:= *4:91::2 H*/-1 9+ Q,U =,4:1 : *Q 1 *Z+@1,0*- 1 1Z)=+ 0U,0;*R+ *9 +@,*4?@@ : [.92 S@;1 : : *Q 1 1-519=1 +@,+ ;1R1,+15 1LR*;4;1 # *;?,9: = */-1 9+-,R *; .9=*Q 0.9,+*9 \ .@=*9;+9+/*45 9*.:1 =,9 =,4: 1 ?;1,+1; @1;,:9?/*: +@,91LR1=45 Z*Q 1LR*;4;1 # 9*.:1 ,/*91 2 8Z :R/;@15 .9 +@ 1U1:< +@1/34.5 Q,U =,4:1 ;;,+.*9 ,95 ;1-1;:0/1 5,Q ,?12 8?1;+.*9

Section 11. Toxicological information

Q,U =,4:1 9,4:1,< 5.,;@1, ,95 - *Q .+9?2 S@.:+ [1: .9# ,==*49+<\@1;1 [9*\ 9< 51/, U15 ,95 .QQ15., +1 1Z=+ ,95 ,/.* =@,*9.=1Z=+ *Z=*Q R*919+ Z*Q :@*;*F1;Q ,95 /*9?F4;Q 1LR*:4; 1 0U*;/< .9@,/,+*9 , 95 51;Q,/ ;*4+1: *Z1LR*:4;1 ,95 1U1 =*9+=+2

Short term exposure

Potential immediate effects : S@1;1;1 9* 5+, , - ,/ ,0/1 *9 +@1Q.L#;1 .+1/Z2

Potential delayed effects : S@1;1;1 9* 5+, , - ,/ ,0/1 *9 +@1Q.L#;1 .+1/Z2

Long term exposure

Potential immediate effects : S@1;1;1 9* 5+, , - ,/ ,0/1 *9 +@1Q.L#;1 .+1/Z2

Potential delayed effects : S@1;1;1 9* 5+, , - ,/ ,0/1 *9 +@1Q.L#;1 .+1/Z2

Potential chronic health effects

General : K,U =,4:1 5,Q ,?1 # *;?,9: +@,*4?@,*/*9?15 *; ;1R1,+15 1LR*:4;12 \$; /*9?15 *; ;1R1,+15 =*9+=+=,9 51Z+ +@1: [.9 ,9 5 /1, 5 # .; .+.*9 <=,; = [9? , 95W 51;Q,+.t:2

Carcinogenicity : H4:R1=+15 *Z=,4:9? =,9=1; 2 #.: [*Z=,9=1; 51R195 *9 54,+. *9 ,9 5 /1-1/ *Z 1LR*:4;12

Mutagenicity :) * [9*\ 9 :.?9.Z=,9+1Z=+ *; =,+.t=, / @,^,;5:2

Teratogenicity :) * [9*\ 9 :.?9.Z=,9+1Z=+ *; =,+.t=, / @,^,;5:2

Developmental effects :) * [9*\ 9 :.?9.Z=,9+1Z=+ *; =,+.t=, / @,^,;5:2

Fertility effects :) * [9*\ 9 :.?9.Z=,9+1Z=+ *; =,+.t=, / @,^,;5:2

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
> ; / N1;Q,/ @@,/,+. *9 D?,.:1: E @@,/,+. *9 D-,R*,:E @@,/,+. *9 D54:+ ,95 Q.:+E	%('C Q?W? &M&IZ Q?W? B&'B72J RRQ J'2J& Q?W 7C2%BQ?W

Section 12. Ecological information

Toxicity

) *+ , - , / ,0/1 2

Persistence and degradability

) *+ , - , / ,0/1 2

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
&FD&F04U1+@*L1@U ,=1+,+1 04+9F7F*/ &FQ1+@R;*R,9F7F*/ 9,R@@/191 7&F+.Q1+@1019^191	72C '2JJ '2CI %2 %2	F F F JB27 7&'2&%	/*\ /*\ /*\ /*\ /*\

Mobility in soil

Soil/water partition coefficient (K_{oc}) :)*+ ,-, ./,0/1 2

Section 13. Disposal considerations

Disposal methods

: S@1?191;,+.*9 *Z\,+ 1 :@*4/501 ,- *.515 *, Q.9.Q.^15 \ @1;1-1;R*:.0/12 N.:R*:/ *Z+@.:R,*54=+.*4+.*9: .95 .9 U0LFR,*54=+ :@*4/5,+ ./ /+Q1: =*Q R/U .+@*1 ;134.;1Q19+ *Z19-.*9Q19+/ R*+1=+*9 .95 \ ;,+1 5.:R*:/ /1?./,+.*9 .95 .9U ;1?.*9,/ /*=,/ ,4 +@*.;134.;1Q19+ N.:R*:*Z:4;R/4: .95 9*9F;1=U/0/1 R*54=+ -., , /:=19:15 \;,+ 1 5.:R*:/ =*9+;= #;2 ` ,,+1 :@*4/59*+01 5.:R*:*Z49+1,+15 # +@1:1\ 1; 49/1: Z/U=*Q R,9+ \ .+@*1;134.;1Q19+ *Z, //,4+@*.;1: \ .+@*4;.:5.=#92 ` ,,+1 R,=[,?9 ? :@*4/501 ;1=U/1528=.91;,+.*9 *; /,95Z// :@*4/5*9/U01 =*9:51;15 \ @19;1=U/9? : 9*+Z, .0/1 2 S@.:Q,+1;./ ,95 .+ =*9+.;91; Q4:+ 01 5.:R*:*Z .9 ,;Z1 \ ,U2 !;1 :@*4/501 +[19 \ @19 @.95/9? 1QR+15 =*9+.;91; +@,+@,-1 9*+0119 =/1,915 *; ;.9:15 *4+ OQRU=*9+.;91; *; /;91; Q,U ;1+.;9 :*Q 1 R;*54=+;1: .541:2 d,R*; Z*Q R;*54=+;1: .541: Q,U =;1,+1 , @?@/U,Q Q,0/1 *; 1LR/*:-1 , *Q*:R@1;1 .9:51 +@ =*9+.;91;2 N* 9*+=+4+ 1/5 *; ?;95 4:15 =*9+.;91; 49/1: +@1U@,-1 0119 =/1,915 +@*4?@/U9+;9;/ /U A-* .55:R1; / *Z: R./15 Q,+1;./ ,95 ;49*ZZ,95 =*9+;=+ \ .+@*./ <,+1; \ U:<5;.,9: .95 :1\1;2

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

14. Transport information

	DOT	IMDG	IATA
UN number	G)7&I%	G)7&I%	G)7&I%
UN proper shipping name	\$A9S	\$A9S	\$A9S
Transport hazard class (es)	%	%	%
Packing group	88	88	88
Environmental hazards	)*2	X1:2	)*2
Marine pollutant substances	)*+ ,RR/=,0/12	DH/- 19+9,R@@,DR1#/14Q E< @1,-U,;*Q ,+.=4H*/-19+ 9,R@@,DR1#/14Q E<?@+ ;,*Q ,+=E	)*+ ,RR/=,0/12

Product RQ (lbs)	B7JJZ) ⁺ ,RR/≠,0/12) ⁺ ,RR/≠,0/12
RQ substances	D9,RQ,191<LU191E) ⁺ ,RR/≠,0/12) ⁺ ,RR/≠,0/12

Additional information

DOT : S@:R:*54=+Q,U 01 ;1F=/,:: .Z15,: f!*Q 04:+.0/1".34.5f 49/1: +,9:R*:+ 15 0U-1::1/ *; ,,:=,;Z -e)*9F04/[R,=[?1: D/1:: +@,9*; 134,/ # 77M?;/E*Z=*Q 04:+.0/1"/.34.5: ;,1 9*+;1?4/;+15 ,: @.^:5*4: Q:+1:./: .9R,=[?1 :^1: /1: +@,9+@1R*54=+:1R*+:0/1 34.9+;+U

IMDG : S@1Q,,.91 R*//4+9 +Q,,[∴ 9*+;134.;15 \ @19*,9:R*+ 15 .9 ∴ ^ 1: *ZnB" *: nB[?2

IATA : S@119-;.*9Q 19+//U@,^;5*4: :40: +9=1 Q,;[Q,U ,RR1,; .Z134.;15 0U*+@1;*,9:R*;* ,+. *9
:1?4/+*9:2

Special precautions for user : **Transport within user's premises:** ,/\ ,U: +,9:R*+ .9=/*:15 =*9+,91:: +@,+,1
4R;?@;9 5:1=4; 1209:4;1 +@, +R1;:*9: +,9:R*+ .9? +@1R,*54=+[9*\ \ @, +# 5* .9
+@11-19+*Z.9 .==.519+*:: : R./.?12

Section 15. Regulatory information

United States

United States inventory (TSCA 8b) : A//=*QR*919+,;1 /:~+15*; 1L1QR#52

U.S. Federal regulations :

SARA 302/304

SARA 304 RQ :)*+ ,RR/.,0/12

Composition/information on ingredients

)* R;*54=† \1;1 Z4952

SARA 311/312

Classification : Ä;1 @,^;5
8QQ15.,+1 D.=44E@1,/ @ @,^;5
N1/U15 D=@*9 =@1./ @ @,^;5

Composition/information on ingredients

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
H*/-19+9,R@@,DR1#/14QE@1,-U ;,*Q 2	X1:2	)*2	)*2	X1:2	)*2
&FD&F04-U+@*L@U=1+,+1	)*2	)*2	)*2	X1:2	)*2
04+9F7F*/	X1:2	)*2	)*2	X1:2	)*2
&F1@U@1L,9F7F*/	X1:2	)*2	)*2	X1:2	X1:2
H*/-19+9,R@@,DR1#/14QE4.?@+ ;,*Q ,+=	X1:2	)*2	)*2	X1:2	)*2
&FQ1+@UR,*R,9F7F*/	X1:2	)*2	)*2	X1:2	)*2
9,R@@/191	X1:2	)*2	X1:2	X1:2	X1:2
7&F+.Q1+@U19^191	X1:2	)*2	)*2	X1:2	)*2

SARA 313

<u>Chemical name</u>	<u>CAS number</u>	<u>Concentration</u>
	United States	Page: 14/15

Product code B123C24

Date of issue 3 July 2015

Version 4

Product name FG CLR PC3200 4

Section 15. Regulatory information

Supplier notification	: 2-(2-butoxyethoxy)ethyl acetate	124-17-4	5 - 10
	butan-1-ol	71-36-3	1 - 5
	naphthalene	91-20-3	1 - 5
	1,2,4-trimethylbenzene	95-63-6	0.5 - 1.5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

Additional environmental information is contained on the **Environmental Data Sheet** for this product, which can be obtained from your **PPG representative**.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 3 * Flammability : 2 Physical hazards : 0

(*) - Chronic effects

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health : 3 Flammability : 2 Instability : 0

Date of previous issue : 6/5/2015

Organization that prepared the MSDS : EHS

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.

United States

Page: 15/15

Printed Name 000085

SAFETY DATA SHEET



Date of issue/Date of revision 19 August 2015
Version 4

Section 1. Identification

Product name : Ä ! " # \$ % & ' Ä \$ # () & # * # " + , - \$! . # \$
Product code : ; - < * < ==;
Other means of identification : /0 121345467
Product type : '3893:7

Relevant identified uses of the substance or mixture and uses advised against

Product use : !?:9@A314W4310/?@7
Use of the substance/
mixture : O/103?7 - 130@7 13?8DMA6410J 10A310
Uses advised against : /0 1VV3C15467

Supplier : -- > !?:9@A36@7
+ ?6 -- > - 41C6
- 30@59ADEB <FGHG
Emergency telephone : IJ<GKJLJMJF<FÄ7%K
number IF<JKNJFM<LGH1?1:1K
=<MP==M==MG<M8Q3C/K
Technical Phone Number : IHGJKGHJMHR#%- \$! > S&/# B- &K PF= 17U7MFF= VU7#%()

Section 2. Hazards identification

OSHA/HCS status : (E3@ 10A313@/?@3:6A6E1b1A:9@5YE6+ %) &)1b 1A: O/U U9?3C10? %0?1 A:
IGROV\$ <R<=7G==K7
Classification of the : W& ..& ; # ' ! XÄ!S% M010D/AYL
substance or mixture &OÄ(# (+ Z!O!(* I/A14M010D/AYJ
&OÄ(# (+ Z!O!(* I3?E1403/?KMD10D/AYJ
% ! O+\$\$+ %d+ \ !\$\$! (&(!+ MD10D/AYG
%# \$! + Ä%#* # S&.& >#\#* # !\$\$! (&(!+ MD10D/AYG&
% ! %# %!(!) &(!+ MD10D/AY<
O&\$O! + ># ! O!(* MD10D/AY<&
(+ Z!O (+ \$# - \$+ SÄO(!+ IV6A8480MD10D/AY<;
(+ Z!O (+ \$# - \$+ SÄO(!+ IÄ?5/A? CE34:MD10D/AY<;
% #O!WO (&\$> # (+ \$> & (+ Z!O!(* I!d > ' # #Z- + %Ä\$# KI\$6@V\$1AY0A1C0
3AA88?KMD10D/AYL
% #O!WO (&\$> # (+ \$> & (+ Z!O!(* I\$# - #& (#S #Z- + %Ä\$# KMD10D/AYG
- 6AC6?D6/^ E6 U30A6C/?@30D^ 3?DA6:30@K 9?_?' ? 0Q3C3ULJLa

GHS label elements

United States Page: 1/17

Section 2. Hazards identification

Hazard pictograms



Signal word

: **Danger**

Hazard statements

- : Flammable liquid and vapor.
- : Harmful if swallowed or if inhaled.
- : Causes serious eye irritation.
- : Causes skin irritation.
- : May cause an allergic skin reaction.
- : May cause cancer.
- : May damage fertility or the unborn child.
- : May cause respiratory irritation.
- : May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response

- : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage

- : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal

- : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

- : Sanding and grinding dusts may be harmful if inhaled. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. NTP, IARC and OSHA have classified chromium (+6) compounds as carcinogenic. Avoid contact with skin and clothing. Wash thoroughly after handling. Emits toxic fumes when heated.

Hazards not otherwise classified

- : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : .3QQA6

Product name : Ä! " # \$ % & ' Ä \$ # () & # * # " + , - \$! . # \$

Ingredient name	%	CAS number
74Y6@6A6@3? %426?0?1VEE1 IV60A/69UK43DE0/U10C @4?039UCEA/U10 00?3U :3/Q3:6 GM59QY6E1?/4 <6BMA30EY456?6?)6Q1?6B<NM:00/CY1?10ME/U /V/4YU6AB6 #0_60?6 /Q3U6M54/C6: [1/43? 5901?M<M/4 0A30EY456?6? GM0E/QYM<MEY46BY41C600 :359048 :349A10 C9U6?6 51A39UCEA/U10	d<= MeGF d<= Me<N d<= MeGF dF Me<= dP Me<= dHMeR dF Me<= dL MeF dGMeL dGMeL d< MeL d=Z Me< d=Z Me< d=Z Me<	/0 12134546 NJHJGMRFMN HHPRM=NMG <LJNLMNHMH <<<MHNMG RFMNLMM PFRJ=MRJMR <LLGMFPMH H<MLNML GFFF<M<LMH <=PMNFMN HHMFPMH RPMFGMP <=GRJMJ=ML

%Ä; C/:6@A6VA600@9500C6@ 3E/90A6D300: O&% 9U 56A@7

&?YC/?C6?A10/? @E/? 1@1 A1?D6@ VA/6C0/?^3:6?310/A 3@96 0 510CE21A00/?7

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

!^3?D6@00B3AA00?B1?Y0V6/^ /26A6QV/@9A6 @MV0U @^ /2 6A6QV/@9A6C9A9A3?DA V6A@600A9@6^
E3@A/:9C0C/?01C01 - + !%+ O+ (\$+ ' O# (# \$ #. # \$> # O * \$+ +. + \$ -) * %!O!& 3UU6:3104f E126
%1^60YS101 %E6603?AU10/? 121345467 626A D320?YEE3?DYU/90E 0 1? 9?C/?@C3/9@ C/?294@0V6A@/?7

Description of necessary first aid measures

- Eye contact** : \$6U /26 C/?01C046?@600AA300V3/9@4Y3E C461B^A6@E 6AE/43?DE66Y642@
1V1A0A-10461@0= U3?90@1?: @66_3U6:310 U6:3C14:23C67
- Inhalation** : \$6U /26 0 ^A6@E3A766V V6A@/? 1AU1?: 10A6@0?/0 5A0E3DB^5A61E3?D@
3AA6D94A^A6@3A10Y1AA600C9A@B^23:6 1A03C3^A6@V3A1 /AQYD6?5Y0A13?6:
V6A@/??647
- Skin contact** : \$6U /26 C/?01U3?10: C4/E3D1?: @E/6@71@E@3?E/A/9DE4^ 3E @/1V1?: ` 10A
/A 9@6A6D?316: @3?C461@6A^/ + (9@6@/42670A E3??A@
- Ingestion** : !^@`14/ 6:B @66_U6:3C14:23C63U 6:3104Y1?: @E/ E3@/?013?6AA 41547 66V
V6A@/?1AU 1?: 10A6@0/ + (3?:9C62/U 30D7

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : O19@6@0A3/9@Y6 3AA007
- Inhalation** :)1AU ^9433?E46:7. 1YC19@60@V3AAV3AA00?7
- Skin contact** : O19@6@03?3AA00?7 S6^100?D E6 @3?7.1Y C19@0? 144AD3@3?A61C0?7

Section 4. First aid measures

Ingestion :)1AU ^943 @`14/ 6:7

Over-exposure signs/symptoms

Eye contact : &:2 6A@@@U V0U @U 1Y3?C49:6E6 ^44/ 3?DT
V13?A 3AA33?
` 16A3?D
A6:76@@

Inhalation : &:2 6A@@@U V0U @U 1Y3?C49:6E6 ^44/ 3?DT
A6@V3A10A1C0A30?
C/9DE3?D
A6:9C6: ^6014` 63DE
3?CA61@0^6014:610E@
@64604U 14/AU 10/?@

Skin contact : &:2 6A@@@U V0U @U 1Y3?C49:6E6 ^44/ 3?DT
3AA33?
A6:76@@
:AY?6@@
CAC 3?D
A6:9C6: ^6014` 63DE
3?CA61@0^6014:610E@
@64604U 14/AU 10/?@

Ingestion : &:2 6A@@@U V0U @U 1Y3?C49:6E6 ^44/ 3?DT
A6:9C6: ^6014` 63DE
3?CA61@0^6014:610E@
@64604U 14/AU 10/?@

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : (A610@@MV0U 10C144O/?01C0/3@/?0A6106?0@V6C30@U 6:31064Y341AD6
891?036@E126 566? 3D6@0 /A 3?E46:7

Specific treatments : / @V6C30A6106?0

Protection of first-aiders : / 1C0/? @E146 01 6? 32/423D1?YV6A@/?143@A `3E/90 @9306 A13?B7!^30@
@906C6: E10^9U 6@1A6@B4MA6@60E6 A6@6A@E/94: 61A1? 1VVA/VA310 1@_A
@6M00135: 5A61B3D1VV1A19@70U 1Y56 :1?D6A/9@ E6 V6A@/VA/23:3D 13 0
D30 U/90EMMU/90E A6@9000?7 , 1@E/?01U 3?10: C4/E3?DE/A/9DE4` 3E` 10A
56^A6 A6U23?D3B/ A`61A D426@7

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Ä@6AYCE6UBC14E02, ` 10A@VA1YDK/A ^1U 7

Unsuitable extinguishing media : S/ ?/0 9@6 10Ag60

Section 5. Fire-fighting measures

- Specific hazards arising from the chemical** : W1U15464893: 1?: 21V/A7!/? 1 ^3A6A 3^E616:B 1 VA6@9A63?CA61@B44CC9A1?: E6 C/?013?AU1Y59A@BCE E6 A3@^ 1 @95@68966QV4@3/?7 1V/A@U 1Y 1C@U9416 3 4/ ^A C/?^3?6: 1A61@A 012641 C/?@3:6A1548@D?C60 1 @/9A6/^ 3D7/? 1?: ^41@51C 7 \$9?/^ ^0 @6^6AU1YC^16 ^3A6A 6Q/4/@3/E1b1A:7 (E3@ U16A313@Q3@ 18910345 ^ 3E4?D 4@B?D6^6C@ W3A6106AC?01U3?16: ^ 3E E3@16A3149@66 C/?013?6: 1?: VA6266: ^AU 563D:3@CE1AD6: 1?Y^ 16A^1YB @6^6AA :A13?7
- Hazardous thermal decomposition products** : S6C/U V/@30? VA/:9C@U 1Y3?C49:6E6 ^44/ 3?DU 16A3@T C1A5/? :3/Q3:6 C1A5/?U/?/Q3:6 VE/@VE/A9@3:6@ E14D6?16: C/U V/9?:@ U6014/Q3:6VQ3:6@
- Special protective actions for fire-fighters** : - A/UV@Y3@/46E6 @6?6 5YA6U23?D14V6A@/?@/U E6 263?30^ E6 3?C3?03^ E6A63@ ^3A67/ 1C@/? @E156 01_6? 3?2423?D1?YV6A@/?1A@ _/A ^3E/90 @9366 0A13?57./2 6 C/?013?6A@/U ^3A6A613^E3@1?56 :/6 ^ 3E/90A3@_A@6 106A @VA10 _66V ^3A6M@6: C/?013?6A@/47
- Special protective equipment for fire-fighters** : W3A6106A@E/94: 61A1VVA/VA31V/A/6C@3 6893/U6?01?: @6M?013?6: 5A61E3D 1VV1A1@%O; &K^ 3E1 ^9441C6M36C6V6A16: 3?V/ @326VA6@6U/:67

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : / 1C@/? @E156 01_6? 3?2/42?D1?YV6A@/?143@A ^3E/90 @9366 0A13?57 #21C916 @9A9?3?D 1A61@766V9?76C6@1@Y1?: 9?VA/6C6: V6A@?64 ^A/U 6?6A3?D3/ ?/0 09CE/ ^ 14 _EA/9DE@V3: U16A314^E90/^144D7/? @/9AC6@/ / ^41A6@U 3?DA ^41U6@3?E1b1A: 1A617&2/3: 5A61E3D21V/A/A U3@0 A/236 1:6891 6 26?343/?7 , 61 1VVA/VA31A6@V3A10E6?26?343/? 3@?1:689167 - 90 /? 1VVA/VA31V6A@/?1A/6C@3 6893/U6?7
- For emergency responders** : !^@V6C3143@6E3D3@6893A67 : 614^ 3E E6 @V3D6E1_6 ?/06 /^ 1?Y3?AU10/? 3?6C@/? P/? @935461?: 9?@93646U 16A31@7/66 14@E6 3^AU10/? 3 HVA ?/?M 6U6AD6?CV6A@/??67h
- Environmental precautions** : &2/3: 3@V6A@^ @346: U16A314?: A9?/^1?: C/?01C03E @/34B16A^1Y@B13?@ 1?: @6^6A@7^YAU E6 A6462?019E/A36@^E6 VA/:9C0E1@19@6:6?2A/?U6?014 V/403/?I@^ 6A@B06A^1Y@B34/A 13AK7

Methods and materials for containment and cleaning up

- Small spill** : %0V 61_3^3E/90 A3@./26 C/?013?6A@/U @V344617^@6@Y1AMVA//0/4@1?: 6QV4/@3/?MVA6893VU6?7 S306 ^ 3E^ 16A1?: U/V 9V3^ 16AM@5467&40A?1264B /A 3^106AM3?@/6854@/A53E 1? 36A0AYU16A314?: V4C63?1? 1WA/VA360 1@0 :3@V/@1?0135A7S3@V/@6 23 1 436?@6:1@6 :3@V/@1?0A10A7

Section 6. Accidental release measures

Large spill

: %0V 61_3^3E/90 A3@./26 C/?013?6A@/U @V344617Ä@6@Y1AMVA//V/4@1?: 6QV4/@3/?MVA6893VL6?0 &VVA/1CEA646@6A/U 9V` 3?:7 - A626?6?AY3?0 @6'6A@! ` 106AC/9A@B1@6L6?@/A C/?^3?6: 1A61@7 1@E@V3461@?0 1? 6^496?0A6106?0 V410/A VA/C66:1@Y44' @70/?013?1?: C/46C@V346` 3E`/? M@ 59@354B 15@/A56?0 106A3107D@1?:51A1E26AUBC963/A:310U 1C69@61A1E1?: V41C6 C/?013?6A/A:3@V/@14CC/A:3?D 4/C14A6D9430@I@6 %6C0/? <LK7S3@V/@6 23 1 436?@6:1@6 :3@V/@1?0A10A7 O/?01U3?16: 15@/A56?0 106A314 1YV/@6E6 @10E 1b1A: 1@E6 @V3446A/:9C0 /0 6T@66%6C0/? <Y A6U6AD6?C0/?01C0 3?AU103/? 1?: %6C0/? <L Y'A`1@6 :3@V/@147

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: - 90/? 1VVA/VA3106A@14 VA/6C0266893VL6?0I@66%6C0/? PK7- 6A@/?@E 1 E3@Y/^ @3?@6?@80B/? VA/546U@E/94: ?/0 56 6U4V6: 3?1?YVA/C6@B?` E3CE E3@VA/:9C03@6:7&2/3: 6QV/@9A615013?@V6C332@0C0?@56YA6 9@67&2/3: 6QV/@9A6A3?DVA6D?1?CYS/ ?/0 E1?:469?0114@10Y VA6C130?@E126566? A61: 1?: 9?: 6A@07 S/ ?/0 D603?6Y6@A/? @3?/A C4/E3D7 S/ ?/0 5A61E6 21VA/A U3@ S/ ?/0 3D6@70Ä@6?4Y` 3E1:689106 26?03403/?7, 61A1VVA/VA3106@V3A10E6? 26?010? 3@?16891067 S/ ?/0 6?6A@A1D61A61@?: C/?^3?6: @V1C6@46@@ 1:6891 064Y26?010: 7 [66V 3 E6/A3D34C/?013?6A/A 1? 1VVA/26 140A?103 U1:6 YAU 1 C/U V10346U 106A3B46V03D0Y C4/@6:E 6? ?/0 3 9@67/0A6 1?: 9@61` 1Y YAU E610@V1A@B/6? Y41U6/A 1?Y/0E6A3D73/? @/9AC6Ä@6Q/4/@3MVA//^ 64603C126?0110DB4E07D 1?: U 106A31E1?:43?DK6893/U6?0 Ä@6?4Y?/?M@V1A?D 0/4@7(1_6 VA6C130?1AYU61@9A6@13?@046C@/03C3@E1AD6@FUVY C/?013?6A/ A603?VA/:9C0A6@3:96? C1?56 E1b1A/:9@7S/ ?/0 A69@6? 013?6A7

Special precautions

: !?D6@0?/^ VA/:9C0A C9A6: C/103?DU 1Y56 E1AU947" 1V/A@U 1Y1C0U9410 3?4` /A C/?^3?6: 1A61@A 0A1264 C/?@3:6A1548@0?C60 1 @/9A6/^ 3D73/? 1?: Y41@E1C_7 " 1V/A@A6E612BAE1? 13A?: U 1Y@VA6114/?D4//A@7^E3@106A313@1A0` 1 U94B/46C/U V/?6?0 @00U BA61: E6 %1^60Y S101 %E660@Y A E6 /0E6AC/U V/?6?0/A C/U V/?6?0@56YA6 546?:3D 1@E6 A6@340U 300A6U 1YE126E6 E1b1A:@^ 144^ 3@ V1A@7

Advice on general occupational hygiene

: #107DBA323?D1?: @U_ 3?D@E/9456 VA/E536: 3?1A61@ E6A6E3@106A313@ E1?:46:B @A6: 1?: VA/C6@0, /A 6A@E/94: ` 1@E1?:@1?: ^106 56YA6 6103DB :A3?3?D1?: @U_ 3?D7\$6U /26 C/?01U3?16: C4/E3?D1?: VA/6C03 6893/U6?056YA6 6?6A3?0103?D1A61@Y66 14@%6C0/? P Y'A 1::303?14 3?AU103/?/? EYD360 U61@9A6@7

Conditions for safe storage, including any incompatibilities

: S/ ?/0 @06 15/26 E6 Y44/` 3?D6U V6A10A6TLFiO IRFiWK7%0A6 3?1CC/A:1?C63CE 4/C14A6D943/?@7/0A6 3?1 @6DA6D101?: 1VVA/26: 1A67 %0A6 3 /A3D34C/?013?6A VA/6C6: YAU :3A6C@9?43D7E1 :AYBC//4 1?: ` 64M26306: 1A61B` 1Y YAU 3?C/UV10354 U 106A31@ @66%6C0/? <=K1?: Y/: 1?: :A3?7 %0A6 4/C 6: 9V7 #4UB?16 144D73/? @/9AC6@6V1A10 YAU /Q3:35?DU 106A3107 66V C/?013?6A@E0Y C4/@6: 1?: @61469?0A61:Y YA 9@670/?013?6A@10E126566? /V 6?6: U9@56 C1A094Y A6@61461?: _6V09VA3D00VA62004611D67 S/ ?/0 @0A6 3?9?41546: C/?013?6A@7 Ä@61VVA/VA3106C/?013?U6?00 12/3: 6?23A/?U6?014C/?01U3?103?7

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<p>7416-00-6</p> <p>4267-07-1</p> <p>039-00-0</p> <p>3073U :3/Q3:6</p> <p>GM50QY6E1?/4</p> <p><GBMA30EY45676?6</p> <p>6Q176B<NM:63/CY1?10ME/U /V/4YU6AB6 #0_60?6 /Q3U6M54/C6: [1/43?</p> <p>5901?M<M/4</p> <p>0A30EY45676?6</p> <p>GM00E/QYM<MEY46BY41C6006</p> <p>:3590/48 :349A16</p>	<p>/?67</p> <p>/?67</p> <p>ACGIH TLV (United States, 4/2014). (, &T=7==F UDUjBIU 61@9A61@OAKP E/9A@7</p> <p>OSHA PEL Z2 (United States, 2/2013). O#!'T <UDK=Uj</p> <p>OSHA PEL (United States, 2/2013). (, &T=7==F UDUjBI1@OAKP E/9A@7</p> <p>OSHA PEL (United States, 2/2013). (, &T<F UDUj P E/9A@WAUT(/014:9 @0</p> <p>ACGIH TLV (United States, 4/2014). (, &T<= UDUj P E/9A@7</p> <p>ACGIH TLV (United States, 4/2014). (, &TG=VVU P E/9A@7</p> <p>OSHA PEL (United States, 2/2013). Absorbed through skin. (, &TGJ=UDUj P E/9A@7 (, &TF= VVU P E/9A@7</p> <p>ACGIH TLV (United States, 4/2014). (, &T<GLUDUj P E/9A@7 (, &TGFVVU P E/9A@7</p> <p>/?67</p> <p>ACGIH TLV (United States, 4/2014). (, &TGUDUj P E/9A@WAUT\$6@V3A1546 ^A1C3?</p> <p>OSHA PEL (United States, 2/2013). (, &TF UDUj P E/9A@WAUT\$6@V3A1546 ^A1C3?</p> <p>(, &T<F UDUj P E/9A@WAUT(/014:9 @0</p> <p>ACGIH TLV (United States, 4/2014). (, &TG=VVU P E/9A@7</p> <p>OSHA PEL (United States, 2/2013). (, &TL== UDUj P E/9A@7 (, &T<== VVU P E/9A@7</p> <p>ACGIH TLV (United States, 4/2014). (, &T<GLUDUj P E/9A@7 (, &TGFVVU P E/9A@7</p> <p>IPEL (PPG, 4/2009). (, &TF= VVU</p> <p>ACGIH TLV (United States, 4/2014). Absorbed through skin. %(#'T =7UDUjBI1@%?K<F U3?96@7 (, &T=7 UDUjBI1@%?KPE/9A@7</p> <p>OSHA PEL (United States, 2/2013). (, &T=7 UDUjBI1@%?KPE/9A@7</p> <p>OSHA PEL (United States).</p>

Section 8. Exposure controls/personal protection

C9U6?6

51A39UCEA/U106

(, &T=7 UDUjBI1@%?K
ACGIH TLV (United States, 4/2014).
 (, &TF=VVU PE/9A@7
OSHA PEL (United States, 2/2013).
Absorbed through skin.
 (, &TGJFUDUj PE/9A@7
 (, &TF=VVU PE/9A@7
ACGIH TLV (United States, 4/2014).
 (, &T=7< UDUjBIU 61@9A61@OAKP E/9A@
 WAUT!/?@/4954
OSHA PEL (United States, 2/2013).
 (, &T=7=F UDUjBI1@OAKP E/9A@7
OSHA PEL Z2 (United States, 2/2013).
 O#!"T < UDK=Uj
OSHA PEL (United States).
 (, &TF UDUj

Key to abbreviations

&	= &CC6V154 .1Q3U9U - 61_	%	= - /06?0140_3?5@/A0/?
&O>!) k	&U6A6:1?O/?^6A6C6/^ >/26A?U6?014!?:9@A34)Y D8?3@07	k	\$6@V3A0AY@6?0003/?
O	= O633D' 3U0	%%	= % 3?@6?0003/?
W	= V0U6	%/ #'	= %E/A06AU#Q//@9A643302145@
!- #'	k !?0A?1- 6AU@/@03#Q//@9A6'3U30	(S	= (/014:9 @0
+ %&	= + CC9V101 4%1'60Y1?:) 614E &:U3?3@00?7	("	k (EA6@E '3U30' 145
\$	k \$6@V3A56	(, &	= (3U6, 6300: &26A10
]	k + %& GROV% <R<7G= %05V1Aq M /Q3C1?:)1 b1A:/9@/05@0?C6@		

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : !^E3@A/:9C0C/?013?@?DA6:3003CE 6QV/@9A63U0@B6A@/14B /A_V41C6
 1U//@VE6A6A 53/4/D3C14/?30 A3?D1Y56 A6893A60 :606AU3?6E66^6C026?@
 E6 26?0340/? /A /0E6AC/?0A/4U61@9A610:/ /A E6 ?6C6@30 9@6A@V3A10
 VA/6C0266893VU6?0 \$6^6A6?C6@E/94:56 U 1:6 0 1VVA/VA310U/?30A3D@0?1A:@7
 \$6^6A6?C6? ?10/?14D93:1?C6:/C9U 6?0@YA U6E/:@ YA E6 :606AU3?10? /A
 E1b1A:/9@/950?C6@3414@/56 A6893A6:7

Appropriate engineering controls : Ä@6?4Y` 3E 1:6 89106 26?0340/?7 Ä@6VA/6@0?C4/@9A60B/C14QE19@26?0340/? /A
 /0E6A6?D366A3?D/?0A/4@_66V` /A_6A6QV/@9A0 13A5/A?C/?01U3?1?@564` 1?Y
 A6C/UU6?:6` /A @000AY403@7 E66?D366A3?D/?0A/4@4@/?66: 0_66VD1@B
 21V/A/A:9@0?C6?0A10/?@564/ 1?Y4/ 6A6QV4/@3203@Ä@6Q4/@3MVA//^
 26?0340? 6893/U6?0

Environmental exposure controls : #U3@/@3/70U 26?0340? /A` /A_ VA/C6@6893VU6?0@E/94:56 CE6C6: 0 6?@9A6
 E6YC/U V4Y 3E E6 A6893A60?0^ 6?23/?U6?014VA/6C0? 4603@40? !? @/U6
 C1@0BU6 @A9556A@00A@A 6?D3?6A3?D/:3^3C10?@ E6 VA/C6@6893VU6?0
 ` 3456 ?6C6@10U A6:9C66U3@/@3/0@C6V154 4624@7

Individual protection measures

Hygiene measures : , 1@E1?:@YA61AU@1?: ^C6E/A/9DE4Y^6AE1?:43DCE6U8C1WA/:9C@B6YA6
 6103DB@U_3?D1?: 9@3?E641210AY1?: 10E66?: /^E6` / A3?DV6A3/:7
 &VVA/VA310CE?3896@E/94:56 9@6:0 A6U26 V/06?014?C/?01U3?10: C4/E3?D
 O/?01U3?10: ` /A_ C4/E3?D@E/94:7/0 56 144 6: /90 / ^E6` /A_V41C67 1@E
 C/?01U3?10: C4/E3D56YA6 A69@3?D?/?@9A6106Y6` 1@E@03/?@1?: @10Y
 @E/6A@A C4/@6 E6` /A_ @03/? 4/C10/?7
Eye/face protection : OE6U3C1@V41@EDD46@7

Section 8. Exposure controls/personal protection

Skin protection

Hand protection

: OE6U3C14MA610000/6A23/D4/26@U V43?D 3E1? 1VVA26: @D:1A: @E/94:56
 ` /A? 101448U6@E6? E1?:43?DCE6UBC14VA/:9C03M A3@ @6@D6?03?:3C10@E3@
 ?6C6@1@Y O/?@3:6A3?E6 V1A1U6A@V6C36: 5Y E6 D426 U1?9M09A6AE6C_
 :9A3?D@6E10E6 D426@1A6@346033?DE63VA/6C26 VA/V6A36@70@E/94:56
 ?/06: E10E68U6 0 5A61 EA/9DEYA 1?YD4/2 U10A314 1Y56 :3*6A6?0A :3*6A6?0
 D4/2 U1?9M09A6A@? E6 C1@8 U39A6@8?@3@7D^ @26A14@95@706@E6
 VA/6C8/? 8U6 /^ E6 D4/26@C1??/0 56 1C9A164Y6@8U16:7

Gloves

: 5904A9556A

Body protection

: - 6A@/?14A/6C82 6893/U6?0YA E6 5/:Y @E/94:56 @6C8: 51@6:/? E6 01@_563D
 V6A/U6: 1?: E6 A3@8?2/26: 1?: @E/94:56 1VVA/2: 5Y1 @V6C3046YA6
 E1?:43?DE3@A/:9C07, E6? E6A6@1 A3@_ 3D73/? ^A/U @036460A3080 61A1?8M
 @030VA/6032 C4/E3D7WA E6 DA616@VA/603/? ^A/U @03C3@E1AD6@8/E3D
 @E/94:3C49:61?0M03C26A14@8/0 @1?: D426 @7

Other skin protection

: &VVA/VA30/0 ` 61A1?: 1?Y1::3 8/?14@3?VA/6C8/? U61@9A6@E/94:56 @6C8:
 51@6:/? E6 01@_563?DV6A/U6: 1?: E6 A3@8?2/26: 1?: @E/94:56 1VVA/2: 5Y1
 @V6C314560A6 E1?:43D E6VA/:9C07

Respiratory protection

: \$6@V3AA0@646870 U9@66 51@6:/? .?/ ^ ? /A 1?8C3V8: 6QV/@9A6624@E6
 E1b1A:@^ E6 VA/:9C01?: E6 @8 ^A 3?D8U8@^ E6 @64660A6@V3A70^ ^ /A 6A@
 1A66QV/@6:0 C/?C6?A18/?@15/2 6 E6 6QV/@9A633BE6YU9@9@81VVA/VA38B
 C6A36: A6@V3A10A^@ 1 VA/V6A436:B 13AMV9A3D A13AM^A6@V3A10U V43?D
 ` 3E 1? 1VVA/26 @D:1A: 3M A3@ @6@D6?03?:3C10@E3@66C6@1AY

Restrictions on use

: - 6A@/?@E1 E3@Y/^ 1@DU1B146AD36@CEA3C/A A6C9A67DA6@3A1AY:3@61@6
 @E/94:7/0 56 6UV4/6: 3?1?YVA/C6@8? E3CE3@A/:9C03@@6:7

Section 9. Physical and chemical properties

Appearance

Physical state

: '3893:7

Color

: /0 12134546

Odor

: /0 12134546

Odor threshold

: /0 12134546

pH

: /0 12134546

Melting point

: /0 12134546

Boiling point

: nLH7HPO ln<==iWK

Flash point

: O4/@6:C9VTJ7Jji O l<<GiWK

Auto-ignition temperature

: /0 12134546

Decomposition temperature

: /0 12134546

Flammability (solid, gas)

: /0 12134546

Lower and upper explosive (flammable) limits

: /' 6ATFRa

Evaporation rate

: =7G<I590Y41C6006 k <K

Vapor pressure

: =7NP_- 1 IF7 UU)DKIA/U 6UV6A19A6m

Vapor density

: /0 12134546

Relative density

: <7GJ

Density (lbs / gal)

: <=7LF

Solubility

: !?@/49543?E6 ^44` 3?DU10A3@74: ` 10A7

Product code BP1Y100B

Date of issue 19 August 2015

Version 4

Product name UNIVERSAL URETHANE YELLOW PRIMER

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water : /O 121345467

Viscosity : [36U18QJ=i O l<=Ji WKKn=7G<CU^@nG<C%K

Volatility : FNa l2\2KBR7Ph l\` K

% Solid. (w/w) : N=7L

Section 10. Stability and reactivity

Reactivity : / @V6C306@0101 A6460 0 A61C320 12134154 7A E3@VA:9C0/A 3@3?DA6:36@7

Chemical stability : (E6 VA:9C03@05467

Possibility of hazardous reactions : Ä?:6A ?/AU14C/?38/?@^ @A1D61?: 9@6E1b1A:/9@A6108?@` 34?/0 /CC9A7

Conditions to avoid : , E6?6QV/@6:0 E3E6UV6A10A6@1YVA:9C6 E1b1A:/9@:6C/U V/@30? VA:9C@7
\$6^6A0 VA/6C0326U61@9A6@003?@6C0?@H1?: P

Incompatible materials : [66V1` 1Y^A/U E6^444/` 3?DU16A31@ VA626?@A?D6Q/E6AUBA61C3?@T
/Q3:38?D1D6?@6A?D 1414@6A?D1C3:@

Hazardous decomposition products : S6C/U V/@30? VA:9C0@U1Y3?C49:6E6^444/` 3?DU16A31@C1A5/? U/?/Q3:6BC1A5/?
:3/Q3:6B@U_6B/Q3:6@^ ?3A/D6?7

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
742670?1VEE1 IV60A/69UKE 4DE01A/U10C	'SF= S6AU14	\$15530	L7JP D\ _D	M
@A?039UCEA/U10	'SF= +A14	\$10	PJ== UD\ _D	M
00?3U :3/Q3:6	'SF= +A14	\$10	L<<PUD\ _D	M
GM50QY60E1?/4	'SF= +A14	\$10	n<= D\ _D	M
	'SF= S6AU14	\$15530	GG=UD\ _D	M
	'SF= +A14	\$10	GF=UD\ _D	M
<E6MA030EY45676?6	'OF= !?E140/? " 1V/A	\$10	<P===UDUj	J E/9A@
	'SF= +A14	\$10	F D\ _D	M
[1/43?	'SF= +A14	\$10	nF== UD\ _D	M
5901?M<M/4	'OF= !?E140/? " 1V/A	\$10	GJ===UDUj	J E/9A@
	'OF= !?E140/? " 1V/A	\$10	P===VWJ	J E/9A@
	'SF= S6AU14	\$15530	LJ== UD\ _D	M
	'SF= +A14	\$10	HR=UD\ _D	M
0A30EY45676?6	'SF= +A14	\$10	PRH=UD\ _D	M
GM00E/QYM<M0EY46EY4 1C600	'SF= S6AU14	\$15530	nF D\ _D	M
	'SF= +A14	\$10	PFLGUD\ _D	M
:359048 :349A10	'SF= +A14	\$10	<HFUD\ _D	M

United States

Page: 10/17

Section 11. Toxicological information

C9U6?6	'OF= !?E140/? " 1V/A 'SF= S6AU14 'SF= +A14	\$10 \$15530 \$10	LR===UDUj <GZ D\D <J== UD\D	J E/9A@ M M
--------	--	-------------------------	-----------------------------------	-------------------

Conclusion/Summary : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Irritation/CorrosionConclusion/Summary

Skin : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Eyes : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Respiratory : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

SensitizationConclusion/Summary

Skin : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Respiratory : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Mutagenicity

Conclusion/Summary : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Carcinogenicity

Conclusion/Summary : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Classification

Product/ingredient name	OSHA	IARC	NTP
04?039UCEA/U10	c	<	[?/ ? 0 56 1 E9U1? C1A8?/D6?7
00?3U :3/Q3:6	M	G;	
GM50QY6E1?/4	M	L	M
C9U6?6	M	G;	\$61@/?154Y1?3C3V8: 0 56 1 E9U1? C1A8?/D6?7
51A39UCEA/U10	c	<	[?/ ? 0 56 1 E9U1? C1A8?/D6?7

Carcinogen Classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: Known to be a human carcinogen; Reasonably anticipated to be a human carcinogen

OSHA: +

Not listed/not regulated: -

Reproductive toxicity

Conclusion/Summary : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Teratogenicity

Conclusion/Summary : (E6A61A6?/ :101 12134546/? E6 U3QA63@67^

Specific target organ toxicity (single exposure)

Name	Category
%/426?0?1VEE1 IV60/49UKB3DE1A/U10C	O10D/AYL
<E6A61A6?/ :101 12134546/? E6 U3QA63@67^	O10D/AYL
)6Q1?6B<NM:03/Y1?10ME/U /V/4 YU 6AB6 #0_60?6 /Q3U6M54/C6:	O10D/AYL
590I?M<M/4	O10D/AYL
:3590/48 :349A10	O10D/AY<
C9U6?6	O10D/AYL

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category
01039UCEA/U16 GM50QY6E1?/4)6Q1?6B<BNM:63/Y1?10ME/U /V/4 YU 6AB6 #0_60?6 /Q3U6M54/C6: :359048 :349A16 C9U6?6 51A39UCEA/U16	O16D/AYG O16D/AYG O16D/AYG O16D/AY< O16D/AYG O16D/AYG

Target organs : O/?0137@U 16A314E3CE19@6@U 1D60 E6?44? 3?D AD1?@A13?B6?A14P6A2/9@
 @06U IO % K7
 O/?0137@U 16A314E3CE1YC19@61U 1D60 E6?44? 3?D/AD1?@A13?B6?A14P6A2/9@
 49?@B32A@V4667BU VE10C@06U B9VV6AA6@V3A10A1C@3?B/? 6 U 1AA? B61A@E
 6Y6B467@A C/A?61B@U 1CE7

Aspiration hazard

Name	Result
%/426?0?1VEE1 IV60A/69UKB3DE0A/U10C C9U6?6	&% !S& (!+)&]&\$S MO16D/AY< &% !S& (!+)&]&\$S MO16D/AY<

Information on the likely routes of exposure**Potential acute health effects**

Eye contact : O19@6@A3/9@Y6 3AA10?7
Inhalation :)1AU ?9433?E46:7 . 1YC19@6@V3A103AA10?7
Skin contact : O19@6@3?3AA8B/? S6^10B?DU E6 @3?7.1Y C19@6? 1448D3@3?A61C3?7
Ingestion :)1AU ?943 @ 14? 6:7

Over-exposure signs/symptoms

Eye contact : &:2 6A@0U V0U @U 1Y3?C49:6E6?44? 3?DT
 V13?A 3AA10?
 ` 16A3?D
 A6:?6@@
Inhalation : &:2 6A@0U V0U @U 1Y3?C49:6E6?44? 3?DT
 A6@V3A10A1C8A10?
 C/9DE3?D
 A6:9C6: ?6014` 63DE
 3?CA61@0?6014:610E@
 @64604U 14/AU 10/?@
Skin contact : &:2 6A@0U V0U @U 1Y3?C49:6E6?44? 3?DT
 3AA10?
 A6:?6@@
 :AY?6@@
 CAC_3?D
 A6:9C6: ?6014` 63DE
 3?CA61@0?6014:610E@
 @64604U 14/AU 10/?@
Ingestion : &:2 6A@0U V0U @U 1Y3?C49:6E6?44? 3?DT
 A6:9C6: ?6014` 63DE
 3?CA61@0?6014:610E@
 @64604U 14/AU 10/?@

Delayed and immediate effects and also chronic effects from short and long term exposure

Section 11. Toxicological information

Conclusion/Summary : (E6A61A67/ :101 12134546/? E6U3C9A63@67^ Q// @9A6 C/U V/?6?0 @/42?021V/A C/?C6?A18/? @3?6QC6@^ E6 @06: /CC9V18/?146QV/@9A63U1Y A6@9401:2 6A@ E61E 6^6C@ @9E1@U9C/9@U6U5A1?61?: A6@V3A10@06U 3A80/? 1?: 1:2 6A@6 6^6C@/? E6_3:26Y@B32A1?: C6?A146A2/9@006U7 %UV0U @1?: @3D32C49:6 E61:1CE6B3bb3?6@0B D96U9@041A 61_?6@08` @3?6@0B 3?6QA6U6 C1@60 4/@0 C/?@G/9@?6@0A426?0@U1YC19@0U 6/^ E6 15/26 6^6C@05Y15@/A30? E6A9DEE6 @3?7(E6A63@/U6 6236?C6 E10A6V610: 6QV/@9A6 /AD1?3@426?0 21V/A@?C/U53?18? ` 3E C/?@0704/9: ?/3@6C1? C19@0A606AE61A3?D/@0E1? 6QV600 ^A/U 6QV/@9A6 ?/3@614/?67 !^ @V41@E5?E6 6Y6@E6 4383: U1YC19@6 3A180? 1?: A62A@3546 1D67!D6@0? U1YC19@019@0B:31AAE61?: 2/U 38D7 (E3@_6@3?0 1CC/9?0E 6A6 ?/ ?B:641Y6: 1?: 3U6:310 6^6C@1?: 14@/E6A/?3C 6^6C@/^ C/U V/?6?0@YU @E/A06AU1?: 4?DM6AU6QV/@9A5Y/A14B E140/? 1?: :6AU14A/90@/^ 6QV/@9A6?: 6Y6 C/?01C0

Short term exposure

Potential immediate effects : (E6A61A67/ :101 12134546/? E6U3C9A63@67^

Potential delayed effects : (E6A61A67/ :101 12134546/? E6U3C9A63@67^

Long term exposure

Potential immediate effects : (E6A61A67/ :101 12134546/? E6U3C9A63@67^

Potential delayed effects : (E6A61A67/ :101 12134546/? E6U3C9A63@67^

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
6Q1?6B<NM:00/C1?10MB E/U /V/4YU6AB6 #0_60?6 /Q3U6M54/C6:	%05MCEA/?3C &# ' !?E1410? S9@01?: U3@0	\$10	F UDUj	R=:1Y@

General : .1Y C19@61U 1D60 /AD1?@EA/9DEVA/4?D6: /AA6V610: 6QV/@9A67A/4/?D6: /A A6V610: C/?01C0C1?:6^10E6 @3?1?: 461 0 3A180? BCA1C3?D1?:\ /A:6AU100@7 +?06 @6?@00B1 @626A646AD361C0? U1Y/CC9A E6? @95@06?0A 6QV/@6:0 26A4/ 46B4@7

Carcinogenicity : .1Y C19@61?C6A53@/^ C1?C6A6V6?: @? :9A10/? 1?: 46B4/^ 6QV/@9A

Mutagenicity : / _?/ ? @3D381?0^6C@/A C80C1E1b1A:@7

Teratogenicity : .1Y :1U 1D6E69?5/A? CE34:7

Developmental effects : / _?/ ? @3D381?0^6C@/A C80C1E1b1A:@7

Fertility effects : .1Y :1U 1D6^6A0480

Numerical measures of toxicity**Acute toxicity estimates**

Route	ATE value
+ A14 S6AU14 !E140/? ID1@60 !E140/? I21V/A@K !E140/? I:9@01?: U3@0K	<LFG7 UD\ D JLP= UD\ D <HGRF7VVU F<F UD4 F7HNFUD4

Product code BP1Y100B

Date of issue 19 August 2015

Version 4

Product name UNIVERSAL URETHANE YELLOW PRIMER

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
GM59QY6E1?/4 GM59QY6E1?/4 1C606	&C96 'OF= n<== UD4WA6@E06A &C96 'OF= <N<UD4WA6@E06A	S1VE?3 MS1VE?31U1D?1 V8@E	JP E/9A@ RNE/9A@

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
GM59QY6E1?/4	M	M	\$61:34Y

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
GM59QY6E1?/4 <B5BMA30EY456?6?6)6Q1?6B<BM:88/Q1?10MB E/U /V/4YU6AB6 #0_60?6 /Q3U6M54/C6: 5901?M<M/4 0A30EY456?6?6 GM59QY6E1?/4 1C606 :359048 :349A10 C9U6?6	=P< L7NL MLN =PP L7J 0 L7P =FN L7<G L7NN	M <G=GL M M M M M LFJP	4/ 4/ 4/ 4/ 4/ 4/ 4/ 4/

Mobility in soil

Soil/water partition coefficient (K_{oc}) : /0 12134546

Section 13. Disposal considerations

Disposal methods

: (E6D626A18/? / ^ `1@6 @E/94:56 12/3:6 : /A U3?9316: `E6A626A/@@@35457@V/@@14
/ ^ E3@A/:9C@B@/490?@1?: 1?Y5YMVA/:9C@@E/94:10140J6@CU V4Y 3E E6
A6893A66?0@ ^ 6?23A/?U6?014VA/6C@/? 1?: `1@6:3@V/@@1D3@4?01?: 1?Y
A6D3/?14/C149E/A30A6893A66?0@7S3@V/@@6 @9AV49@ ??MA6C41548A/:9C@@
23 1 436?@6:1@6 :3@V/@@1A10A7, 1@6 @E/94:7/0 56 :3@V/@@6^ 9?A616: 0
E6 @6'6A9?46@104C/U V4B?0` 3E E6 A6893A66?0@ ^ 1449E/A30@3E g9A3@3C0
, 1@6V1C 1D30 @E/94:56 A6C746:7!?C3?6A30 /A 41?:94 @E/94:7?4Y56 C/?@3:6A6:
`E6? A6C743?0?/0 ^61@3546 E3@ 106A314?: 300?013?6AU9@56 :3@V/@@6^ 3?1
@16` 1Y7 O1A6@E/94:56 01_6? `E6? E1?:43?D6UV036: C/?013?6A@E10E126?/ 0566?
C461?6:/A A3?@6907 #U V0Y C/?013?6A@ 43?6A@Y A603?@/U6 VA/:9C0A6@96@7
" 1V/A^XU VA/:9C0A6@96@U 1YCA106 1 E3E4Y41U 1546/A 6QV4/@320J/@VE6A6
3?@3:6E C/?013?6A@ / ?/0 C96` 64: / ADA3?9@6:C/?013?6A@246@E6YE126566?
C461?6:E/A9DE43?6A?14Y &2/ 3: :3@V6A@ ^ 0Y46 U106A314?: A9?/^ 1?: C/?01C0
` 3E @/34 106A`1Y@B13?@?: @6`6A@7

Disposal should be in accordance with applicable regional, national and local laws and regulations.

United States

Page: 14/17

PrimeName_000099

Section 13. Disposal considerations

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

14. Transport information

	DOT	IMDG	IATA
UN number	Ä <GNL	Ä <GNL	Ä <GNL
UN proper shipping name	- &! (- &! (- &! (
Transport hazard class (es)	L	L	L
Packing group	!!!	!!!	!!!
Environmental hazards	/7	* 6@7	/7
Marine pollutant substances	/0 1VV3C15467	I%/426?0?1VEE1 IV60A/469UKB 4DE01A/U10C00?039U CEA/U106K	/0 1VV3C15467
Product RQ (lbs)	RJZ<R	/0 1VV3C15467	/0 1VV3C15467
RQ substances	I@V/?39UCEA/U106BQY46?K	/0 1VV3C15467	/0 1VV3C15467

Additional information

DOT : (E3@A/:9C0U 1Y56 A6MC410001 @O/U 59@35463893:B9?46@ @A1?@V/A05Y26@@@6413ACA7^
/?M594_V1C_1D6@46@ @1?/A 689140 <<RD1K/^ C/U 59@3546383:@1A6?/0 A6D946: 1@
E1b1A:/9@U106A3103?V1C_1D6 @3046@ @1? @E6 VA/:9C0A6V/A0546891?007

IMDG : (E6 U 1A3?6/4490?0U 1A_3@/0 A6893A6: E6? 0A1?@V/A03?@30^ oF' /A oF _D7

IATA : (E6 6?23A/?U6?0144E1b1A:/9@@@950?C6U 1A_U 1Y1VV61A3^A6893A65Y/0E6A0A1?@V/A03/?
A6D9430@7

Special precautions for user : **Transport within user's premises:** 14`1Y@A1?@V/A0C4/@6C/?013?6A@101A6
9VA3DE0: @6C9A#?@9A6E10V6A@/?01?@V/A0DE6 VA/:9C0_?/ ` E100 :/ 3
@E6 626?0/^ 1? 1CG:6?0/ A@V3#1D0

Section 15. Regulatory information

United States

United States inventory (TSCA 8b) : &44C/U V/?6?0@1A6400 /A 6Q6UV0:7

SARA 302/304

SARA 304 RQ : /0 1VV3C15467

Composition/information on ingredients

/ VA/:9C0@6A6 79?:7

SARA 311/312

Classification : V3AE1b1A:
!UU6:310 I1C90KE6140E1b1A:
S6410: ICEA/?3CE614E E1b1A:

Section 15. Regulatory information

Composition/information on ingredients

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
7460-09-3?	/7	/7	/7	* 6@7	/7
%42670?1VEE1 IV60A/69UKB3DE0	* 6@7	/7	/7	* 6@7	/7
1A/U10C					
@0?039UCEA/UI0	/7	/7	/7	* 6@7	* 6@7
00?3U :3/Q3:6	/7	/7	/7	/7	* 6@7
GM50QY6E1?/4	* 6@7	/7	/7	* 6@7	* 6@7
<GBMA30EY45676?6	* 6@7	/7	/7	* 6@7	/7
)6Q1?6B<NM:0/Y1?10MB	* 6@7	/7	/7	* 6@7	* 6@7
E/U /V/4YU6AB6 #0_60?6 /Q3U6M					
54/C 6:					
5901?M<M/4	* 6@7	/7	/7	* 6@7	/7
0A30EY45676?6	* 6@7	/7	/7	* 6@7	/7
GM0E/QYM<MEY46EY41C600	* 6@7	/7	/7	/7	/7
:359040? :349A10	/7	/7	/7	* 6@7	* 6@7
C9U6?6	* 6@7	/7	/7	* 6@7	* 6@7
51A39UCEA/UI0	* 6@7	/7	/7	* 6@7	* 6@7

SARA 313

Supplier notification	Chemical name	CAS number	Concentration
@0?039UCEA/UI0	HHPRM=NMG	HM<L	
GM50QY6E1?/4	<<<MHNMG	F M<=	
<GBMA30EY45676?6	RFMNLMLN	F M<=	
5901?M<M/4	H<MLNML	< MF	
51A39UCEA/UI0	<=GRJMJ=ML	=7 M<	

%&\$& L<L ?/033C13?@U9@0/0 56 :601CE6: YU E6 %S%1?: 1?YC/VY3?D1?: A6:3@0590 / ^ E6 %S% @E14C49:6
C/VY3?D1?: A6:3@0590 / ^ E6 ?/033C101CE6: 0 C/V36@ ^ E6 %S% @95@689647A6:3@05907

Additional environmental information is contained on the Environmental Data Sheet for this product, which can be obtained from your PPG representative.

California Prop. 65

WARNING: (E3@A/:9C0C/?013?@ CE6U3C14?/ ? 0 E6 %016 / ^ O143A?310 C19@C1?C6A?: 53AE:6^6C0/A /0E6A
A6VA/:9C026E1AU7

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : L p Flammability : G Physical hazards : =
I p KMDEA?3C6^6C@

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Product code BP1Y100B

Date of issue 19 August 2015

Version 4

Product name UNIVERSAL URETHANE YELLOW PRIMER

Section 16. Other information

Health : 3 Flammability : 2 Instability : 0

Date of previous issue : 6/5/2015

Organization that prepared the MSDS : EHS

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.

United States

Page: 17/17

Printed Name_000102

Photographic Documentation

Name of Facility: Prime Inc. Truck Fire

Inspector(s): Maureen Vincenty

Inspection Date: Sunday, September 27, 2015

Purpose of Inspection: RCRA Incident Investigation Report



Publish Date: Wednesday 2 December 2015

Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire

Table of Photographs:

Photograph 1: ISP Photos Taken on September 27, 2015	3
Photograph 2: ISP Photos Taken on September 27, 2015	3
Photograph 3: ISP Photos Taken on September 27, 2015	3
Photograph 4: ISP Photos Taken on September 27, 2015	3
Photograph 5: ISP Photos Taken on September 27, 2015	3
Photograph 6: ISP Photos Taken on September 27, 2015	3
Photograph 7: Additional Photos Taken on September 27, 2015	4
Photograph 8: Additional Photos Taken on September 27, 2015	4
Photograph 9: Additional Photos Taken on September 27, 2015	4
Photograph 10: Additional Photos Taken on September 27, 2015	4
Photograph 11: Additional Photos Taken on September 27, 2015	4
Photograph 12: Additional Photos Taken on September 27, 2015	4
Photograph 13: Additional Photos Taken on September 27, 2015	5
Photograph 14: Additional Photos Taken on September 27, 2015	5
Photograph 15: Additional Photos Taken on September 27, 2015	5
Photograph 16: Additional Photos Taken on September 27, 2015	5
Photograph 17: DEQ Photos Taken on October 16, 2015	6
Photograph 18: DEQ Photos Taken on October 16, 2015	6
Photograph 19: DEQ Photos Taken on October 16, 2015	6
Photograph 20: DEQ Photos Taken on October 16, 2015	6
Photograph 21: DEQ Photos Taken on October 16, 2015	7
Photograph 22: DEQ Photos Taken on October 16, 2015	7
Photograph 23: DEQ Photos Taken on October 16, 2015	7

Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire



Photograph 1: ISP Photos Taken on September 27, 2015



Photograph 2: ISP Photos Taken on September 27, 2015



Photograph 3: ISP Photos Taken on September 27, 2015



Photograph 4: ISP Photos Taken on September 27, 2015



Photograph 5: ISP Photos Taken on September 27, 2015



Photograph 6: ISP Photos Taken on September 27, 2015

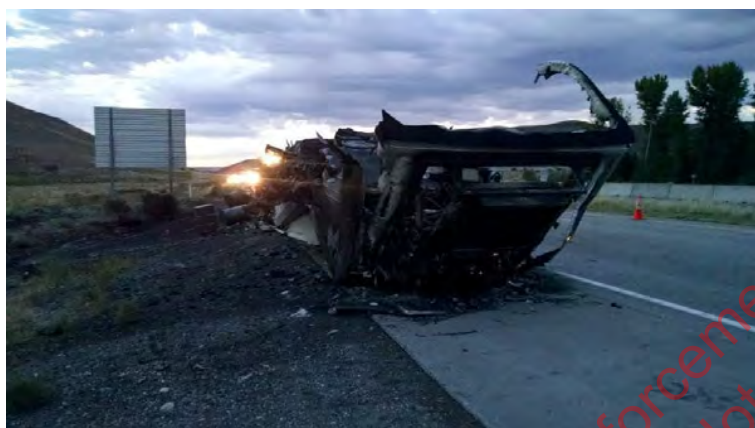
Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire



Photograph 7: Additional Photos Taken on September 27, 2015



Photograph 8: Additional Photos Taken on September 27, 2015



Photograph 9: Additional Photos Taken on September 27, 2015



Photograph 10: Additional Photos Taken on September 27, 2015



Photograph 11: Additional Photos Taken on September 27, 2015



Photograph 12: Additional Photos Taken on September 27, 2015

Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire



Photograph 13: Additional Photos Taken on September 27, 2015



Photograph 14: Additional Photos Taken on September 27, 2015



Photograph 15: Additional Photos Taken on September 27, 2015



Photograph 16: Additional Photos Taken on September 27, 2015

Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire



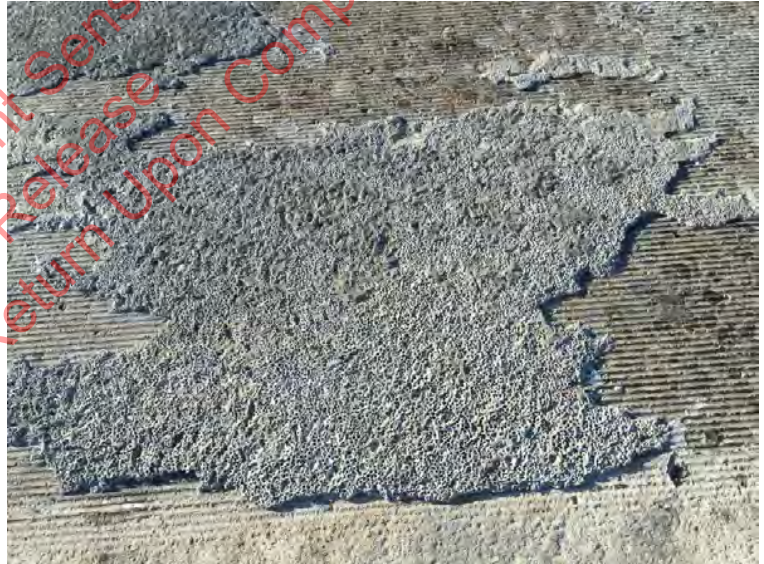
Photograph 17: DEQ Photos Taken on October 16, 2015



Photograph 18: DEQ Photos Taken on October 16, 2015



Photograph 19: DEQ Photos Taken on October 16, 2015



Photograph 20: DEQ Photos Taken on October 16, 2015

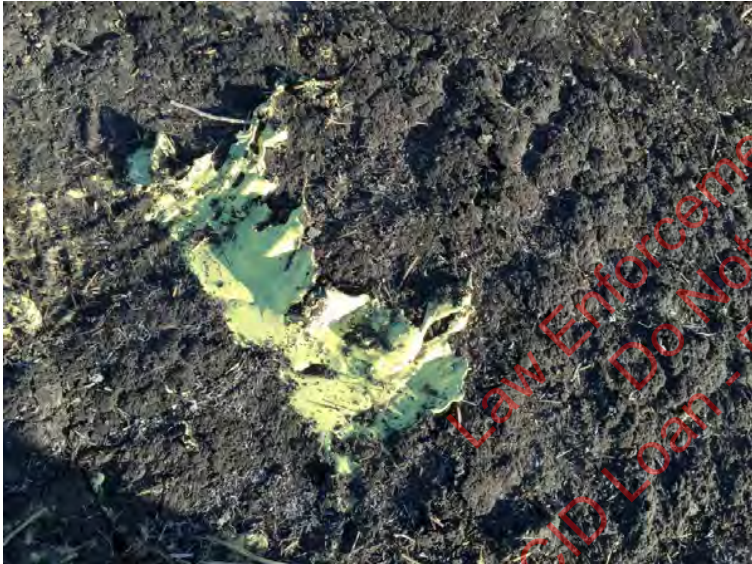
Idaho Department of Environmental Quality
Photographic Documentation For Prime Inc. Truck Fire



Photograph 21: DEQ Photos Taken on October 16, 2015



Photograph 22: DEQ Photos Taken on October 16, 2015



Photograph 23: DEQ Photos Taken on October 16, 2015

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 1 D R 0 0 0 2 0 5 2 1 8	2. Page 1 of 1	3. Emergency Response Phone (702) 396-4148	4. Manifest Tracking Number 008405001 JJK		
5. Generator's Name and Mailing Address PRIME, INC. 2740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803 Generator's Phone: 8 1 2 8 5 3 - 2 4 0 0			Generator's Site Address (if different than mailing address) PRIME, INC. 1-84 EASTBOUND MM 25 CALDWELL ID 83605				
6. Transporter 1 Company Name H2O ENVIRONMENTAL (BOISE)			U.S. EPA ID Number NVR000086496				
7. Transporter 2 Company Name			U.S. EPA ID Number				
8. Designated Facility Name and Site Address USECOLOGY INC. 20400 LEMLEY ROAD GRAND VIEW ID 83624 Facility's Phone: 800 274-1516			U.S. EPA ID Number 1 D D 0 7 3 1 1 4 6 5 4				
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes
	X	HA3077, Hazardous waste, solid, n.o.s. (Chromium) 9, PGIII	No.	Type			
			001	DT	0024		0007
14. Special Handling Instructions and Additional Information 1) PROFILE# 38946 (HAZARDOUS WASTE SOLID) BRG# 171 2) PROFILE# 3) PROFILE# 4) PROFILE# WEAR APPROPRIATE SAFETY EQUIPMENT IF UNDELIVERABLE, NOTIFY H2O							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offor's Printed/Typed Name CRAIG SIMMONS		Signature <i>[Signature]</i>		"ON BEHALF OF" Month Day Year 12/29/15			
INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:						
	Transporter signature (for exports only):						
TRANSPORTER	17. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name Jim Corder / CWR LLC		Signature <i>[Signature]</i>		Month Day Year 12/29/15		
DESIGNATED FACILITY	Transporter 2 Printed/Typed Name		Signature		Month Day Year		
	18. Discrepancy						
	18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Shwn released pending Resolution 12/29/15 Actual received 20 yrcs, OK per Craig Simmons via telecon 1/5/16 ck						
	18b. Alternate Facility (or Generator) U.S. EPA ID Number						
	Facility's Phone: 18c. Signature of Alternate Facility (or Generator) Month Day Year						
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. H132 2. 3. 4.							
20. Designated Facility Owner or Operator. Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Cristina Rodriguez		Signature <i>[Signature]</i>		Month Day Year 12/29/15			

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

H2O Environmental - Garden City, ID

Sample Delivery Group: L801974
Samples Received: 11/19/2015
Project Number: Corder Prime
Description: Prime Excavation

Report To: Craig Simmons
6679 South Supply Way
Boise, ID 83716

Entire Report Reviewed By:



Jarred Willis
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

Law Enforcement Sensitive
Do Not Release
EPA-CID Loan Return Upon Completion

(Barcode_000109)

TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



¹Cp: Cover Page	1
²Tc: Table of Contents	2
³Ss: Sample Summary	3
⁴Cn: Case Narrative	4
⁵Sr: Sample Results	5
PRIMES01 L801974-01	5
⁶Qc: Quality Control Summary	6
Mercury by Method 7470A	6
Metals (ICP) by Method 6010B	7
⁷Gl: Glossary of Terms	9
⁸Al: Accreditations & Locations	10
⁹Sc: Chain of Custody	11

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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Printed: 11/23/15 15:29
Page Name: 000312

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
Corder Prime

SDG:
L801974

DATE/TIME:
11/23/15 15:29

PAGE:
2 of 11

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



PRIMES01 L801974-01 Waste

Collected by
Craig Simmons

Collected date/time
11/18/15 11:16

Received date/time
11/19/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG830769	1	11/21/15 17:20	11/22/15 09 05	BRJ
Metals (ICP) by Method 6010B	WG830724	1	11/21/15 09:50	11/22/15 03:35	WBD
Preparation by Method 1311	WG830299	1	11/20/15 15:39	11/20/15 15:40	CHM

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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EPA-CID Loan - Return Upon Completion

PrimeAccess_000313

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
Corder Prime

SDG:
L801974

DATE/TIME:
11/23/15 15:29

PAGE:
3 of 11



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Law Enforcement Sensitive
Do Not Release
EPA-CID Loan - Return Upon Completion

PRIMES01

Collected date/time: 11/18/15 11:16

SAMPLE RESULTS - 01

L801974

ONE LAB. NATIONWIDE



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		11/20/2015 3:39:12 PM	WG830299

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	11/22/2015 09 05	WG830769

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Arsenic	ND		0.450	5	1	11/22/2015 03:35	WG830724
Barium	ND		1.35	100	1	11/22/2015 03:35	WG830724
Cadmium	ND		0.450	1	1	11/22/2015 03:35	WG830724
Chromium	18.5		0.450	5	1	11/22/2015 03:35	WG830724
Lead	ND		0.450	5	1	11/22/2015 03:35	WG830724
Selenium	ND		0.450	1	1	11/22/2015 03:35	WG830724
Silver	ND		0.450	5	1	11/22/2015 03:35	WG830724

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Law Enforcement Sensitive
Do Not Release
EPA-CID Loan - Return Upon Completion

Printed: 11/23/15 15:29

ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
Corder PrimeSDG:
L801974DATE/TIME:
11/23/15 15:29PAGE:
5 of 11

WG830769

Mercury by Method 7470A

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE

L801974-01

Method Blank (MB)

(MB) 11/22/15 08:35

	MB Result	MB Qualifier	MB RDL
Analyte	mg/l		mg/l
Mercury	ND		0.0100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 11/22/15 09:41 • (LCSD) 11/22/15 08:40

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Mercury	0.0300	0.0290	0.0286	97	95	80-120			1	20

L801683-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/22/15 08:42 • (MS) 11/22/15 08:45 • (MSD) 11/22/15 08:48

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury	0.0300	ND	0.0223	0.0240	74	80	1	75-125	J6		7	20

L802002-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/22/15 08:50 • (MS) 11/22/15 08:53 • (MSD) 11/22/15 09:00

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury	0.0300	ND	0.0242	0.0291	81	97	1	75-125			18	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
Corder PrimeSDG:
L801974DATE/TIME:
11/23/15 15:29PAGE:
6 of 11

WG830724

Metals (ICP) by Method 6010B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE



L801974-01

Method Blank (MB)

(MB) 11/22/15 02:38

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Arsenic	ND		0.450
Barium	ND		1.35
Cadmium	ND		0.450
Chromium	ND		0.450
Lead	ND		0.450
Selenium	ND		0.450
Silver	ND		0.450

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 11/22/15 02:41 • (LCSD) 11/22/15 02:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	9.42	9.40	105	104	80-120			0	20
Barium	9.00	9.27	9.24	103	103	80-120			0	20
Cadmium	9.00	9.35	9.32	104	104	80-120			0	20
Chromium	9.00	9.80	9.77	109	109	80-120			0	20
Lead	9.00	9.54	9.53	106	106	80-120			0	20
Selenium	9.00	9.60	9.62	107	107	80-120			0	20
Silver	9.00	9.30	9.27	103	103	80-120			0	20

7 GI

8 Al

9 Sc

L801683-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/22/15 02:47 • (MS) 11/22/15 02:52 • (MSD) 11/22/15 02:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	0.185	9.70	9.77	106	107	1	75-125			1	20
Barium	9.00	0.357	9.35	9.37	100	100	1	75-125			0	20
Cadmium	9.00	ND	9.35	9.36	104	104	1	75-125			0	20
Chromium	9.00	ND	9.60	9.56	107	106	1	75-125			0	20
Lead	9.00	ND	9.54	9.50	106	106	1	75-125			0	20
Selenium	9.00	0.0372	9.82	9.88	109	109	1	75-125			1	20
Silver	9.00	ND	9.27	9.29	103	103	1	75-125			0	20

Printed on 11/23/15 15:29

ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
Corder PrimeSDG:
L801974DATE/TIME:
11/23/15 15:29PAGE:
7 of 11

WG830724

Metals (ICP) by Method 6010B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE

[L801974-01](#)

L802002-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/22/15 03:41 • (MS) 11/22/15 03:50 • (MSD) 11/22/15 03:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	0.0289	9.42	9.38	104	104	1	75-125			0	20
Barium	9.00	0.0510	9.18	9.13	101	101	1	75-125			1	20
Cadmium	9.00	ND	8.57	8.49	95	94	1	75-125			1	20
Chromium	9.00	0.00328	9.74	9.60	108	107	1	75-125			1	20
Lead	9.00	0.529	9.85	9.78	104	103	1	75-125			1	20
Selenium	9.00	ND	9.65	9.57	107	106	1	75-125			1	20
Silver	9.00	ND	9.25	9.18	103	102	1	75-125			1	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
Corder PrimeSDG:
L801974DATE/TIME:
11/23/15 15:29

Printed: 11/23/15 15:29

PAGE:
8 of 11

GLOSSARY OF TERMS

ONE LAB, NATIONWIDE



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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Prime Name 000319

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
Corder Prime

SDG:
L801974

DATE/TIME:
11/23/15 15:29

PAGE:
9 of 11

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{ns} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Prime Alliance 000328

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
Corder Prime

SDG:
L801974

DATE/TIME:
11/23/15 15:29

PAGE:
10 of 11

H2O Environmental - Garden City, ID

Sample Delivery Group: L803601
Samples Received: 11/27/2015
Project Number: CORDER, PRIME EX
Description: Prime, Paint excavation

Report To: Craig Simmions
6679 South Supply Way
Boise, ID 83716

Entire Report Reviewed By:



Jarred Willis
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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(Barcode_000128)

TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



¹Cp: Cover Page	1
²Tc: Table of Contents	2
³Ss: Sample Summary	3
⁴Cn: Case Narrative	4
⁵Sr: Sample Results	5
PRIME BG01 L803601-01	5
⁶Qc: Quality Control Summary	6
Mercury by Method 7470A	6
Metals (ICP) by Method 6010B	7
⁷Gl: Glossary of Terms	9
⁸Al: Accreditations & Locations	10
⁹Sc: Chain of Custody	11

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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Prime ALice_000323

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
CORDER, PRIME EX

SDG:
L803601

DATE/TIME:
12/04/15 10:45

PAGE:
2 of 11

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



PRIME BG01 L803601-01 Waste

Collected by
Craig Simmons

Collected date/time
11/25/15 00:00

Received date/time
11/27/15 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG833020	1	12/03/15 09:43	12/03/15 14:02	TRB
Metals (ICP) by Method 6010B	WG833026	1	12/03/15 09:31	12/03/15 12:25	LTB
Preparation by Method 1311	WG832569	1	12/02/15 08:58	12/02/15 08:59	BG

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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Prime ID: 000324

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
CORDER, PRIME EX

SDG:
L803601

DATE/TIME:
12/04/15 10:45

PAGE:
3 of 11



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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Printed: 000325

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
CORDER, PRIME EX

SDG:
L803601

DATE/TIME:
12/04/15 10:45

PAGE:
4 of 11



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/2/2015 8:58:09 AM	WG832569

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	12/03/2015 14:02	WG833020

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Arsenic	ND		0.450	5	1	12/03/2015 12:25	WG833026
Barium	ND		1.35	100	1	12/03/2015 12:25	WG833026
Cadmium	ND		0.450	1	1	12/03/2015 12:25	WG833026
Chromium	ND		0.450	5	1	12/03/2015 12:25	WG833026
Lead	ND		0.450	5	1	12/03/2015 12:25	WG833026
Selenium	ND		0.450	1	1	12/03/2015 12:25	WG833026
Silver	ND		0.450	5	1	12/03/2015 12:25	WG833026

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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Prime ID: 000326

WG833020

Mercury by Method 7470A

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE

L803601-01

Method Blank (MB)

(MB) 12/03/15 13:19

	<u>MB Result</u>	<u>MB Qualifier</u>	<u>MB RDL</u>
Analyte	mg/l		mg/l
Mercury	ND		0.0100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/03/15 13:21 • (LCSD) 12/03/15 13:24

	<u>Spike Amount</u>	<u>LCS Result</u>	<u>LCSD Result</u>	<u>LCS Rec.</u>	<u>LCSD Rec.</u>	<u>Rec. Limits</u>	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	<u>RPD</u>	<u>RPD Limits</u>
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Mercury	0.0300	0.0271	0.0280	90	93	80-120			3	20

L803519-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/03/15 13:26 • (MS) 12/03/15 13:29 • (MSD) 12/03/15 13:31

	<u>Spike Amount</u>	<u>Original Result</u>	<u>MS Result</u>	<u>MSD Result</u>	<u>MS Rec.</u>	<u>MSD Rec.</u>	<u>Dilution</u>	<u>Rec. Limits</u>	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	<u>RPD</u>	<u>RPD Limits</u>
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury	0.0300	ND	0.0237	0.0266	79	89	1	75-125			12	20

L803402-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/03/15 13:34 • (MS) 12/03/15 13:36 • (MSD) 12/03/15 13:39

	<u>Spike Amount</u>	<u>Original Result</u>	<u>MS Result</u>	<u>MSD Result</u>	<u>MS Rec.</u>	<u>MSD Rec.</u>	<u>Dilution</u>	<u>Rec. Limits</u>	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	<u>RPD</u>	<u>RPD Limits</u>
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury	0.0300	0.000230	0.0290	0.0278	96	92	1	75-125			4	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
CORDER, PRIME EXSDG:
L803601DATE/TIME:
12/04/15 10:45PAGE:
6 of 11

WG833026

Metals (ICP) by Method 6010B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE



L803601-01

Method Blank (MB)

(MB) 12/03/15 11:29

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Arsenic	ND		0.450
Barium	ND		1.35
Cadmium	ND		0.450
Chromium	ND		0.450
Lead	ND		0.450
Selenium	ND		0.450
Silver	ND		0.450

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/03/15 11:31 • (LCSD) 12/03/15 11:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	9.73	9.77	108	109	80-120			0	20
Barium	9.00	9.43	9.44	105	105	80-120			0	20
Cadmium	9.00	9.44	9.41	105	105	80-120			0	20
Chromium	9.00	9.61	9.55	107	106	80-120			1	20
Lead	9.00	9.45	9.46	105	105	80-120			0	20
Selenium	9.00	9.93	9.94	110	110	80-120			0	20
Silver	9.00	9.43	9.40	105	104	80-120			0	20

L803519-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/03/15 11:45 • (MS) 12/03/15 11:51 • (MSD) 12/03/15 11:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	0.0199	10.2	10.1	113	112	1	75-125			1	20
Barium	9.00	0.635	9.95	9.93	104	103	1	75-125			0	20
Cadmium	9.00	0.00196	9.71	9.70	108	108	1	75-125			0	20
Chromium	9.00	ND	9.53	9.50	106	106	1	75-125			0	20
Lead	9.00	ND	9.55	9.61	106	107	1	75-125			1	20
Selenium	9.00	0.0434	10.5	10.5	116	116	1	75-125			0	20
Silver	9.00	ND	9.73	9.67	108	107	1	75-125			1	20

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ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
CORDER, PRIME EXSDG:
L803601DATE/TIME:
12/04/15 10:45PAGE:
7 of 11

WG833026

Metals (ICP) by Method 6010B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE

[L803601-01](#)

L803634-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/03/15 12:50 • (MS) 12/03/15 12:52 • (MSD) 12/03/15 12:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	9.00	0.0266	9.71	9.83	108	109	1	75-125			1	20
Barium	9.00	0.0127	9.38	9.50	104	105	1	75-125			1	20
Cadmium	9.00	0.000607	9.38	9.51	104	106	1	75-125			1	20
Chromium	9.00	0.0657	9.57	9.64	106	106	1	75-125			1	20
Lead	9.00	0.00853	9.43	9.56	105	106	1	75-125			1	20
Selenium	9.00	0.00465	9.86	10.0	109	111	1	75-125			2	20
Silver	9.00	ND	9.35	9.42	104	105	1	75-125			1	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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ACCOUNT:
H2O Environmental - Garden City, IDPROJECT:
CORDER, PRIME EXSDG:
L803601DATE/TIME:
12/04/15 10:45PAGE:
8 of 11Printed: 12/04/15 10:45
Printed: 000329



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{ns} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Prime Name 000339

ACCOUNT:
H2O Environmental - Garden City, ID

PROJECT:
CORDER, PRIME EX

SDG:
L803601

DATE/TIME:
12/04/15 10:45

PAGE:
10 of 11

VEND# PPG PI CHK# 501656

501656

DATE	INVOICE NO.	REFERENCE	AMOUNT
1/05/16	1535454		54,102.14
TOTALS			***54,102.14

501656

PRIME, INC.
P.O Box 4208 Springfield, MO 65808-4208

THIS CHECK IS VOID WITHOUT A SECURITY BACKGROUND AND A SIGNATURE BORDER PRINTED IN A HEAT SENSITIVE INK THAT DISAPPEARS WHEN RUBBED



P.O BOX 4208
SPRINGFIELD, MO 65808-4208

BANK OF AMERICA - MAINE

52 153
112

501656

DATE	CHECK NO.	AMOUNT
1/08/16	501656	***54,102.14

PAY FIFTY-FOUR THOUSAND ONE HUNDRED TWO AND 14/100 DOLLARS*****

TO THE
ORDER
OF

PPG INDUSTRIES INC
ONE PPC PLACE
PITTSBURGH, PA

53272


SIGNATURE AND CERTIFICATION NUMBER REQUIRED FOR ALL CHECKS - 12/1/15

501656 00112015390 00802 349810

EPA CID Case No. 1003-0101: 0327

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

Case Title:

Prime, Inc

Subject of Report:

Hazmat Manifest and Invoice for 12/29/15 Disposal at US Ecology

Reporting Office:

Boise, ID, Resident Office

Activity Date:

March 22, 2016

Reporting Official and Date:

Darin J. Mugleston

Resident Agent in Charge

22-MAR-2016, Signed by *Darin J. Mugleston*

Approving Official and Date:

Edward W. Owens

Assistant Special Agent in Charge

22-MAR-2016, Approved by *Edward W. Owens*

Assistant Special Agent in Charge

SYNOPSIS

On March 21 and 22, 2016, Terry Geis, General Manager, US Ecology, Grand View, ID, provided the Hazardous Waste Manifest and Invoice for the disposal of hazardous waste received from H2O Environmental on December 29, 2015.

DETAILS

On March 21 and 22, 2016, Terry Geis, General Manager, US Ecology, 20400 Lemley Road, Grand View, ID, (208) 834-2275, provided, via emails, Reporting Agent with the Hazardous Waste Manifest and Invoice for the disposal of "27.66 tons/yards of RCRA solids" received from H2O Environmental on December 29, 2015. The Manifest and Invoice are attached.

In a subsequent phone call, Geis said there was a discrepancy on the manifest for the amount of material being disposed. The manifest had the quantity listed at 24 cubic yards. However, according to Geis, determining the quantity of a material in yards is less accurate than obtaining the quantity by using weight scales. In determining the quantity in yards, one has to "eye ball" the amount. After the load was weighed, the amount disposed was 27.66 tons of hazardous soil material.

ATTACHMENT

Hazmat Manifest, dated 12_29_15

US Ecology Invoice for RCRA Disposal, dated 1_8_16

This document contains neither recommendations nor conclusions of the EPA.
It is the property of the EPA and is loaned to your agency;
it and its contents are not to be distributed outside your agency.

EPA CID Case No. 1003-0101: 0965

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

15122911038 55300th 20445

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number IDR000205210	2. Page 1 of 1	3. Emergency Response Phone (702) 386-4148	4. Manifest Tracking Number 008405001 JJK
5. Generator's Name and Mailing Address PRIME, INC. 2740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65809			Generator's Site Address (if different than mailing address) PRIME, INC. 1-84 EASTBOUND MM 26 CALDWELL ID 89605		
Generator's Phone: 812 863-2400					
6. Transporter 1 Company Name H2O ENVIRONMENTAL (80182)				U.S. EPA ID Number NVR000080400	
7. Transporter 2 Company Name				U.S. EPA ID Number	
8. Designated Facility Name and Site Address US ECOLOGY INC. 20400 LEMLEY ROAD GRAND VIEW ID: 83824				U.S. EPA ID Number IDD073114054	
Facility's Phone: 800-274-1616					
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type	11. Total Quantity	12. Unit Wt./Vol.
	X	HAZ077, Hazardous waste, solid, n.o.s. (Chromium) 8, POIII	001 DT	0024	Y
13. Waste Codes 0007					
14. Special Handling Instructions and Additional Information HAZ077 (HAZARDOUS WASTE SOLID) BR95 171 2) PROFILED 3) PROFILED 4) PROFILED WEAR APPROPRIATE SAFETY EQUIPMENT IF UNDELIVERABLE, NOTIFY H2O					
15. GENERATOR'S/CERTIFIER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/packaged, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.					
Generator/Certifier's Printed/Typed Name CRAIG SIMMONS					
Signature <i>[Signature]</i> Month Day Year 12/29/15					
TRANSPORTER	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____				
	17. Transporter Acknowledgment of Receipt of Materials				
	Transporter 1 Printed/Typed Name TIM CROOK Signature <i>[Signature]</i> Month Day Year 12/29/15				
DESIGNATED FACILITY	Transporter 2 Printed/Typed Name Signature Month Day Year				
	18. Discrepancy				
	18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection <i>Owner retained 20 yrels. on 12/29/15 via telecomm 1/5/16 etc</i>				
	18b. Alternate Facility (or Generator) U.S. EPA ID Number				
	Facility's Phone: _____				
18c. Signature of Alternate Facility (or Generator) Month Day Year					
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a					
Printed/Typed Name Yolima Rodriguez Signature <i>[Signature]</i> Month Day Year 12/29/15					

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

EPA CRL 6885 No. 1003-0101-0005

DESIGNATED FACILITY'S COPY

US Ecology Idaho, Inc.
P.O Box 400
20400 Lemley Road
Grand View, Idaho 83624

Phone: (800) 274 1516
(208) 834 2275
Fax: (208) 834 2997
(208) 834 2919

US Ecology Idaho

a US Ecology Inc. company

INVOICE

Page 1 of 1

H2O ENVIRONMENTAL

Attn : ED SAVRE

6679 SUPPLY WAY

BOISE, ID 83716-5545

Invoice #: G48458

Invoice date: 01/08/2016

Customer ID: 020502 / H2OENVIRO

Please remit checks to:

P.O. BOX 26273
Salt Lake City, UT 84126-0273

Please wire to:

Bank: Wells Fargo Bank, N.A. San Francisco, CA
ABA: 121000248 **Account #:** 5130000820
Account Name: USE/Subsidiaries

Terms: 30 Days

Quantity	Unit	DESCRIPTION	Rate	Total
Generator: PRIME INC., I-84 EASTBOUND MM 25, CALDWELL, ID 83605			EPA ID:IDR000205219	
Reference #: 15122911038-008405001 JJK-1-1 Waste Stream #:38946-0				
27.66	TON/YARD	Stabilization - RCRA Solids (D004-D011)	\$118.50	\$3,277.71
		10% Energy, Insurance and Recovery fee		\$327.77
			Total	\$3,605.48

** Minimum quantity/minimum charge applied.

EPA CID Case No. 1003-0101: 0967

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

Case Title:

Prime, Inc

Subject of Report:

Meeting and Inspection of Trailer with Brian Singleton and Attorney Peter Christensen, Prime S.L.C.

Reporting Office:

Boise, ID, Resident Office

Activity Date:

August 2, 2016

Reporting Official and Date:

Darin J. Mugleston
Resident Agent in Charge

04-AUG-2016, Signed by Darin J. Mugleston

Approving Official and Date:

Jeanne Proctor
Special Agent in Charge

08-AUG-2016, Approved by Edward W. Owens
Assistant Special Agent in Charge

SYNOPSIS

On August 2, 2016, Brian Singleton, Operations Manager, Prime, Inc. (Prime), Salt Lake City, Utah, and Attorney Peter Christensen, Law Firm of Strong and Hanni, Salt Lake City, UT, met with investigating agents. During the meeting, investigating agents observed the burnt trailer with a number of drums on it from the Idaho fire incident.

DETAILS

On August 2, 2016, at approximately 10:00 a.m., Brian Singleton, Operations Manager, Prime, 3720 W 800 S, Salt Lake City, Utah, and Attorney Peter Christensen, Law Firm of Strong and Hanni, Salt Lake City, UT, met with Special Agent (SA) Darin Mugleston, EPA-CID, and SA [REDACTED], U.S. Department of Transportation – Office of Inspector General (DOT-OIG).

The purpose of the meeting was to determine the whereabouts of a burned semi-trailer from the September 27, 2015, paint-related waste incident from a semi-trailer fire operated by Prime, on Interstate 84, at mile post 115, near Glenns Ferry (also near Hammett), ID.

Singleton and Attorney Christensen met with investigating agents in a vacated room, upstairs in the main Prime building.

At the beginning of the meeting, SA Mugleston and SA [REDACTED] introduced themselves, exchanged business cards, and displayed their credentials to Singleton and Attorney Christensen.

Attorney Christensen stated he represents Prime, Singleton, and all Prime employees. Attorney Christensen claimed he also represents Prime's Head Quarters, located in Springfield, MO.

After explaining the purpose of the interview, Attorney Christensen and Singleton left the meeting room. Upon their return, Attorney Christensen said the questioned trailer is located here at Prime's Salt Lake City facility. Attorney Christensen said the interviewing agents can inspect the burnt trailer, but there will be no interviews or reviewing documents.

When asked about interviewing individuals to get a clear picture of the events of the fire incident, Attorney Christensen recited the "30(b)(6)" Deposition rule, requesting interviewing agents to provide him with a list of issues and questions. Attorney Christensen will then find the person (s) who can answer the questions.

When SA Mugleston asked Attorney Christensen if he was a criminal attorney, Attorney Christensen

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EPA CID Case No. 1003-0101: 0001

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

said they have criminal attorneys in his law firm.

After the above meeting, Singleton and Attorney Christensen took investigating agents to inspect the trailer.

The trailer was located in the northeast portion of Prime's facility. Singleton called the area where the trailer was located the "grave yard."

The trailer was covered with heavy tarps, which were being removed by a Prime employee as we approached the trailer. Due to the heat, the wind, and the large amount of yellow jackets around the trailer, only half of the tarps were removed from the trailer.

To Attorney Christensen's knowledge, the trailer is confirmed as the trailer involved in questioned incident.

When the tarps were removed to expose about half of the trailer, investigating agents smelled strong chemical odor coming from the trailer. The odor never left while investigating agents inspected the trailer.

Investigating agents observed a number of drums still located on the trailer. The drums were burned, removing any labels from the drums. The bung caps on the drums were also missing on the drums observed.

Singleton said there are 32 drums on the trailer. Singleton didn't know if the drums contained any material.

Investigating agents were unable to find any identification marks (i.e., license plate or placards) on the trailer.

During the inspection, SA Mugleston took digital photos of the trailer and drums. SA Mugleston downloaded the digital images 10 through 25 (images 1 through 9 are unrelated to this investigation) from his Canon Power Shot A1100 IS camera and burned the images to a Compact Disk, on August 4, 2016. The digital images will be kept in the Boise Resident Office. A copy of the Chain of Custody for the CD is attached as a place holder to this report. A portable document format file containing the photos are also attached.

After the inspection, investigating agents were escorted to the front of Prime's main facility. When discussing the status of the trailer, Attorney Christensen asked if removing the trailer is considered destruction of evidence, SA Mugleston said he will get back to Attorney Christensen.

Attorney Christensen advised Prime wants to cooperate with the investigation.

The meeting and inspection was concluded at approximately 11:00 a.m.

ATTACHMENT

Chain of Custody_Photos of Burnt Trailer, dated 8_2_16
Photos of Burnt Trailer with Drums, dated 8_2_16

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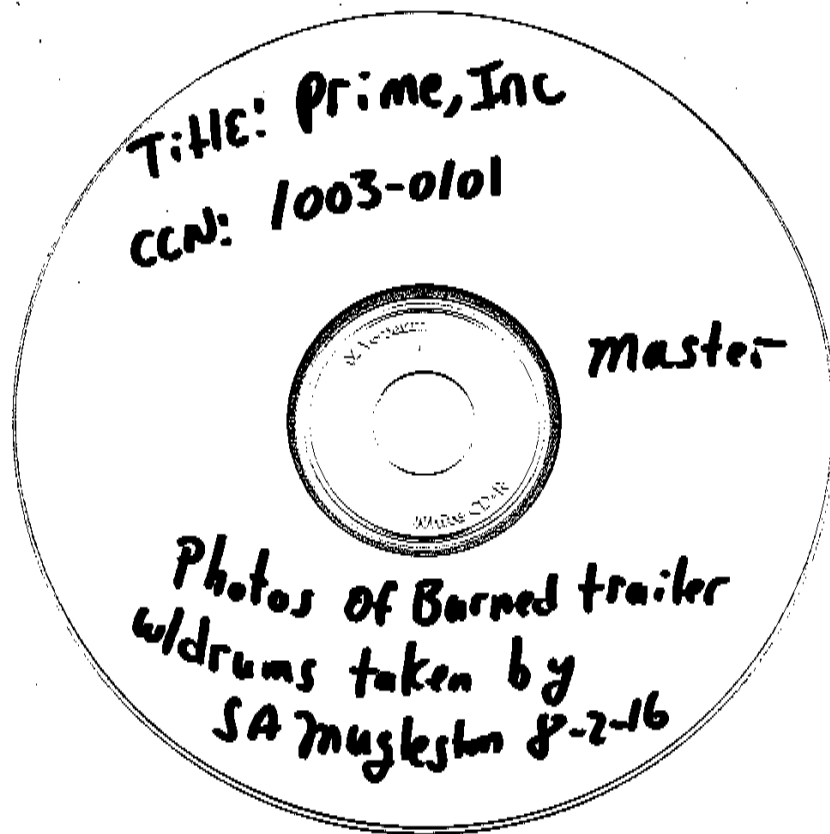
EPA CID Case No. 1003-0101: 0002



United States Environmental Protection Agency
Office of Criminal Enforcement, Forensics & Training
CHAIN OF CUSTODY RECORD

Case Number 1003-0101		Case Name Prime, Inc		1. Collection Location/Source 3720 W 800 S, Salt Lake City, UT	
2. Item/Sample Number	Item/Sample Date Time	3. Collected By	4. Item/Sample Location	5. Description	
20160802-001	08/02/16	SA Mugleston	Photos of burned trailer with drums located at 3720 W 800 S, Salt Lake City, UT.	One (1) Compact Disk containing digital images taken of Prime's burned trailer with drums, located at Prime's facility in Utah, by SA Mugleston, EPA-CID, on 8-2-16.	
<i>Nothing Follows</i>					
<div style="position: relative; height: 300px;"><div style="position: absolute; top: 0; left: 0; width: 100%; height: 100%; border: 1px solid black; transform: rotate(45deg); opacity: 0.5;"></div><div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-size: 2em; font-weight: bold;">Done</div></div>					

EPA CID Case No. 1003-0101: 0003





EPA CID Case No. 1003-0101: 0005



EPA CID Case No. 1003-0101: 0006



EPA OIO Case No. 1003-0101-1007



EPA CID Case No. 1003-0101: 0008





EPA CID Case No. 1003-0101-0010



EPA-010 Case No. 1009-0101-0011



EPA CID Case No. 1003-0101: 0012



SPN-CID Case No. 1003-0101: 0013





EPA CID Case No. 1003-0101- 0315



EPA CID Case No. 1003-0101- 0016





EPA C/D Case No. 1503-0101-0918



EPA CID Case No. 1003-0101: 0019



**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

Case Title:

Prime, Inc

Subject of Report:

Consent Search to Sample Drums at Prime, Salt Lake City, Utah

Reporting Office:

Boise, ID, Resident Office

Activity Date:

August 24, 2016

Reporting Official and Date:

Darin J. Mugleston

Resident Agent in Charge

29-AUG-2016, Signed by *Darin J. Mugleston*

Approving Official and Date:

Jeanne Proctor

Special Agent in Charge

29-AUG-2016, Approved by *Jeanne Proctor*

Special Agent in Charge

SYNOPSIS

On August 24, 2016, Consent to Search was conducted by EPA-CID and EPA's National Enforcement Investigations Center (NEIC) to inspect and sample drums of paint waste at Prime, Inc. (Prime)'s facility in Salt Lake City, Utah.

DETAILS

On August 24, 2016, at approximately 9:00 a.m., a Consent to Search was conducted at Prime, 3720 W. 800 S, Salt Lake City, Utah, by EPA and NEIC. Consent was authorized by Attorney Peter Christensen, Law Firm of Strong and Hanni, who represents Prime. The Consent to Search permitted EPA-CID and its representative, NEIC, to inspect and sample drums of paint waste associated with the September 27, 2015, fire incident involving Prime's semi-trailer that was transported from Mountain Home, Idaho to Prime's Salt Lake City facility. A copy of the Consent to Search is attached.

The following EPA personnel participated on the consent search: Special Agent (SA) Darin Mugleston, EPA-CID; SA [REDACTED] EPA-CID; John Fowler, National Technical Coordinator (NTC), NEIC; and Jake Stewart, NTC, NEIC.

The following Prime representatives were present at times or throughout the consent search: Attorney Peter Christensen, Law Firm of Strong and Hanni; Attorney Marshall Hendrickson, Law Firm of Strong and Hanni; Brian Singleton, Operations Manager, Prime, Salt Lake City Facility; Glen Jones, Account Manager, H2O Environmental (H2O), Salt Lake City, UT; and Tim Loving, Project Manager, H2O, Salt Lake City, UT. Prime also had several employees who operated the forklift to remove and stage the drums off the trailer.

Prior to removing the drums off the trailer, SA Mugleston took digital photos of the trailer and drums. SA Mugleston downloaded the digital images 1 through 7 from his Canon Power Shot A1100 IS camera and burned the images to a Compact Disk, on August 26, 2016. The digital images will be kept in the Boise Resident Office. A copy of the Chain of Custody for the CD is attached as a place holder to this report. A portable document format file containing the photo log, sketch, and photos are attached.

During the consent search, NEIC labeled and inspected each drum. NEIC collected samples from eight (8) drums. A detailed sampling report will be provided by NEIC.

NEIC provided split samples to H2O with a Chain of Custody. The Chain of Custody will be included in NEIC's final report.

At the conclusion of the consent search, SA Mugleston conducted an exit briefing with Attorney

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EPA CID Case No. 1003-0101: 0021

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

Marshall Hendrickson and Brian Singleton, Prime.

During the exit briefing, SA Mugleston provided a receipt for the collection of the samples to Brian Singleton, Prime, which is attached.

The Consent Search was concluded at approximately 4:00 p.m.

ATTACHMENT

Consent to Search Form, dated 8_24_16

Chain of Custody Consent Search Photos, dated 8 24 16

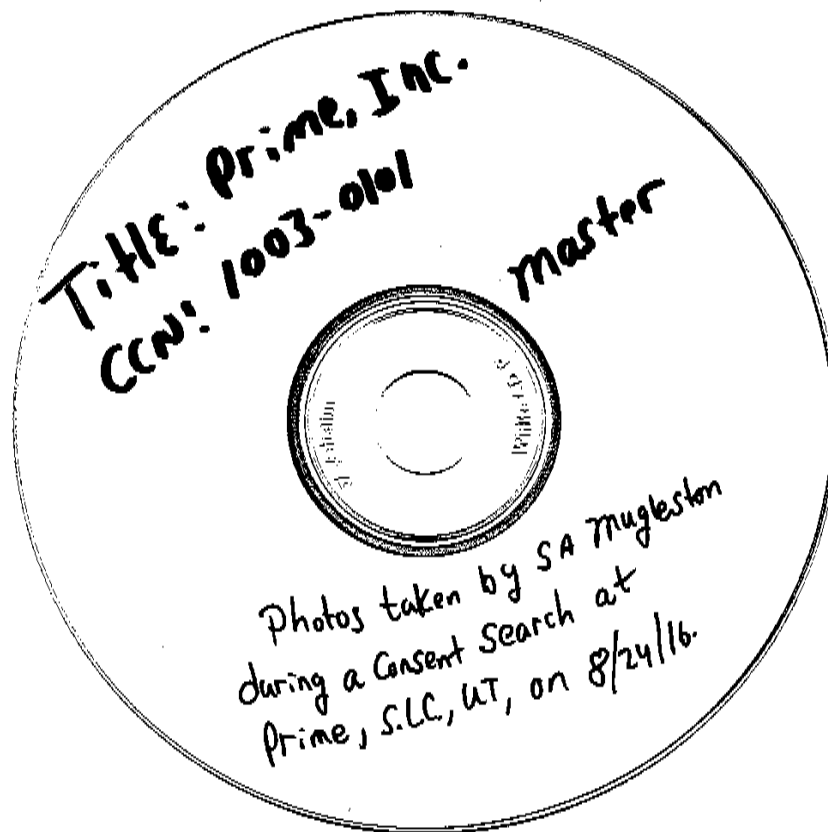
PDF Containing Photo Log, Sketch, Photos, dated 8_24_16

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EPA CID Case No. 1003-0101: 0022



EPA CID Case No. 1003-0101: 0023



Case Title: Prime
Case Number: 1003-0101
Camera: Canon Power Shot

PHOTO LOG

Consent Search
Atime, Inc. Facility
3720 W. 800s.
Salt Lake City, UT

8/24/16

EPA CID Case No. 1003-0101: 0025

[illegible]

Pr, me, JNC
Salt Lake City, UT
1003-0101

8/24/16

Consent Search



EPA CID Case No. 1003-0101-0027





EPA CID Case No. 1003-0101: 0029



EPA CID Case No. 1003-0101: 0030



EPA CID Case No. 1003-0101- 0031



**U.S. Environmental Protection Agency
Office of Criminal Enforcement, Forensics & Training**

CONSENT TO SEARCH

I HAVE BEEN ASKED TO PERMIT SPECIAL AGENTS OF THE ENVIRONMENTAL PROTECTION AGENCY AND THEIR REPRESENTATIVES TO SEARCH:

Prime, Inc.
3720 W. 800 S
Salt Lake City, Utah

Where they may observe, inspect, and analyze the physical remnants and contents of the trailer associated with an incident occurring on or about September 27, 2015 involving Bill of Lading No. 0811B65356/ Load ID No. CAP00709220 that was transported from Mountain Home, Idaho to Salt Lake City, Utah and is currently stored at the Prime facility.

Agents and their representatives may review processes, take photographs & measurements, collect samples and catalogue all items associated with the trailer from the incident now stored at the Prime facility identified above. Additionally, any samples taken or collected from the trailer or its contents will be sent to the Environmental Protection Agency National Enforcement Investigations Center for further testing, analysis, and characterization.

This consent may be withdrawn in writing at any time by notifying an EPA Special Agent present at the search.


I HAVE NOT BEEN THREATENED, NOR FORCED IN ANY WAY.
I FREELY CONSENT TO THIS SEARCH.



Signature for Facility Date

 8/24/16

Signature for EPA Date

 2016 August 24

Witness Date

**United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report**

Case Number:

1003-0101

Case Title:

Prime, Inc

Subject of Report:

NEIC Report for 8-24-16 Field Support

Reporting Official and Date:

Darin J. Mugleston

Resident Agent in Charge

13-DEC-2016, Signed by Darin J. Mugleston

Reporting Office:

Boise, ID, Resident Office

Activity Date:

December 13, 2016

Approving Official and Date:

Jeanne Proctor

Special Agent in Charge

14-DEC-2016, Approved by Edward W. Owens

Assistant Special Agent in Charge

SYNOPSIS

On December 13, 2016, EPA's National Enforcement Investigations Center (NEIC) provided a Report for its field technical assistance on the Prime, Inc. (Prime) investigation.

DETAILS

On December 13, 2016, NEIC provided EPA-CID with a Report, detailing NEIC's field and laboratory technical support of an investigation at Prime, located at 3720 W. 800 S, South Lake City, Utah, on August 24, 2016. The NEIC Report is attached.

ATTACHMENT

NEIC Report for 8_24_16 Field Support

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EPA CID Case No. 1003-0101: 0034



United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

National Enforcement Investigations Center

NEIC

NEICRP1723R01

NEIC REPORT

Prime Inc.

Salt Lake City, Utah
NEIC Project No.: RP1723
CID Case No.: 1003-0101

December 2016

Prepared by:

John Fowler, Chemist
John Reschl, Chemist

Prepared for:

Darin Mugleston
EPA Criminal Investigation Division
Boise Resident Office
Boise, Idaho, 83702

Authorized for Release by:

David Parker, Program Coordinator

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
P.O. Box 25227
Building 25, Denver Federal Center
Denver, Colorado 80225

CONTENTS

FINDINGS.....	3
PROJECT ACTIVITIES.....	4

TABLES

Table 1. PROJECT TEAM MEMBERS.....	4
Table 2. SAMPLING AND ANALYTICAL RESULTS	5
Table 3. SAMPLING AND ANALYSIS PROCEDURES.....	7

APPENDICES

- A Field XRF Results (1 page)
- B Chain of Custody Record (1 page)
- C Receipt for Samples Record (1 page)
- D Field and Laboratory Photographs (56 pages)

This Contents page shows all of the sections contained in this report and provides a clear indication of the end of this report.

FINDINGS

- The contents of 32 drums removed from a burnt semi-trailer were analyzed by X-ray fluorescence spectrometry (XRF). Twenty of these drums contained material consistent with a strontium chromate primer (Universal Urethane Yellow Primer, Product Code BP1Y100B, from trailer's shipping manifest).
- Representative¹ samples were collected from 8 of the 20 drums identified as containing material consistent with strontium chromate primer. All 8 samples had concentrations of chromium greater than the regulatory level established under the Resource Conservation and Recovery Act (RCRA) for the hazardous waste toxicity characteristic² and had the properties established for the RCRA hazardous waste ignitability characteristic.³

¹ Appendix I to 40 Code of Federal Regulations (CFR) Part 261 – REPRESENTATIVE SAMPLING METHODS states, in part: "Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the Agency to be representative of the waste...."

Containerized liquid waste – 'COLIWASA.'"

² 40 CFR § 261.24 – "(a) A solid waste (except manufactured gas plant waste) exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Method," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table...."

Table 1 – Maximum Concentration of Contaminants for the Toxicity Characteristic... Contaminant... Chromium... Regulatory Level (mg/L)... 5.0."

³ 40 CFR § 261.21 – "(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has either of the following properties: (1) It is liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has a flash point less than 60 °C (140 °F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D 93-79 or D 93-90 (incorporated by reference, see §260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D 3278-78 (incorporated by reference, see §260.11)...."

PROJECT ACTIVITIES

On August 24, 2016, the U.S. Environmental Protection Agency (EPA) National Enforcement Investigations Center (NEIC) provided field technical assistance to the EPA Criminal Investigation Division (CID) in support of an investigation of Prime Inc. (Prime), located at 3720 West 800th South, Salt Lake City, Utah. NEIC provided field and laboratory technical support to the Prime investigation. The project team members are listed in **Table 1**.

Table 1. PROJECT TEAM MEMBERS		
Team Member	Organization	Project Role
John Fowler	NEIC	Project manager (PM)
Jacob Stowell	NEIC	Field team member
[REDACTED]	CID	Field team member
John Reschl	NEIC	Principal analytical chemist (PAC)
Ben Burns	NEIC	Laboratory team member
Kristine Pordesimo	NEIC	Laboratory team member

The field team provided support to this investigation by inventorying, performing on-site testing, and sampling of drums taken from a burnt semi-trailer. Under the direction of John Fowler, [REDACTED] collected samples from 32 drums for XRF testing, using new glass drum thieves. A summary of the on-site XRF testing conducted by John Fowler is contained in **Appendix A**. Based on the XRF testing, 20 of the 32 drums contained material consistent with strontium chromate primer. Drums consistent with strontium chromate primer had XRF readings greater than 10,000 milligrams per kilogram (mg/kg) chromium and 17,000 mg/kg strontium, while other drums not consistent with strontium chromate primer had XRF readings under 6 mg/kg chromium and 132 mg/kg strontium. Following the XRF testing, Jacob Stowell collected additional samples from 8 of those 20 drums using a composite liquid waste sampler (COLIWASA). The samples were driven by Jacob Stowell to the NEIC laboratory in Denver, Colorado, for analysis. The laboratory analyzed the samples for the RCRA hazardous waste characteristics of toxicity and ignitability. A summary of the sampling and analytical results is provided in **Table 2**. A copy of the chain of custody record is provided in **Appendix B**.

All environmental measurement activities were performed in accordance with the NEIC quality system. All field sampling, field measurements/monitoring, and/or laboratory measurements described in this report are within the scope of NEIC's ISO/IEC 17025 accreditation issued by American National Standards Institute-American Society for Quality (ANSI-ASQ) National Accreditation Board (certificate No. AT-1646).

Table 2. SAMPLING AND ANALYTICAL RESULTS

Sample No. ¹	Sample Location ¹	Laboratory Sample Descriptions and Phase Separations Results	RCRA Characteristic and Other Test Results
D06	Drum 06	Top phase: Clear liquid with suspended yellow solids 0.5% ² Bottom phase: Yellow fine solids 99.5%	Toxicity ³ : 36.8 milligram per liter (mg/L) chromium ⁴ Ignitability: Flash point ⁴ = 45.0 degrees Celsius (°C) Liquid phase: < 2% water Density ⁵ : = 1.29 grams/milliliter (g/mL)
D10	Drum 10	Top phase: Clear liquid with suspended yellow solids 1.8% Bottom phase: Yellow fine solids 98.2%	Toxicity: 65.5 mg/L chromium Ignitability: Flash point = 44.5 °C Liquid phase: < 2% water Density: = 1.29 g/mL
D15	Drum 15	Top phase: Clear liquid with suspended yellow solids 2.7% Bottom phase: Yellow fine solids 97.3%	Toxicity: 37.0 mg/l chromium Ignitability: Flash point = 44.5 °C Liquid phase < 2% water Density = 1.25 g/mL
D20	Drum 20	Top phase: Clear liquid with suspended yellow solids 3.8% Bottom phase: Yellow fine solids 96.2%	Toxicity: 50.7 mg/L chromium Ignitability: Flash point = 43.0 °C Liquid phase < 2% water Density = 1.19 g/mL
D22	Drum 22	Top phase: Clear liquid with suspended yellow solids 49.5% Bottom phase: Yellow fine solids 51.5%	Toxicity: 352 mg/L chromium Ignitability: Flash point = 45.0 °C Liquid phase < 2% water Density = 1.31 g/mL
D25	Drum 25	Top phase: Clear liquid with suspended yellow solids 3.5% Bottom phase: Yellow fine solids 96.5%	Toxicity: 44.0 mg/L chromium Ignitability: Flash point = 44.5 °C Liquid phase < 2% water Density = 1.23 g/mL
D26 ⁶	Drum 26	Top phase: Clear liquid with suspended yellow solids 2.4% Bottom phase: Yellow fine solids 97.6%	Toxicity: 37.4 mg/L chromium Ignitability: Flash point = 44.0 °C Liquid phase < 2% water Density = 1.24 g/mL

Table 2. SAMPLING AND ANALYTICAL RESULTS

Sample No. ¹	Sample Location ¹	Laboratory Sample Descriptions and Phase Separations Results	RCRA Characteristic and Other Test Results
D26 ⁶	Drum 26	Top phase: Clear liquid with suspended yellow solids 2.7% Bottom phase: Yellow fine solids 97.3%	Toxicity: 50.3 mg/L chromium Ignitability: Flash point = 44.0 °C Liquid phase < 2% water Density = 1.22 g/mL
D29	Drum 29	Top phase: Clear liquid with suspended yellow solids 1.5% Bottom phase: Yellow fine solids 98.5%	Toxicity: 42.7 mg/L chromium Ignitability: Flash point = 44.0 °C Liquid phase < 2% water Density = 1.27 g/mL
¹ Sample numbers and drum identification numbers were assigned in the field by John Fowler. All drums were 55-gallons drums. The term “Station” on the chain of custody record is interchangeable with the term “Sample” in this table. ² Phase percentages (%) are calculated based on volume. Values are the average of the two samples collected from each drum. ³ Result from the toxicity characteristic leaching procedure (TCLP) for RCRA hazardous waste characteristic of toxicity. The regulatory level for chromium is 5.0 mg/L. ⁴ Nonaqueous liquids with flash point values less than or equal to 60° C (140 degrees Fahrenheit) have the properties of the RCRA hazardous waste characteristic of ignitability. Flashpoint was determined on the liquid phase of each sample. ⁵ Density was determined on a mixed sample containing both the upper and bottom phases. ⁶ Field replicate samples.			

At the request of CID case agent Darin Muggleston, samples were collected for H2O Environmental (H2O) along with the samples collected for the NEIC laboratory. H2O supplied its own sample jars. John Fowler relinquished the H2O samples to Glen Jones, account manager, Salt Lake Base, H2O. A copy of the “Receipt for Samples” form is attached as **Appendix C**.

Field and laboratory photographs are attached as **Appendix D**. Laboratory sample descriptions, observations, and comments are documented in the project file.

Table 3 lists the sampling and analysis procedures followed and the sampler(s)/analyst(s) associated with each activity or test. Data quality summaries, including uncertainty measurements, for all laboratory measurements are maintained in the project file.

Table 3. SAMPLING AND ANALYSIS PROCEDURES

Analytical Methods/Procedures	Team Member
<ul style="list-style-type: none"> • <i>X-ray Fluorescence Spectrometry Using the Niton Model 792 XLt Field Portable X-ray Fluorescence</i>, NEICPROC/11-001 	John Fowler
<ul style="list-style-type: none"> • <i>Container Sampling</i>, NEICPROC/00-048R1 	Jacob Stowell
<ul style="list-style-type: none"> • Metals extraction: SW-846 Method 1311: Toxicity Characteristic Leaching Procedure 	John Reschl
<ul style="list-style-type: none"> • <i>Elemental Analyses</i>, NEICPROC/00-062R5 • SW-846 Method 6010: Inductively Coupled Plasma-Atomic Emission Spectrometry 	John Reschl
Flash point analysis: <ul style="list-style-type: none"> • <i>Setaflash Method for Determining Ignitability of Liquids</i>, NEICPROC/06-001R2 • ASTM D 3278-78, Standard Test Methods for Flash Point of Liquids by Setaflash Closed Tester 	Ben Burns
<ul style="list-style-type: none"> • <i>Water Content Determination by Coulometric Karl Fischer Titration</i>, NEICPROC/00-073R3 • SW-846 Method 9000: Determination of Water in Waste Materials by Karl Fischer Titration 	Kristine Pordesimo

Appendix A
FIELD XRF RESULTS
(mg/kg)¹

Container	Color of Material	Strontium	Chromium	Primer Drum	Sampled for RCRA Analysis
Drum 01	White	<LOD ²	<LOD		
Drum 02	White	<LOD	130.5		
Drum 03	Yellow	28493.2	15963.3	Yes	
Drum 04	White	<LOD	<LOD		
Drum 05	White	2.9	53.5		
Drum 06	Yellow	47634.0	12241.3	Yes	Sampled
Drum 07	Yellow	28209.5	14113.0	Yes	
Drum 08	White	<LOD	<LOD		
Drum 09	White	<LOD	<LOD		
Drum 10	Yellow	37326.3	16575.4	Yes	Sampled
Drum 11	White	1.9	<LOD		
Drum 12	White	<LOD	<LOD		
Drum 13	White	4.2	114.4		
Drum 14	White	<LOD	<LOD		
Drum 15	Yellow	35449.3	19297.2	Yes	Sampled
Drum 16	White	<LOD	<LOD		
Drum 17	White	5.6	35.5		
Drum 18	Yellow	45802.8	18036.5	Yes	
Drum 19	Yellow	52090.7	18907.9	Yes	
Drum 20	Yellow	59570.2	15827.7	Yes	Sampled
Drum 21	Yellow	63103.8	25409.8	Yes	
Drum 22	Yellow	50767.1	23856.7	Yes	Sampled
Drum 23	Yellow	55307.1	21636.7	Yes	
Drum 24	Yellow	59259.0	25108.2	Yes	
Drum 25	Yellow	38879.0	19552.7	Yes	Sampled
Drum 26	Yellow	51209.2	11224.1	Yes	Sampled
Drum 27	Yellow	44577.8	11779.1	Yes	
Drum 28	Yellow	50326.5	24204.4	Yes	
Drum 29	Yellow	17194.3	15647.8	Yes	Sampled
Drum 30	Yellow	35245.5	19989.9	Yes	
Drum 31	Yellow	53331.1	24724.2	Yes	
Drum 32	Yellow	51634.3	22926.5	Yes	
Estimated LOD:		1.5	8.0		

Number: 32 20 8

1 – Values should be considered semi-quantitative due to levels, sample matrix, and how material was prepared for analysis.

2 – Limit of Detection (LOD)

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME				NO. OF CON- TAINERS 802 cases	TAG NUMBERS				SAMPLE TAG VERIFICATION	REMARKS	
NE RP1723		Prine Inc.											
SAMPLERS: (Signature)													
Joe B. Gail													
STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION								
D06	8/24/10	1320	X		Drum 06	2					NE38534 54	✓	
D10		1410	X		Drum 10	2					NE38554 56	✓	
D15		1405	X		Drum 15	2					NE38534 59	✓	
D20		1400	X		Drum 20	2					NE38861482	✓	
D25		1355	X		Drum 25	2					NE38864465	✓	
D29		1345	X		Drum 29	2					NE38867463	✓	
D22		1330	X		Drum 22	2					NE38870071	✓	
D26		1340	X		Drum 26	4					NE388737475 NE3887291	✓	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)			
[Signature]		8/24/2016 09:00											
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)			
Relinquished by: (Signature)		Date / Time		Received for Laboratory by:		Date / Time		Remarks					
[Signature]				[Signature]		8/26/16 0900		Samples locked in ice chest with combination lock by J. Fowler on 8/24/2016. JDF					

Distribution: Original Accompanies Shipment; Copy to Coordinator Field-Files

RECEIPT FOR SAMPLES

PROJ. NO. RP1723		PROJECT NAME Prime, Inc.				Name of Facility Prime, Inc.			
SAMPLERS (Signature) 						Facility Location Salt Lake City, Utah			
Split Samples Offered <input checked="" type="checkbox"/> Accepted () Declined									
STA NO	DATE	TIME	COMP	GRAB	SPLIT SAMPLES	TAG NUMBERS	STATION DESCRIPTION	NO. OF CONTAINERS	REMARKS
D06	08/24/16	1320	X		Yes	NE33851	Draw 06	1	H ₂ O Supplied Both
D10		1410	X			NE38852	Draw 10	1	
D15		1405	X			NE38855	Draw 15	1	
D20		1400	X			NE38860	Draw 20	1	
D22		1330	X			NE38869	Draw 22	1	
D25		1355	X			NE68863	Draw 25	1	
D26	X	1340	X			NE68872	Draw 26	1	
D27	08/24/16	1345	X		Yes	NE68866	Draw 29	1	
Transferred by: (Signature)									
Received by: (Signature)									
Telephone 801-677-0036									
Date 08/24/2016		Time 15:25		Title Waste Manager		Date 08/24/2016		Time 15:30	

Distribution: Original to Coordinator Field Files; Copy to Facility

N 61249

NEICRP1723R01

Appendix C
Page 1 of 1

EPA CID Case No. 1003-0101-0046

Prime Inc.
Salt Lake City, Utah













































































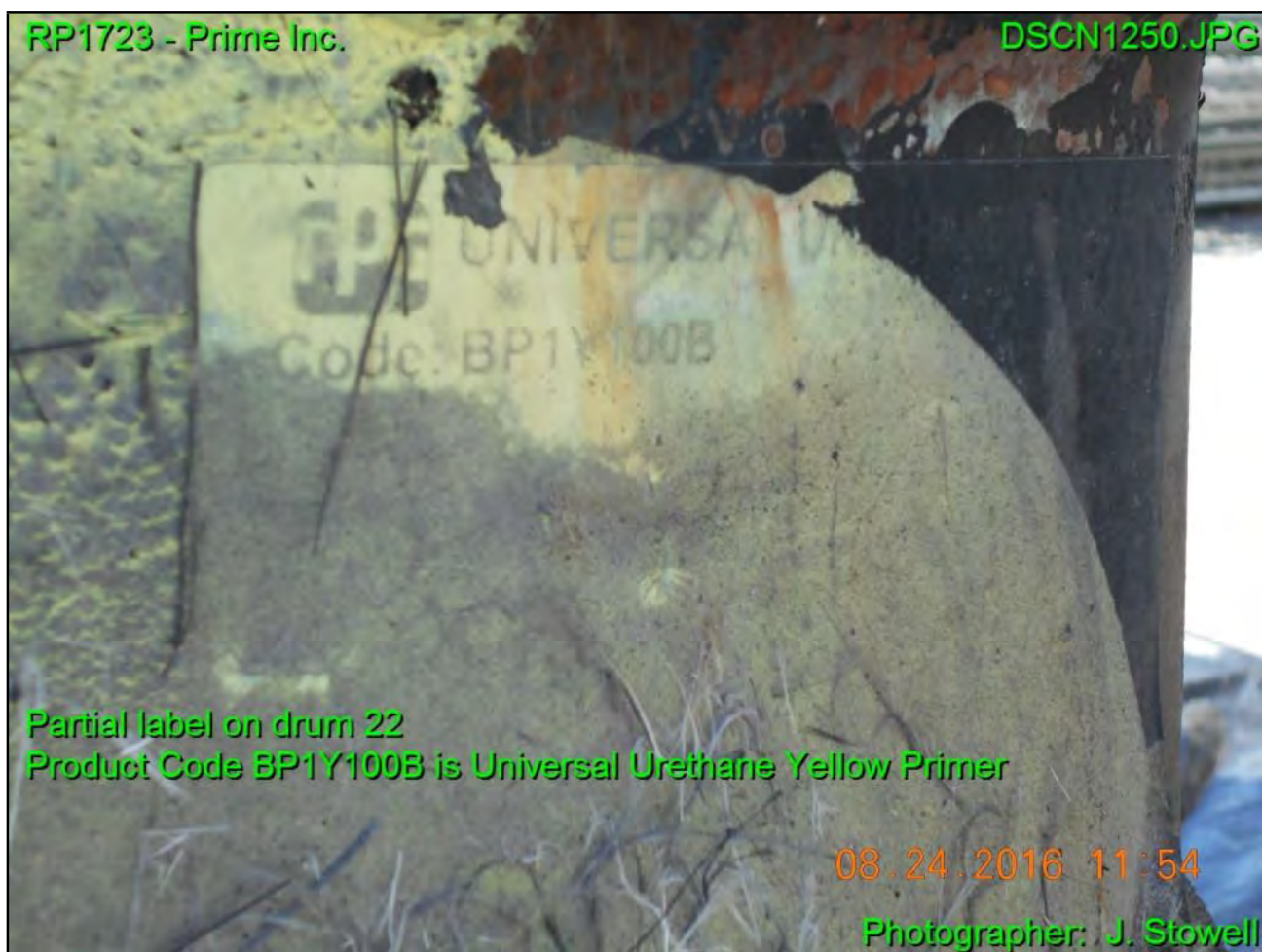


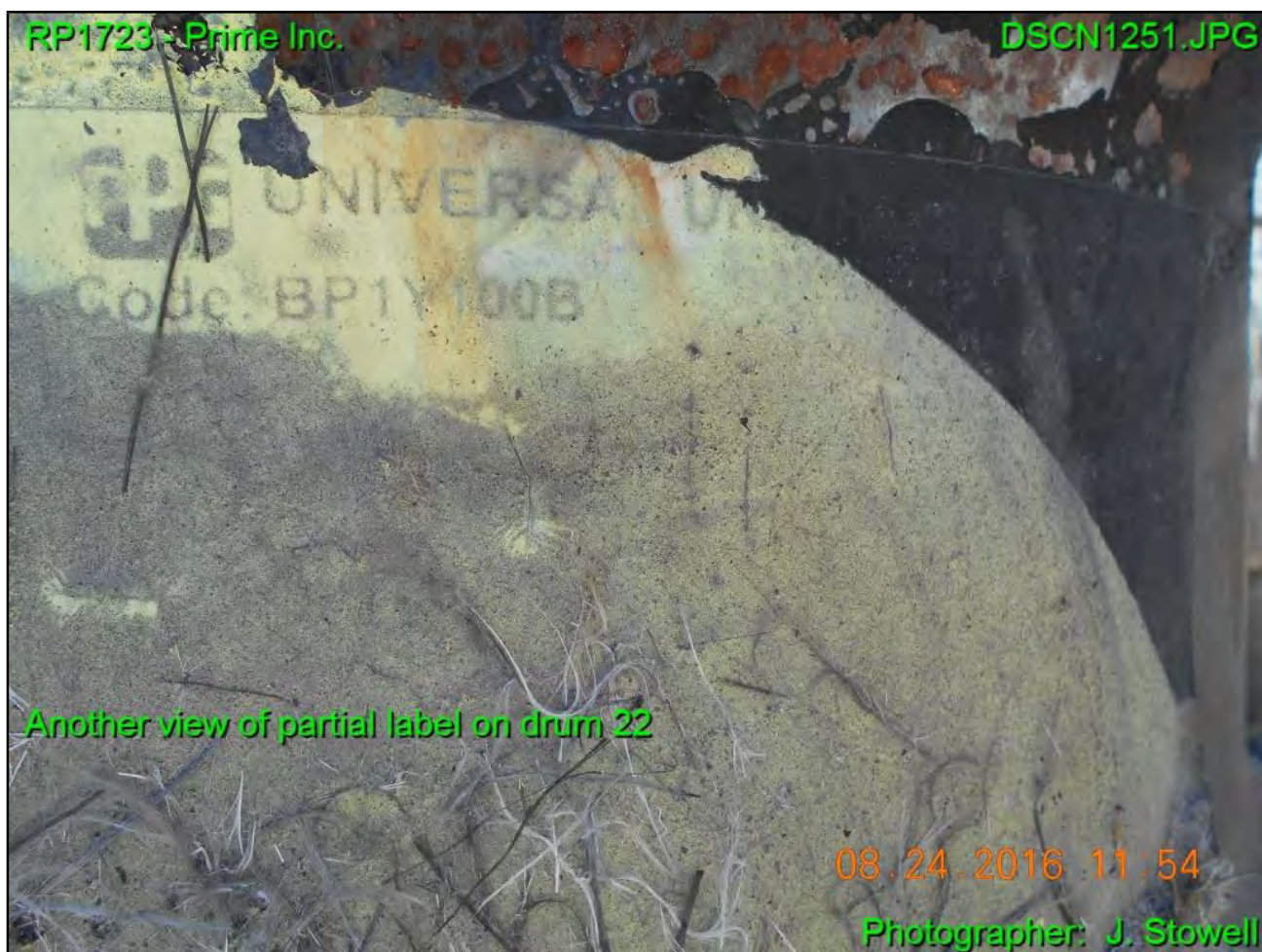






















Law
EPA-CID Loan -





Law
EPA-CID Loan -



RP1723 - Prime Inc.

IMG_3531.JPG



Samples D06 to D20 at NEIC laboratory

Photographer: J. Reschl

Law
EPA-CID Loan -

RP1723 - Prime Inc.

IMG_3532.JPG



Samples D25 to D29 at NEIC laboratory

Photographer: J. Reschl

Law
EPA-CID Loan -



Law
EPA-CID Loan -



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS, & TRAINING
CRIMINAL INVESTIGATION DIVISION
SEATTLE AREA OFFICE
1200 Sixth Avenue, CID
Seattle, Washington 98101-1128**

DELIVERED VIA CERTIFIED MAIL AND ELECTRONIC MAIL

Prime, Inc.
c/o Peter Christensen
Strong & Hanni
102 South 200 East, Suite 800
Salt Lake City
pchristensen@strongandhanni.com

Re: Preservation Request Letter

Dear Mr. Christensen:

Prime, Inc. is involved in an ongoing criminal investigation by the United States Environmental Protection Agency Criminal Investigation Division. This letter requests that you preserve information and physical property that is of interest to federal investigators.

Scope of Demand for Preservation

This letter is a formal demand for the immediate preservation of any and all items and records related to the transportation, retrieval, or disposal of a PPG Industries shipment of paint and a Prime, Inc. trailer involved in a truck fire and associated clean-up that occurred on or about September 27, 2015 outside Mountain Home, Idaho, ("Incident"), Bill of Lading No. 0811B65356/ Load ID No. CAP00709220 ("Load"). This preservation letter includes but is not limited to all external and internal digital and print documents and records regarding the Load, accident, clean-up, removal, disposal and storage of all items, property, debris, and waste associated with the Load. This preservation letter includes but is not limited to any and all documents and records in Prime, Inc.'s possession that were sent to or received from PPG Industries, Idaho State Police, B&W Wrecker Services, Corder LLC, CWE LLC, Brett's Towing, Premium Environmental Services, US Ecology, Idaho Waste Systems, Idaho Department of Ecology, H2O Environmental, or any other entity or individual involved in the Incident.

This letter further demands preservation of the physical remnants of the trailer associated with the Incident and all of its contents that were transported from Mountain Home, Idaho to Salt Lake City, Utah and are currently stored at the Prime Facility at 3720 W. 800 S, Salt Lake City, Utah.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS, & TRAINING
CRIMINAL INVESTIGATION DIVISION
SEATTLE AREA OFFICE
1200 Sixth Avenue, CID
Seattle, Washington 98101-1128

Preservation Demand & Actions Required

You are hereby immediately requested to: **refrain from moving, tampering, altering, discarding, and/or relocating any items on the site located at 3720 W. 800 S, Salt Lake City, Utah or at Prime's headquarters located at 2740 N Mayfair Ave, Springfield, MO 65803 that are within the scope of this demand letter. The term "items" includes, but is not limited to, paper or electronic records, vehicles or trailers, drums or containers at these locations.**

Important Advisories

You are advised that any confusion or ambiguity regarding the scope of this preservation demand should be resolved in favor of preservation and/or in consultation with the contact provided below. You are also advised that failure to comply with this demand for preservation, under certain circumstances, may be punishable as a federal crime pursuant to 18 U.S.C. § 2232.

If you have any questions about the scope or nature of this request for preservation, you should contact Special Agent Darin Mugleston at 208 378-6515. I can also be contacted at 206-553-2913.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeanne Proctor".

Jeanne Proctor
Special Agent in Charge

cc: Darin Mugleston



Printed on 100% recycled/recyclable paper with a minimum 50% post-consumer fiber using vegetable-based ink.



Industrial & Hazardous Waste: Remediation - Transport - Disposal
24-Hour Emergency Response

claim #116457 9/27/15 Santer

INVOICE

Invoice Date	9/23/2016
Invoice #	008403722
Terms	Net 30
Due Date	10/23/2016

Bill To:
PRIME INC. STEVE FIELDS P.O. BOX 11048 SPRINGFIELD, MO 65808

Service Address:
PRIME INC. 3720 WEST 800 SOUTH SALT LAKE CITY, UT 84104

Service Date	Job		Sales Order #:	1011379
9/19/2016			P.O. #:	
Billing Name:	MARSHALL HENDRICKS...	Billing # or Email:	417-521-3223	Manifest #:
				015158774

Description	Unit #	Price	Quantity	Amount
09-19-16 & 09-21-16 LOAD AND DELIVER 32 OVERPACK DRUMS OF HAZ WASTE TO HERITAGE FOR DISPOSAL.				
09-19-16 LOADING DRUMS				
CERTIFIED ENVIRONMENTAL MANAGER (STRAIGHT TIME) GLEN JONES		115.00	4	460.00
ENVIRONMENTAL TECHNICIAN (STRAIGHT TIME) JESUS RAMIREZ		50.00	4	200.00
ENVIRONMENTAL TECHNICIAN (STRAIGHT TIME) BENJAMIN FAIRBANKS		50.00	4	200.00
BOX TRUCK W/ LIFTGATE		75.00	4	300.00
ANALYTICAL SERVICES		431.20	1	431.20
09-21-16 DELIVERY TO HERITAGE				
BOX VAN AND TRANSPORTATION OF 32 DRUMS		3,175.00	1	3,175.00
MANIFEST #015158774				
DISPOSAL OF HAZARDOUS WASTE PAINT		431.00	32	13,792.00
PROFILE & MANIFEST FEE		75.00	1	75.00
8% ENVIRONMENTAL FEE		13,472.00	0.08	1,077.76
<p>out to pay 9/28/16 OK Paid See 9/28/16</p>				

REMIT TO: H2O ENVIRONMENTAL, INC., DEPT. #201
P.O. BOX 220, BETTENDORF, IA 52722

Total \$19,710.96

PLEASE MAKE YOUR PAYMENT WITHIN THE TERMS STATED ABOVE.

Past due accounts will be assessed a finance charge of 1.5% of the outstanding balance per month.

For billing inquiries, please call (208) 343-7867

We sincerely appreciate your business.

Payments/Credits \$0.00

Balance Due \$19,710.96

H2O TAX ID# 88-0370785



Industrial & Hazardous Waste Remediation - Transport - Disposal
24 Hr. Emergency Response

- ☐ 4435 E. Colton Ave., Suite #101, Las Vegas, NV 89115, 702.396.4148
- ☐ 3510 Barron Way, Suite #200, Reno, NV 89511, 775.351.2237
- ☐ 6679 S. Supply Way, Boise, ID 83716, 208.343.7867
- ☐ 2364 South Airport Blvd., Suite #2, Chandler, AZ 85249, 480.855.5676
- ☒ 903 W. Center St., Suite D, N. Salt Lake, UT 84054, 801.677.0036
- ☐ 201-1 Quinella Dr., Sunland Park, NM 88063, 915.218.4634

www.envcleanup.com

SERVICES ESTIMATE

To:	Marshall Hendrickson		From:	Fidel Acosta	
Company:	Prime Inc. (Strong & Hanni)		Email:	facosta@envcleanup.com	
Address:	460 S. Orange Salt Lake City, UT 84104		Date:	09-12-2016	
Email:	MHendrickson@Strongandhanni.com		Job Location:	Prime Inc. Facility 3720 West 800 South Salt Lake City, UT 84104	
Phone:	801-532-7080	Cell:			
Scope of work: Load and deliver 32 overpack drums (85 gallon) of hazardous waste to Heritage Nevada for disposal.					
Description	Rate	Quantity	UOM	Total	
Box Van & Transportation of 32 Drums	3175.00	1	EA	\$ 3,175.00	
Disposal of Hazardous Waste Paint	431.00	32	EA	\$ 13,792.00	
Profile & Manifest Fee	75.00	1	EA	\$ 75.00	
8% Environmental Fee	13472.00	.08		\$ 1,077.76	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
Total				\$ 18,119.76	

Estimate Approval Signature:

Approval Date:

9-13-2016

Work is involved hourly on a portal-to-portal time and materials basis. Changes in scope of work due to site conditions, waste volumes, waste characteristics, regulatory criteria or Client's request will constitute a change order and work will be invoiced using our current Posted Rates. Terms and conditions as set forth in the H2O Environmental Service Agreement are also applied. H2O Environmental has the necessary Contractors Licenses, transportation permits, bonds and insurance coverage to perform this type of work. Certificates of Liability, Auto, Pollution Control and Workers Compensation Insurance are available upon request.

Revision Date: 7/15/16

Signed with permission from Steve Field, Prime Inc. (Sept. 12, 2016)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MO0059100407	2. Page 1 of 1	3. Emergency Response Phone 801-577-0036	4. Manifest Tracking Number 015158774 JJK	
5. Generator's Name and Mailing Address PRIME, INC. 1740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803			Generator's Site Address (if different than mailing address) PRIME, INC. 3720 WEST 800 SOUTH SALT LAKE CITY UT 84104			
Generator's Phone: 816-221-0533			U.S. EPA ID Number NVR000088408			
6. Transporter 1 Company Name H2O ENVIRONMENTAL (NORTH SALT LAKE)			U.S. EPA ID Number			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address HERITAGE ENVIRONMENTAL 284 EAST STOREY ROAD COOLIDGE AZ 85228			U.S. EPA ID Number			
Facility's Phone: 602-732-4107			A20081706402			
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity
				No.	Type	12. Unit Wt./Vol.
	1.	UNIDENTIFIED FLAMMABLE LIQUID, n.o.s. (Trivalent chromium, Metal Effluents)		032	DR	16.000
	2.					
	3.					
4.						
13. Waste Codes D001 D002 D003						
14. Special Handling Instructions and Additional Information 1) PROFILES 151232-1 (FLAMMABLE LIQUIDS) BRG #120 2) PROFILES 3) PROFILES 4) PROFILES WEAR APPROPRIATE SAFETY EQUIPMENT IF UNDETERMINABLE, NOTIFY H2O						
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Offeror's Printed/Typed Name Brian Sinaklin			Signature 		Month Day Year 9 19 16	
TRANSPORTER	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:			
	Transporter signature (for exports only):					
	17. Transporter Acknowledgment of Receipt of Materials					
	Transporter 1 Printed/Typed Name Glen Jones		Signature 		Month Day Year 9 19 16	
Transporter 2 Printed/Typed Name		Signature		Month Day Year		
DESIGNATED FACILITY	18. Discrepancy					
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
	Manifest Reference Number:					
	18b. Alternate Facility (or Generator) U.S. EPA ID Number					
	Facility's Phone:					
18c. Signature of Alternate Facility (or Generator) Month Day Year						
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. A141		2.		3.		4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name Therrie M. Gates			Signature 		Month Day Year 9 21 16	

#116457 Sankr



Industrial & Hazardous Waste: Remediation - Transport - Disposal
24-Hour Emergency Response

INVOICE

Invoice Date	11/21/2016
Invoice #	008404458
Terms	Net 30
Due Date	12/21/2016

Bill To:
PRIME INC. STEVE FIELDS P.O. BOX 11048 SPRINGFIELD, MO 65808

Service Address:
PRIME INC. 3720 WEST 800 SOUTH SALT LAKE CITY, UT 84104

Service Date	Job		Sales Order #:	
11/16/2016	J40270 > ENVIRONMENTAL CONSULTING		P.O. #:	
Billing Name:	MARSHALL HENDRICKS...	Billing # or Email:	417-521-3223	Manifest #: MULTIPLE

Description	Unit #	Price	Quantity	Amount
11-16-16 CUT UP AND DISPOSE OF BURNT SEMI TRAILER CONTAMINATED WITH CHROMIUM.				
CONTRACTORS TO CUT INTO CUBIC YARD SECTIONS AND LOAD INTO BOXES	102	6,556.00	1	6,556.00
ROLL OFF TRUCK		100.00	8	800.00
20 YARD BOX DAILY RENTAL (#4366, #4095, #4380) \$30/ DAY FOR 2 DAYS		30.00	6	180.00
BIN LINERS		30.00	3	90.00
TRANSPORTATION		100.00	13	1,300.00
PPE - WHITE TYVEK FOR LANDFILL DISPOSAL		14.00	2	28.00
MANIFEST #71967 DISPOSAL OF NON HAZARDOUS TRAILER FIRE DEBRIS		1,400.00	1	1,400.00
MANIFEST #71942 DISPOSAL OF NON HAZARDOUS TRAILER FIRE DEBRIS		1,400.00	1	1,400.00
MANIFEST #71949 DISPOSAL OF NON HAZARDOUS TRAILER FIRE DEBRIS		1,400.00	1	1,400.00
8% ENVIRONMENTAL FEE		4,200.00	0.08	336.00
PROFILE & MANIFEST FEE		75.00	1	75.00

REMIT TO: H2O ENVIRONMENTAL, INC., DEPT. #201
P.O. BOX 220, BETTENDORF, IA 52722

PLEASE MAKE YOUR PAYMENT WITHIN THE TERMS STATED ABOVE.

*Past due accounts will be assessed a finance charge of 1.5% of the
outstanding balance per month.

*Credit card payments are assessed a 3% convenience fee.

For billing inquiries, please call (208) 343-7867

We sincerely appreciate your business.

H2O TAX ID# 88-0370785

Total \$13,565.00

Payments/Credits \$0.00

Balance Due \$13,565.00

OK to Amy 11/21/16
[Signature]

OK Fred
11/21/16
[Signature]



Industrial & Hazardous Waste Remediation - Transport - Disposal
24 Hr. Emergency Response

- ☐ 4435 E. Colton Ave., Suite #101, Las Vegas, NV 89115, 702.396.4148
- ☐ 3510 Barron Way, Suite #200, Reno, NV 89511, 775.351.2237
- ☐ 6679 S. Supply Way, Boise, ID 83716, 208.343.7867
- ☐ 2364 South Airport Blvd., Suite #2, Chandler, AZ 85249, 480.855.5676
- ☒ 903 W. Center St., Suite D, N. Salt Lake, UT 84054, 801.677.0036
- ☐ 201-1 Quinella Dr., Sunland Park, NM 88063, 915.218.4634

www.envcleanup.com

SERVICES ESTIMATE

To:	Marshall Hendrickson		From:	Fidel Acosta	
Company:	Prime Inc. (Strong & Hanni)		Email:	facosta@envcleanup.com	
Address:	460 S. Orange Salt Lake City, UT 84104		Date:	09-28-2016	
Email:	MHendrickson@Strongandhanni.com		Job Location:	Prime Inc. Facility 3720 West 800 South Salt Lake City, UT 84104	
Phone:	801-532-7080	Cell:			
Scope of work: Quote to cut up and dispose of burnt semi trailer contaminated with chromium. This project is estimated for 12 hours. Fire watch will be provided. This is the safest way to transport and handle this material.					
Description	Rate	Quantity	UOM	Total	
Welders to cut into cubic yard sections to be loaded into boxes	6556.00	1	EA	\$ 6,556.00	
Roll off truck (deliver and pick up of 3 roll off boxes)	100.00	8	HR	\$ 800.00	
3X20 yard boxes @30\$ per day	60.00	3	DAY	\$ 180.00	
Bin liners	30.00	3	EA	\$ 90.00	
Manifesting and waste profiling	75.00	1	EA	\$ 75.00	
8% Environmental Fee on disposal	4200.00	0.08	1	\$ 336.00	
Transportation to Clean Harbors (port to port)	100.00	13	HR	\$ 1,300.00	
Disposal of material per box	1400.00	3	EA	\$ 4,200.00	
PPE for landfill disposal.	14.00	2	EA	\$ 28.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
*Quantities to be subject to change				\$ 0.00	
Total				\$ 13,565.00	

Estimate Approval Signature: _____ **Approval Date:** _____

Work is invoiced hourly on a portal-to-portal time and materials basis. Changes in scope of work due to site conditions, waste volumes, waste characteristics, regulatory criteria or Client's request will constitute a change order and work will be invoiced using our current Posted Rates. Terms and conditions as set forth in the H2O Environmental Service Agreement are also applied. H2O Environmental has the necessary Contractors Licenses ,transportation permits, bonds and insurance coverage to perform this type of work. Certificates of Liability, Auto, Pollution Control and Workers Compensation insurance are available upon request.

Quoted Rate: 74546



Industrial & Hazardous Waste Remediation - Transport - Disposal
24 Hr. Emergency Response

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SERVICES ESTIMATE

To:	Marshall Hendrickson		From:	Fidel Acosta	
Company:	Prime Inc. (Strong & Hanni)		Email:	facosta@envcleanup.com	
Address:	460 S. Orange Salt Lake City, UT 84104		Date:	09-28-2016	
Email:	MHendrickson@Strongandhanni.com		Job Location:	Prime Inc. Facility 3720 West 800 South Salt Lake City, UT 84104	
Phone:	801-532-7080	Cell:			
Scope of work: Quote to cut up and dispose of burnt semi trailer contaminated with chromium. This project is estimated for 12 hours. Fire watch will be provided. This is the safest way to transport and handle this material.					
Description	Rate	Quantity	UOM	Total	
Welders to cut into cubic yard sections to be loaded into boxes	6556.00	1	EA	\$ 6,556.00	
Roll off truck (deliver and pick up of 2 roll off boxes)	100.00	5*	HR	\$ 500.00	
2X20 yard boxes @30\$ per day	60.00	3*	DAY	\$ 180.00	
Bin liners	30.00	2	EA	\$ 60.00	
Manifesting and waste profiling	75.00	1	EA	\$ 75.00	
8% Environmental Fee on disposal	2800.00*	0.08	1	\$ 224.00	
Transportation to Clean Harbors (port to port)	100.00	8*	HR	\$ 800.00	
Disposal of material per box	1400.00	2*	EA	\$ 2,800.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
				\$ 0.00	
*Quantities to be subject to change				\$ 0.00	
Total				\$ 11,195.00	

Estimate Approval Signature:

[Signature]

Approval Date:

11/10/2016

Work is invoiced hourly on a portal-to-portal time and materials basis. Changes in scope of work due to site conditions, waste volumes, waste characteristics, regulatory criteria or Client's request will constitute a change order and work will be invoiced using our current Posted Rates. Terms and conditions as set forth in the H2O Environmental Service Agreement are also applied. H2O Environmental has the necessary Contractors Licenses, transportation permits, bonds and insurance coverage to perform this type of work. Certificates of Liability, Auto, Pollution Control and Workers Compensation Insurance are available upon request.

Signed with permission of Steve Field

Revision Date: 7/15/16

50116034000968

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
PRIME, INC. 1740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803		INDUSTRIAL	1	801-577-0038	71987
5. Generator's Name and Mailing Address		Generator's Site Address (if different than mailing address)			
PRIME, INC. 1740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803		PRIME, INC. 3720 WEST 860 SOUTH SALT LAKE CITY UT 84104			
Generator's Phone: 817-863-2400					
6. Transporter 1 Company Name		U.S. EPA ID Number			
H2O ENVIRONMENTAL (NORTH SALT LAKE)		NVR000028496			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address		U.S. EPA ID Number			
CLEAN HARBOR - GRASSY MOUNTAIN 3 MILES EAST 7 MILES NORTH OF KNOLLS CLIVE UT 84025		U20001361748			
Facility's Phone: 801-455-8900					
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. Non-hazardous, Non-regulated, Industrial solid waste (Fiber Fire Dishes)		001	CM	33.742	T
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information					
1) PROFILES CH1312571 (NON REGULATED SOLID WASTE) WEAR APPROPRIATE SAFETY EQUIPMENT IF UNDELIVERABLE, NOTIFY H2O					
2) PROFILES					
3) PROFILES					
4) PROFILES					
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
Generator's/Offoror's Printed/Typed Name		Signature		Month Day Year	
Ruan Blazek		[Signature]		11/16/16	
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit:		Date leaving U.S.:	
Transporter Signature (for exports only):					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name		Signature		Month Day Year	
Shane Pollock		[Signature]		11/16/16	
Transporter 2 Printed/Typed Name		Signature		Month Day Year	
[Name]		[Signature]		11/19/16	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:					
17b. Alternate Facility (or Generator)		U.S. EPA ID Number			
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)		Month Day Year			
[Signature]		11/16/16			
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name		Signature		Month Day Year	
[Name]		[Signature]		11/16/16	

CO# 16038000968

GENERATOR	NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number INDUSTRIAL	2. Page 1 of 1	3. Emergency Response Phone 801-877-0030	4. Waste Tracking Number 71942		
	5. Generator's Name and Mailing Address PRIME INC. 2740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803				Generator's Site Address (if different than mailing address) PRIME INC. 3720 WEST 800 SOUTH SALT LAKE CITY UT 84104			
	Generator's Phone: 812 853-2400				U.S. EPA ID Number			
	6. Transporter 1 Company Name H2O ENVIRONMENTAL (NORTH SALT LAKE)				U.S. EPA ID Number NVR000020400			
	7. Transporter 2 Company Name				U.S. EPA ID Number			
	8. Designated Facility Name and Site Address CLEAN HARBORS - GRASSY MOUNTAIN 3 MILES EAST 7 MILES NORTH OF KNOLLS CLIVE UT 84038				U.S. EPA ID Number UTD991301742			
	Facility's Phone: 801 329-0305							
	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.		
			No.	Type				
	1. Non-hazardous, Non-regulated, Industrial solid waste (Trailer Fire Doors)		201	CM	33,742	T	11/16/16	
2.								
3.								
4.								
13. Special Handling Instructions and Additional Information 1) PROFILES ONLY (NON REGULATED SOLID WASTE) WEAR APPROPRIATE SAFETY EQUIPMENT 2) PROFILES IF UNDETERMINED, NOTIFY HCS 3) PROFILES 4) PROFILES PT - 4095								
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.								
Generator's/Offor's Printed/Typed Name Ryan Blasch				Signature [Signature]		Month Day Year 11/16/16		
TRANSPORTER	15. International Shipments		<input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:			
	16. Transporter Acknowledgment of Receipt of Materials							
	Transporter 1 Printed/Typed Name Robert Slade				Signature [Signature]		Month Day Year 11/16/16	
	Transporter 2 Printed/Typed Name				Signature		Month Day Year	
DESIGNATED FACILITY	17. Discrepancy							
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
	Manifest Reference Number:							
	17b. Alternate Facility (or Generator)				U.S. EPA ID Number			
	Facility's Phone:				Month Day Year			
17c. Signature of Alternate Facility (or Generator)				Month Day Year				
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a								
Printed/Typed Name [Signature]				Signature [Signature]		Month Day Year 11/16/16		

SO# 16038000968

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone 801-877-0018	4. Waste Tracking Number 71940
5. Generator's Name and Mailing Address PRIME, INC. 2740 NORTH MAYFAIR AVENUE SPRINGFIELD MO 65803 Generator's Phone: 812-853-2400			Generator's Site Address (if different than mailing address) PRIME, INC. 9730 WEST 800 SOUTH SALT LAKE CITY UT 84104		
6. Transporter 1 Company Name H2O ENVIRONMENTAL (NORTH SALT LAKE)			U.S. EPA ID Number H200000000000		
7. Transporter 2 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address CLEAN HARBOR - GRASSY MOUNTAIN 3 MILES EAST 7 MILES NORTH OF KNOLLS CLIVE UT 84039 Facility's Phone: 801-323-2900			U.S. EPA ID Number UT0001301740		
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. Non-hazardous, Non-regulated, Industrial solid waste (Trailer Fire Debris)		001	CM	33.742	T
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information 1) PROFILED CHL312871 (NOW REGULATED SOLID WASTE) 2) PROFILED 3) PROFILED 4) PROFILED PT. 4380			WEAR APPROPRIATE SAFETY EQUIPMENT IF UNDELEVERABLE, NOTIFY H2O		
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
Generator's/Offoror's Printed/Typed Name Ryan Bloesch			Signature [Signature]		Month Day Year 11 16 16
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.			Port of entry/exit: Date leaving U.S.:		
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Robert Stadel			Signature [Signature]		Month Day Year 11 16 16
Transporter 2 Printed/Typed Name			Signature		Month Day Year
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:				U.S. EPA ID Number	
17b. Alternate Facility (or Generator)					
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Robert Bloesch			Signature [Signature]		Month Day Year 11 16 16