ATTACHMENT #6

REMOVAL ACTION FINAL REPORT

OPERABLE UNIT 4
REMOVAL ACTION

DES MOINES TCE SITE
DICO, INC.

MARCH, 1997

D0262

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inaccessible to the central HEPA vacuum system were swept with Euroclean HEPA vacuum hand units. Associated with the HEPA vacuuming, daily dry sweeping of floors where active work was occurring was performed with a Tennant sweeper to minimize levels of dust generated by overhead vacuuming operations

2.3.3 Insulation Repair/Removal

At various locations within the buildings, some panels of worn and aged insulation were falling from the ceilings. Since such damage would not be acceptable for painting later these sections were replaced and/or repaired where necessary. In some buildings the ceiling insulation backing had been identified as containing PCB's in past investigation and in these cases the panels were removed for disposal. Repairs of existing insulation and installation of new material was secured with tape to prevent gaps in coverage.

2.3.4 Floor Scrubbing

In order to adequately prepare the buildings floors for application of the paint product, a three-stage approach was employed. After a dry sweeping by a Tennant vacuum machine to remove generally loose residue that had accumulated on the floor, a walk behind Tennant floor washing machine was used for an initial detergent scrubbing of the floor. The purpose of the first wash cycle was to remove surface residue on the floor. This wash cycle consisted of a water-based detergent application, a mechanical scrubbing by the floor washer, and a wet vacuuming to remove free standing water. After the initial floor washing a self-propelled Tennant washing machine, capable of a vigorous scrubbing action with heated water, was used with a high strength cleaner. This wash cycle was performed to remove oils, greases, and other materials present at the surface of the buildings floors. At corners, edges, and other such floor areas unable to be reached by floor washers cleaning was accomplished by hand scrubbing with hard bristled brooms. In some cases, enamel stripper was required for removal of painted traffic lanes on the floor. The final stage of floor application was an acid washing of the floor surfaces with a Tennant scrubbing machine. The acid was applied to the floor with a Tennant scrubbing machine and vigorously scrubbed. After an area was acid washed residual acid was removed via the Tennant floor washing machine with vacuum removal. The acid washing provided a newly exposed surface to provide sufficient adhesion capability for the floor paint.

2.3.5 Wall and Ceiling Paint Application

Upon completion of cleaning activities within a building, painting of the walls and ceilings began. Some surface areas require the application of block filler in order to insure proper adhesion of the paint. Plastic sheeting was place on the floors to protect the surface

washing operation permitted, these pieces were power washed and returned to the hazardous waste storage area. The pieces were then cut into sections small enough for packing into 55 gallon drums which were then sealed, labeled, and set aside until removal off-site. The aldrin steel was disposed of by incineration at the Aptus facility in Lakeville, Minnesota. A waste profile of the waste material is provided in Attachment 5.2 and a summary of quantities and shipment dates is in Attachment 5.0

The aldrin/dieldrin contaminated soil was removed by a backhoe and either set aside in storage piles or loaded directly into roll-off containers. Soil set temporarily aside was set upon and covered with plastic sheeting to prevent wind blown or stormwater losses until a rolloff was available for loading. The excavated soil was removed off-site for disposal by incineration at the Aptus facility in Coffeyville, Kansas. A waste profile and analysis is provided in Attachment 5.3 and a summary of quantities and shipment dates is in Attachment 5.0.

3.2.3 Building Remediation Waste

Several different waste streams were generated as a result of remedial activities with Buildings No. 1 through No. 5 and the Maintenance Building. The five waste streams generated directly by the work actions included the HEPA vacuum dust, waste insulation, the wastewater generated by floor washing, the recovered acid/water mixture from the acid scrubbing of the floor, and the settled sludge from the accumulated wastewater. As described earlier, the HEPA vacuum system had a central collection unit for the dust removed during vacuuming. Added to this would also be the dust collected by the smaller hand held units used for those areas that were difficult to reach. Both the waste were containerized into 55 gallon drums as it was generated. Once a drum had reached its capacity it was sealed and labeled and temporarily stored in the hazardous waste storage area to await removal off-site. The HEPA dust was disposed of by incineration at the Aptus facility in Lakeville, Minnesota. A waste profile and analysis is provided in Attachment 5.4 and a summary of quantities and shipment dates is in Attachment 5.0.

In the buildings, where previous investigations indicated PCB's were present in the insulation, this material was removed for disposal as work progressed through the buildings. As the waste insulation was removed, it was placed into 55 gallon fiber drums which were sealed and labeled. The drums were placed in the hazardous waste storage area to await off-site removal. The insulation was disposed of by incineration at the Aptus facility in Lakeville, Minnesota. A waste profile and analysis is provided in Attachment 5.5 and a summary of quantities and shipment dates is in Attachment 5.0.

The cleaning and preparation of the floors for painting led to the generation of the two aqueous waste streams of floor wash water and recovered acid/water mixture. As the floor wash water was generated, it was transferred for temporary holding to poly storage tanks

4.0 ESTIMATE OF TOTAL REMEDIATION COST

A listing of the contractors and organizations that provided services and/or products associated with the cost incurred in complying with the administrative order are provided below. An estimate of the total cost of each service and/or product is also included.

City Environmental Contracting, Inc.

City Environmental Contracting, Inc. (City) served as the primary contractor for the remediation work required by the administrative order. City provided general consulting services, engineering design, equipment procurement, equipment maintenance, sub-contractor selection, scheduling, and management, management and oversight of remedial activities, work plan development, and work progress reports.

Estimated Cost of Services - $2,579,018.00

Aptus/Westinghouse Environmental Services

Aptus was the sole provider of hazardous waste transportation and disposal for the waste streams that required incineration along with analytical services to characterize and profile the waste generated. The Aptus facilities that received waste materials from the remediation efforts include the Coffeyville, Kansas location and the Lakeville, Minnesota location.

Estimated Cost of Services - $498,104.00

Yount-Glade Paint Center

The Yount-Glade Paint Center was the sole source for paint product and associated application materials for the wall and ceiling painting activities.

Estimated Cost of Products - $102,496.00

Tennant Company

Tennant Company was the sole provider of paint product and associated application material for the floor painting activities. All Tennant products, services, and equipment rental concerning floor washing and acid scrubbing activities are included as subcontractor expenses in the City estimated cost of service.

Estimated Cost of Products - $54,484.00

ATTACHMENT 5.0

HAZARDOUS WASTE GENERATED SUMMARY

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OU4 REMOVAL ACTION

HAZARDOUS WASTE GENERATED

DICO, INC. - DES MOINES, IOWA

MANIFEST #	MANIFEST DATE	HAZARDOUS WASTE DESCRIPTION	TYPE OF CONTAINER	# OF CONTAINERS	VOLUME SHIPPED GAL	VOLUME SHIPPED LBS	DISPOSAL FACILITY & LOCATION
KH45D	8/31/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		40490	APTUS - COFFEYVILLE, KS
KI37D	8/31/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		29340	APTUS - COFFEYVILLE, KS
KI36D	8/31/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		24970	APTUS - COFFEYVILLE, KS
KH48D	8/31/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		29560	APTUS - COFFEYVILLE, KS
KJ16D	9/1/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		30000	APTUS - COFFEYVILLE, KS
KJ15D	9/1/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		36240	APTUS - COFFEYVILLE, KS
KJ18D	9/12/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		29950	APTUS - COFFEYVILLE, KS
KJ17D	9/12/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		32190	APTUS - COFFEYVILLE, KS
KK38D	9/13/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		30210	APTUS - COFFEYVILLE, KS
KK37D	9/13/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		30400	APTUS - COFFEYVILLE, KS
KK62D	9/14/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		21590	APTUS - COFFEYVILLE, KS
KK63D	9/14/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		35130	APTUS - COFFEYVILLE, KS
KS33D	10/7/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		27580	APTUS - COFFEYVILLE, KS
KX24D	11/1/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		26560	APTUS - COFFEYVILLE, KS
KX23D	11/1/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		36030	APTUS - COFFEYVILLE, KS
KW71D	11/1/94	ALDRIN CONTAMINATED SOIL	ROLLOFF	1		26595	APTUS - COFFEYVILLE, KS
194	9/2/94	WASTE CORROSIVE LIQUID	DRUM	6	280		CHIEF SUPPLY CORP. - HASKELL, OK
		WASTE CORROSIVE LIQUID	DRUM	1	30		CHIEF SUPPLY CORP. - HASKELL, OK
		WASTE PAINT MATERIAL (WALL PRIMER)	DRUM	3	165		CHIEF SUPPLY CORP. - HASKELL, OK
		WASTE PAINT MATERIAL (WALL PAINT)	DRUM	6	330		CHIEF SUPPLY CORP. - HASKELL, OK
		WASTE PAINT MATERIAL (FLOOR PAINT)	DRUM	3	115		CHIEF SUPPLY CORP. - HASKELL, OK
		WASTE PAINT MATERIAL (DIP TANK PAINT)	DRUM	11	600		CHIEF SUPPLY CORP. - HASKELL, OK
E066P	9/2/94	WASTEWATER SLUDGE (FLOOR WASHING)		13		7130	APTUS - LAKESVILLE, MN
		WASTE PPE		73		5473	APTUS - LAKESVILLE, MN
		WASTE INSULATION		26		826	APTUS - LAKESVILLE, MN
		WASTEWATER SLUDGE (PARTS WASHING)		10		5010	APTUS - LAKESVILLE, MN
294	10/31/94	WASTE CORROSIVE LIQUID	DRUM	1	55		CHIEF SUPPLY CORP -HASKELL, OK
		WASTE PAINT MATERIAL (WALL PAINT)	DRUM	2	110		CHIEF SUPPLY CORP -HASKELL, OK
		WASTE PAINT MATERIAL (FLOOR PAINT)	DRUM	4	220		CHIEF SUPPLY CORP -HASKELL, OK
		WASTE PAINT MATERIAL (DIP TANK PAINT)	DRUM	1	55		CHIEF SUPPLY CORP -HASKELL, OK
		WASTE PAINT MATERIAL (WALL PAINT)	DRUM	1	55		CHIEF SUPPLY CORP -HASKELL, OK

MANIFEST #	MANIFEST DATE	HAZARDOUS WASTE DESCRIPTION	TYPE OF CONTAINER	# OF CONTAINERS	VOLUME SHIPPED GAL	VOLUME SHIPPED LBS	DISPOSAL FACILITY & LOCATION
E561R	11/10/94	WASTE INSULATION	DRUM	10		182	APTUS - LAKEVILLE, MN
		HEPA VAC DUST	DRUM	9	450		APTUS - LAKEVILLE, MN
		WASTEWATER SLUDGE (FLOOR WASHING)	DRUM	10	550		APTUS - LAKEVILLE, MN
		WASTE PPE	DRUM	60	3000		APTUS - LAKEVILLE, MN
		ALDRIN CONTAMINATED SOLIDS	DRUM	8	280		APTUS - LAKEVILLE, MN
		(ALDRIN TANK & ANNEX STEEL FRAGMENTS) WASTE AEROSOL SPRAY CANS	DRUM	5	250		APTUS - LAKEVILLE, MN
		WASTEWATER SLUDGE (PARTS WASHING)	DRUM	2	120		APTUS - LAKEVILLE, MN
		WASTE PPE	DRUM	6	330		APTUS - LAKEVILLE, MN
		WASTE PPE	DRUM	1	55		APTUS - LAKEVILLE, MN

D0270

WASTE GENERATION TOTALS:

ALDRIN CONTAMINATED SOILS	486835 lbs
WASTE CORROSIVE LIQUID	440 gal
WASTE PAINT MATERIAL (WALLS)	495 gal
WASTE PAINT MATERIAL (FLOOR)	385 gal
WASTE PAINT MATERIAL (DIP TANK PAINT)	660 gal
WASTE INSULATION	1008 lbs
HEPA VACUUM DUST	450 gal
WASTEWATER SLUDGE (FLOOR WASHING)	1265 gal
WASTE PPE	7700 gal
ALDRIN CONTAMINATED SOLIDS	280 gal
WASTE AEROSOL SPRAY CANS	250 gal
WASTEWATER SLUDGE (PARTS WASHING)	660 gal
WASTE PAINT MATERIAL (WALL PRIMER)	165 gal

13758 gall.

ATTACHMENT 5.5

WASTE INSULATION WASTE PROFILE AND ANALYSIS

APTUS
A Westinghouse Company

Report Date : 15-JUL-1994
Profile : AP142677
Location : AP107938
Disposal Facility : APTUT
Laboratory Number : L9418107-003

APTUS WASTE PROFILE SHEET
Part 1 of 2

1. GENERATOR INFORMATION

Aptus Contact : NONE SPECIFIED
Generator: DICO INCORPORATED
Address : 200 SOUTHWEST 16TH STREET
FACTORY BUILDING
DES MOINES IA 50309

Technical Contact: GARY SCHUSTER
Phone Number : 515/244-7286
Facility EPA ID: IAD 005 279 278
State ID # : N/A

2. GENERAL INFORMATION

Billing Name: DICO INCORPORATED
Address : POST OFFICE BOX 1344
DES MOINES IA 50305
Company Contact : GARY SCHUSTER
Phone Number : 515/244-7286
Generating Process:
DEMOLITION & CLEANUP OF BUILDING
Common Name of Waste: BATT INSULATION
Rate of Generation: 700 GAL per OT
(qty) (gal/lb/tons)

3. CHEMICAL COMPOSITION (no trade names)
(totals must add up to 100%) (25% Range maximum)

FIBERGLASS BATT INSULATION	99	%
PAPER FOIL AND ADHESIVE	1	%

4. TOXICITY CHARACTERISTICS (mg/l) Other

PESTICIDES	
ENDRIN	N/S
LINDANE	N/S
METHOXYCHLOR	N/S
TOXAPHENE	N/S
2,4-D	N/S
2,4,5-TP (SILVEX)	N/S
HEPTACHLOR	N/S
CHLORDANE	N/S
BASE NEUTRALS	
1,4-DICHLOROBENZENE	N/S
HEXACHLORO-1,3 BUTADIENE	N/S
HEXACHLOROETHANE	N/S
NITROBENZENE	N/S
PYRIDINE	N/S
2,4-DINITROTOLUENE	N/S
HEXACHLOROBENZENE	N/S
ACID EXTRACTABLES	
O-CRESOL	N/S
M-CRESOL	N/S
P-CRESOL	N/S
CRESOL	N/S
PENTACHLOROPHENOL	N/S
2,4,5-TRICHLOROPHENOL	N/S
2,4,6-TRICHLOROPHENOL	N/S
VOLATILES	
BENZENE	N/S
CARBON TETRACHLORIDE	N/S
CHLOROBENZENE	N/S
CHLOROFORM	N/S
1,2-DICHLOROETHANE	N/S
1,1-DICHLOROETHYLENE	N/S
METHYL ETHYL KETONE	N/S
TETRACHLOROETHYLENE	N/S
TRICHLOROETHYLENE	N/S
VINYL CHLORIDE	N/S

5. TRANSPORTATION INFORMATION

Proper DOT Name Shipping Name:
RQ-WASTE POLYCHLORINATED BIPHENYLS
(PCB2)
Hazard Class: 9
RQ: 1 UN/NA: UN2315
EPA Waste Number(s):
MN03 PCB2
Container Size: 55 Type: DM
Pickup Site :
Hazard Zone : Packing Group : II
Transporter : APTUS
EPA ID # : MND980791321
Contact : DON MACKENTHUN
Phone Number: 612/469-3475

6. METALS ( ) Actual ( ) Range ( ) Total ( ) TCLP

ARSENIC	BDL
BARIUM	39.5
CADMIUM	ND
CHROMIUM	BDL
LEAD	150.0
MERCURY	.6
COPPER	N/S
SILVER	ND
SELENIUM	ND
THALLIUM	ND
BERYLLIUM	ND
ANTIMONY	BDL
NICKEL	BDL
MANGANESE	N/S
OTHER	N/S

D0272

.inghouse Company

Report Date : 15-JUL-1994
Profile : AP142677
Location : AP107938
Disposal Facility : APTUT
Laboratory Number : L9418107-003

APTUS WASTE PROFILE SHEET
Part 2 of 2

7. PHYSICAL DESCRIPTION

INORGANIC
Physical State : SOLID
Phases/Layering: UNILAYER

% FREE LIQUID	0
TOTAL SOLID (WT%)	100

Odor : NONE
Color: GREY YELLOW

8. OTHER HAZARDOUS PROPERTIES

EXPLOSIVE	NO
INFECTIOUS	NO
RADIOACTIVE	NO
PYROPHORIC	NO
REACTIVE	NO
SHOCK SENSITIVE	NO

9. FUEL BLENDING/INCINERATION PARAMETERS
( ) Actual ( ) Range

BTU/LB	1240
% WATER (BY WT)	<1
FLASH POINT (F)	>200
TOTAL ORGANIC HALOGEN (%)	.8
TOTAL ORGANIC SULFUR	N/S
MISCIBILITY WITH WATER	N/S
ASH	86.21
SPECIFIC GRAVITY	.58
PH	7.90
PCB	28
VISCOSITY	SOLID
OXIDIZER	NEG

10. INORGANICS (mg/l or ppm)

CYANIDES	NEG
SULFIDES	NEG
CHLORIDE	N/A
FLOURIDE	663.5
IODIDE	N/A
BROMIDE	N/A

11. ATTACHMENTS

Addenda : _____
Lab Analysis : _____
MSDS : _____
Other : _____

12. CERTIFICATION: I hereby certify that the enclosed sample and/or analytical data is representative of the waste and that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omission of composition or properties exists, and that all known or suspected hazards have been disclosed. I authorize APTUS to act as the Generators agent in matters concerning management of the aforementioned waste.

Date: 29-JUN-1994

Authorized By: C.S PORRESTER
Title: PLANT ENGINEER

Signature: _____
Date: _____

COMMENTS: PCB SOLID/SLUDGE

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DICO INCORPORATED
200 SOUTHWEST 16TH STREET
DES MOINES IA 50309

CLIENT ID: 4 INSULATION
BLDG 4 & 5
LABORATORY NO: L9418107-003
DATE RECEIVED: 6/30/1994
SAMPLE MATRIX: SOLID

ATTN: STEVE FORRESTER

PROFILE: AP142677

PARAMETER	RESULT	UNIT	MDL	METHOD
Ash	86.21	%	0.01	ASTM D482
Density	0.58	g/mL	N/A	ASTM D1429
Fluoride (Solid)	663.5	mg/Kg	0.1	EPA 340.2
Halogen-Total as Chloride	0.8	%	0.1	ASTM D808 Modified
Heat of Combustion	1,240	BTU/lb	1,000	ASTM D240
Total Solids	99.33	%	0.01	EPA 160.3
pH	7.90	N/A	0-14	SW-846 9045
PCB	28	ug/g	1	SW-846 8080
Total Analytes				
Antimony	BDL	mg/Kg	10.0	SW-846 6010
Arsenic	BDL	mg/Kg	10.0	SW-846 6010
Barium	39.5	mg/Kg	0.2	SW-846 6010
Beryllium	ND	mg/Kg	0.30	SW-846 6010
Cadmium	ND	mg/Kg	2.00	SW-846 6010
Chromium	BDL	mg/Kg	2.50	SW-846 6010
Lead	150.0	mg/Kg	10.0	SW-846 6010
Mercury	0.601	mg/Kg	0.100	SW-846 7471
Nickel	BDL	mg/Kg	2.40	SW-846 6010
Selenium	ND	mg/Kg	10.0	SW-846 6010
Silver	ND	mg/Kg	1	SW-846 6010
Thallium	ND	mg/Kg	10.0	SW-846 6010
Ignitability Screen	>140	Deg.-F.	140	Aptus 90 Qualitative
Oxidizer Screen	NEGATIVE			Aptus120 Qualitative
Radioactivity Screen	NEGATIVE			Aptus190 Qualitative
Reactivity Screen	CYANIDE - NEGATIVE SULFIDE - NEGATIVE WATER - NEGATIVE			Aptus200 Qualitative
Physical Description	Yellow solid - 100%			Aptus180 Descriptive

BDL = Below Detection Limit
ND = Not Detected
MDL = Method Detection Limit
N/A = Not Applicable

APTUS
21750 Cedar Avenue • Lakeville, MN 55044 • 612-469-3475
A Westinghouse Company