[redacted]
INIT 07/14/94

FYI-0794-
00003

STERLING CHEMICALS

[redacted]
84940000103

October 5, 1987

Contains No CBI

Ms. Roberta Wedge
Staff Scientist
DYNAMAC CORPORATION
11140 Rockville Pike
Rockville, Maryland 20852

Dear Ms. Wedge:

As per your request of August 27, Sterling Chemicals is submitting the following information regarding Acrylonitrile (CAS No. 107-13-1):

ATTACHMENT 1 - RCRA Section 3007 Questionnaire, June 30, 1987. This document contains non-confidential process and environmental data.

ATTACHMENT 2 - Material Safety Data Sheet

ATTACHMENT 3 - Texas Air Control Board Data of Acrylonitrile Emissions Texas City Plant - 1984

ATTACHMENT 4 - Texas Air Control Board "Evaluation Report of Acrylonitrile Sources in the State of Texas"

Confidential information (ATTACHMENT 5) regarding production numbers and environmental data is being sent to Dr. Robert Brink, EPA, along with a complimentary copy of Attachments 1 - 4.

RECEIVED
OPPT CBIC
94 JUL 14 AM 9:33

Sterling Chemicals, Inc.
P.O. Box 1311
Texas City, Texas 77592-1311
409-945-4431

As you are aware, Sterling Chemicals completed purchase of the Monsanto Texas City plant site on August 1, 1986. All data (ATTACHMENTS 1 - 4) supplied to Dynamac is public information.

We are pleased to submit this data.

Sincerely,

S.Z. Chamberlain
E.A. Superintendent - Air,
Water and Risk Assessment

rsw
Enclosure

cc: Dr. Robert Brink (TS-792)
Interagency Testing Committee
Room 535, East Tower
401 M Street, S.W.
Washington, D.C. 20460

ATTACHMENT 1

S2C

STERLING CHEMICALS

June 18, 1987

Ms. Dina Villari
Information Management Staff (WH-563)
Office of Policy, Planning and Information
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Ms. Villari:

Attached to this letter is the completed 3007 questionnaire related to solid wastes generated from our production of acrylonitrile. As you will note, we presently do not generate the K014 waste stream as defined in 40 CFR 261.32. If we resume up our acetonitrile production, we will generate a K014 stream. Our facility also has no on-site surface impoundments, landfills, land treatment areas, or waste piles for the management of hazardous wastes.

Concentrations of the major residual constituents are given in weight percent and the concentrations of Appendix VII and Appendix VIII compounds are given in parts per million.

As provided for in Section 3007(b) and by regulations in 40 CFR Part 2, Subpart B, Sterling Chemicals, Inc. is claiming that certain information contained in this questionnaire is confidential within the meaning of U.S.C. 1905. This information is contained in a separate envelope and each page is stamped "CONFIDENTIAL".

Sterling Chemicals, Inc.
P.O. Box 1311
Texas City, Texas 77592-1311
409-945-4431

0 0 0 6

If you have any questions, please call David Dunn at 1/409/942-3129.

Sincerely,

Sandra S. Newman

Sandra S. Newman
Manager of
Environmental Affairs

SWM/rsw
Enclosure

OMB No. 2050-0042
Expiration Date: June 30, 1987

RCRA SECTION 3007 QUESTIONNAIRE
Organic Chemicals Industry

Return within 30 days from date of receipt to:

Ms. Dina Villari
Information Management Staff (WH-563)
Office of Policy, Planning and Information
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

I. Corporate/Plant Data

A. Name of Corporation Sterling Chemicals, Inc.

B. Address of Corporation Headquarters

Street M Corp Plaza, 333 Clay Street, Suite 3700

City Houston State Texas Zip 77007

C. Name of Plant Texas ity Site

D. Location of Plant

Street 201 Bay Street South

City Texas City State Texas Zip 77592-1311

Latitude 29:22:42 (degrees, minutes, seconds)

Longitude 94:53:40 (degrees, minutes, seconds)

Hazardous waste generator ID number: TXD008079527

E. Mailing Address of Plant (if different from above)

P.O. Box 1311, Texas City, Texas 77592-1311

F. Name(s) of personnel to be contacted for additional information pertaining to this questionnaire:

Name	Title	Telephone
David W. Dunn	Environmental Affairs Superintendent	1/409/942-3129

2. **Type of Plant Operations:**

A. Indicate whether the following organic chemicals were manufactured at this facility in 1986 via the process indicated.

	Chemical product	Process	
1.	Acrylonitrile	Ammoxidation of Propylene	Yes X No ___
2.			Yes ___ No ___
3.			Yes ___ No ___
4.			Yes ___ No ___
5.			Yes ___ No ___
6.			Yes ___ No ___
7.			Yes ___ No ___
8.			Yes ___ No ___

Complete this questionnaire for each chemical listed above, which you manufactured via the process indicated. If none of these chemicals were manufactured by the process indicated, return pages 1 and 2 of this questionnaire.

B. Identify as follows the chemical intermediate(s)[1] produced at this facility in the production of chemicals identified above: N/A

CAS Number[2]	Chemical Name	Common Name

[1] Intermediate means any chemical substance (1) which is intentionally manufactured and removed from the equipment in which it is manufactured, and (2) which either is consumed in whole or in part in chemical reaction(s) used for the intentional manufacture of other chemical substance(s) or mixture(s).

[2] The CAS number is needed only where the identity of the chemical may not be apparent from the chemical and/or common name.

C. Indicate those classes of chemical products or intermediates which were produced at this facility in 1986. Circle appropriate code number(s).

Code Number	Classes of Products and Intermediates
	ORGANIC DYES & PIGMENTS
286 52	Organic Dyes
286 53	Organic Pigments
	CYCLIC INTERMEDIATES
286 61	Aromatic Acids & Derivatives
(286 62)	Aromatic Acids Anhydrides
286 63	Aromatic Ketones & Aldehydes
286 64	Aromatic Alcohols
(286 65)	Aromatic Hydrocarbons
286 66	Cyclic Amines
286 67	Halogenated Aromatics NEC
286 68	Acyclic Chemicals
286 69	Cyclic Intermediates NEC
	CYCLIC CHEMICALS NEC
286 71	Salts of Aromatic Acids
286 72	Other Cyclic Chemicals
	ACYCLIC CHEMICALS
286 81	Halogenated Hydrocarbons
(286 82)	Monohydric Acyclic Alcohols
286 83	Polyhydric Alcohols & Esters
(286 84)	Acyclic Acids, Anhydrides & Esters
286 85	Acyclic Aldehydes
286 86	Acyclic Ketones
(286 87)	Acyclic Nitrogens
286 88	Acyclic Compounds NEC
286 89	Acyclics NEC
	ORGANIC CHEMICALS NEC
286 91	Flavor & Perfume Materials
(286 92)	Plasticizers

NEC - Not elsewhere classified

3. Process Information

This information will be used to address industry wide variation in type and quantity of residuals generated. Residuals include any process stream generated during the manufacture of a product which is not used as a raw material or principally sold as a commercial product. Residuals may be solids (e.g., still bottoms), liquids (e.g., wastewater), confined gases (e.g., gases that are containerized to facilitate disposal), and unconfined gases generated by the management of solid or liquid residuals (e.g., incinerator stack emissions) or unconfined gases containing condensable components (e.g., vented light ends). For each unit process used to manufacture the products listed in question 2, provide a general process block flow diagram that identifies major unit operations and indicates the types and points of introduction/generation of feedstocks, products, co-products/by-products, and residuals (See Examples I and II). Include the information requested in questions 3-A through 3-D in the flow diagram. Provide the information requested in questions 3-E and 3-F in an attachment.

A. Identify the product process, intermediates, co-products, and by-products produced by the process.

B. Provide a block for each major unit operation in the production and residuals management process (e.g., reactor, washer, filtration, wastewater treatment, air emission control).

C. Identify process input such as raw materials, reagents and solvents by chemical or common name or chemical formula, and indicate the point of introduction with arrows.

D. Assign a Residual Identification Number to each of the following types of residuals and indicate its point of generation with an arrow:

1. Residuals generated by unit operations in the product process, including unit operations that produce, recover co-products, by-products and solvents; and
2. Final treatment residuals (i.e., residuals generated by physical, chemical (including incineration and other thermal treatment) or biological treatment and that are not intermediate treatment residuals generated within a treatment train).

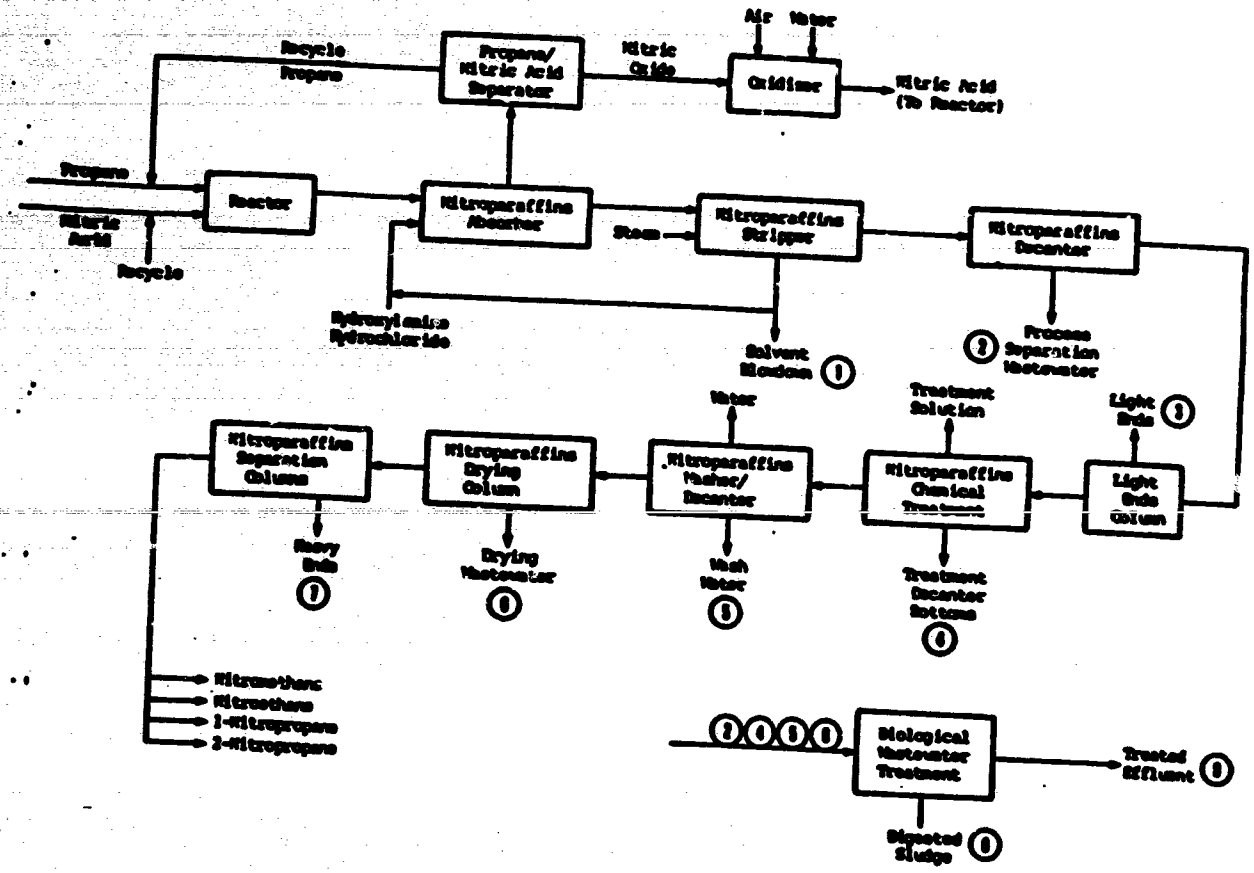
When more than one process block flow diagram is provided (i.e., for multiple product processes), assign unique sequential Residual Identification Numbers to the residuals.

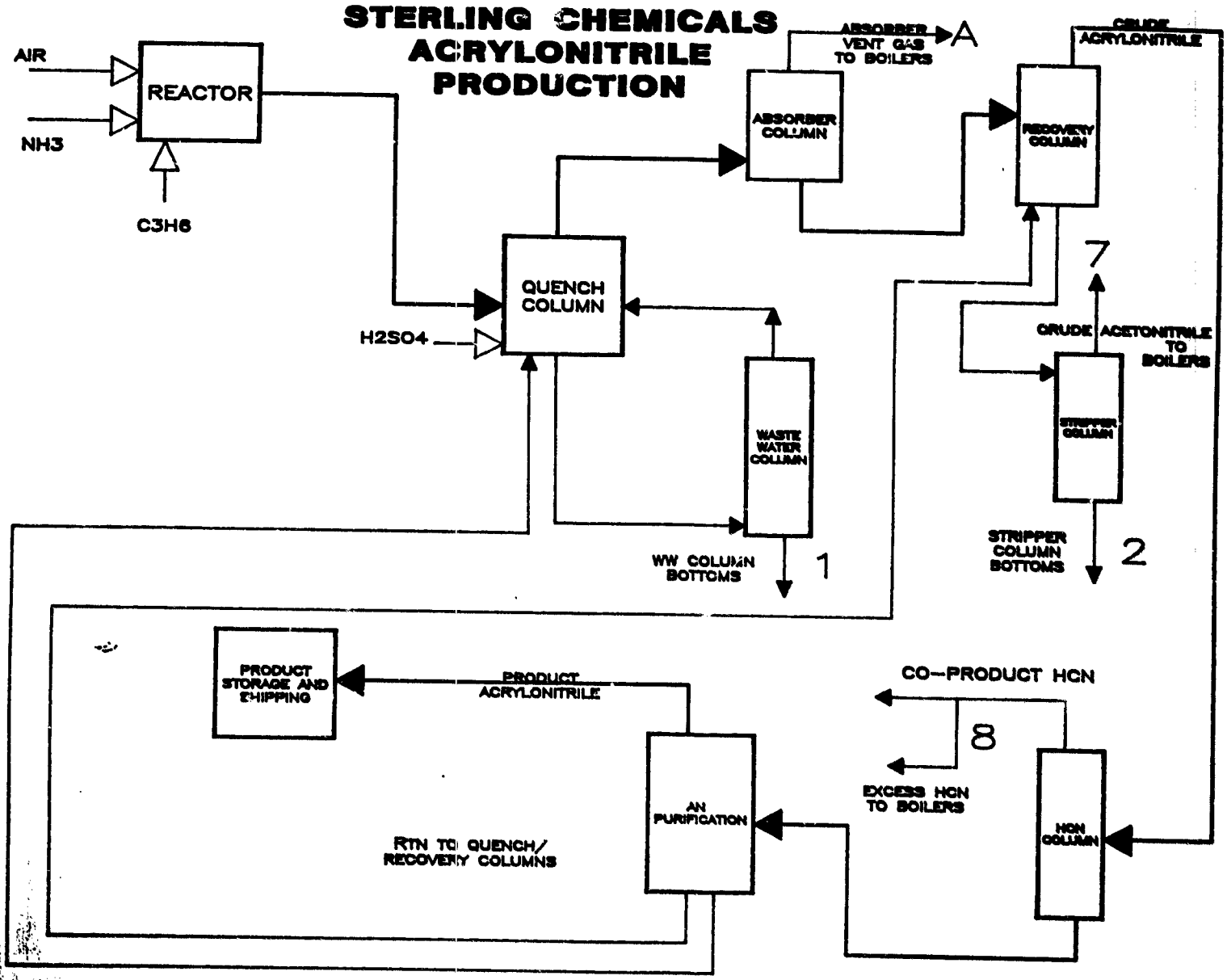
E. If residuals from this product process are combined with the residuals from other product processes at this facility prior to treatment, identify the product process residual by Residual Identification Number and specify the source of other residuals using the codes provided in Question 2-C.

F. Indicate the typical annual production, the 1986 annual production, and the system capacity (specify) for each: product, co-product, and by-product.

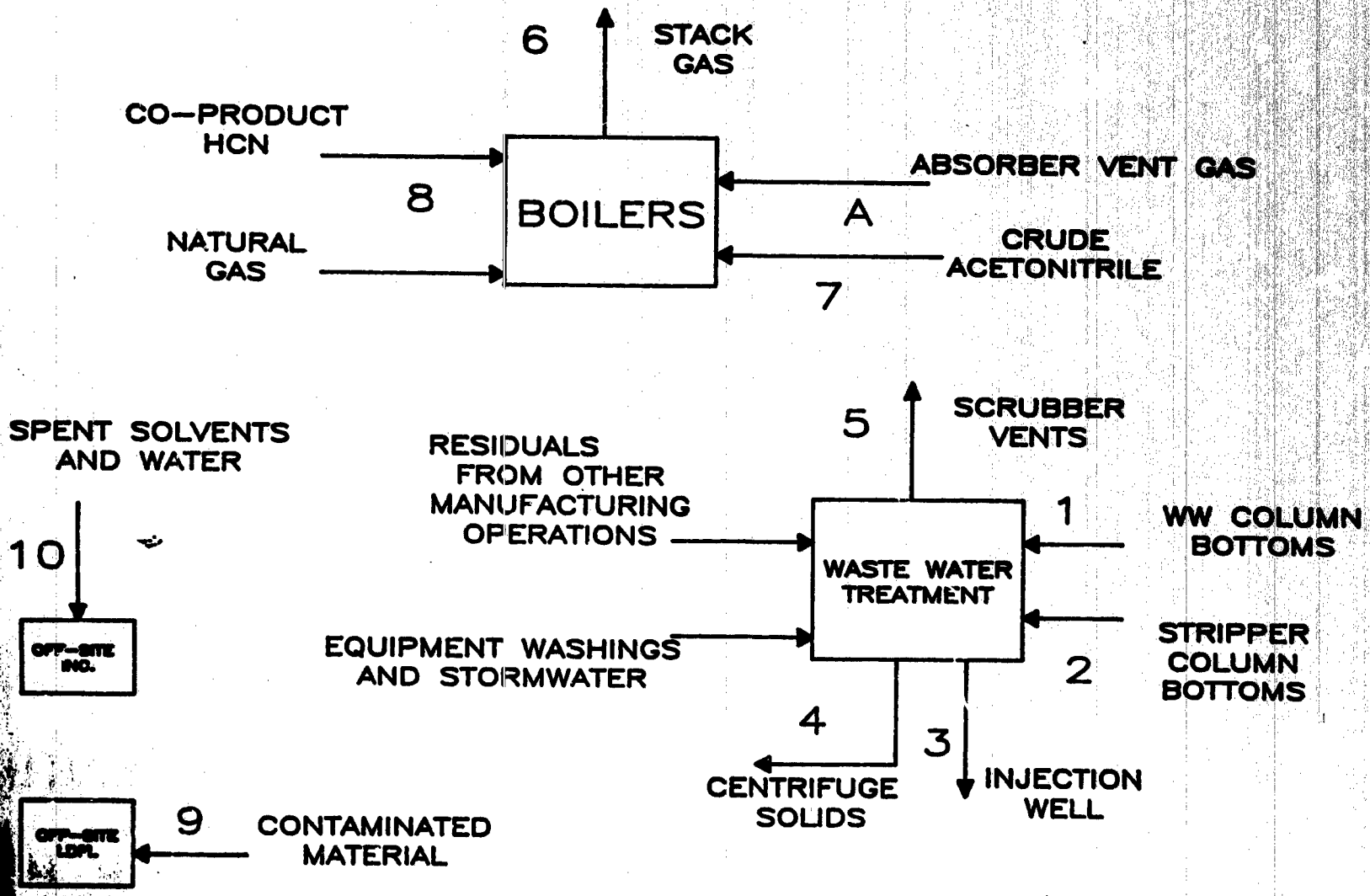
Example I - Process Block Flow Diagram

Product Process: Nitroparaffins via Nitration of Propane
Chemical Intermediate:
Co-products/By-products: Nitromethane, Nitroethane, 1-Nitropropane, 2-Nitropropane




STERLING CHEMICALS
ACRYLONITRILE
PRODUCTION
AIR
NH3
C3H6
REACTOR
ABSORBER VENT GAS TO BOILERS
A
ABSORBER COLUMN
CRUDE ACRYLONITRILE
RECOVERY COLUMN
QUENCH COLUMN
H2SO4
WASTE WATER COLUMN
7
CRUDE ACETONITRILE TO BOILERS
STRIPPER COLUMN
WW COLUMN BOTTOMS
1
STRIPPER COLUMN BOTTOMS
2
PRODUCT STORAGE AND SHIPPING
PRODUCT ACRYLONITRILE
CO-PRODUCT HCN
8
EXCESS HCN TO BOILERS
AN PURIFICATION
HCN COLUMN
RTN TO QUENCH/ RECOVERY COLUMNS

ACRYLONITRILE RESIDUALS



Example II - Response to Questions 3-E and 3-F

A. Response to Question 3-E. SEE CONFIDENTIAL INFORMATION

Residual Identification Number	Source Code	Description of Residual	Treatment Process

B. Response to Question 3-F. (Annual Production) SEE CONFIDENTIAL INFORMATION

Product	1986 Prod.	Typical Prod.	Prod. Capacity

Co-product/By-product	1986 Prod.	SEE CONFIDENTIAL INFORMATION

4. Residuals Characterization Information

For each process used to manufacture the chemicals listed in Question 2, complete Table I by providing the following information for each identified residual. An example is provided below (Example III).

A. Identify the product process.

B. List each residual by Residual Identification Number.

C. If the residual has been identified in the facility RCRA notification, indicate whether it was identified as ignitable (I), corrosive (C), reactive (R), or EP toxic (E), or listed by EPA or reported by the facility as toxic (T), or acutely hazardous (H).

D. For each residual, describe the following properties where appropriate: physical state [e.g., liquid (specify whether aqueous or organic), solid, slurry (indicate solids content), gas]; pH; flash point; Btu content; viscosity; toxicity.

E. List the compounds which are known by analysis to be present in the residual and specify, as known, the typical concentration or range of concentration, using the codes in Table I, if preferred.

F. If residual analyses are not available, list the compounds which are expected to be present in the residual based on chemical engineering principles and the expected concentration, if known.

Example III - Response to Question 4

A. Product Process: Nitroparaffins via Nitration of Propane

B. Residual Identification Number	C. RCRA Identification (I,C,R,E, T or H)	D. Properties of Residual	E. Known Compounds, Concentrations, Ranges	F. Other Expected Compounds
2	Not Identified	Aqueous liquid	Methanol 0.9% Ethanol 0.9% Formic Acid 1% Acetic Acid 1% Acetonitrile 0.9% Water 95+%	Propionitrile Acrylonitrile
3	I	Organic liquid	Acetone 20 % Formaldehyde 45% Acetaldehyde 35%	

Table I - Response to Question 4

A. Product Process: Acrylonnitrile via Ammoxidation of Propylene

B. Residual Identification Number	C. RCRA Identification (I,C,R,E, T or ND)	D. Properties of Residual	E.[2] Known Compounds, Concentrations, Ranges[1]	F. Other Expected Compounds
1 (K011)	R, T	Aqueous Liquid pH = 5.0	-	N/A
2 (K013)	R, T	Aqueous Liquid pH = 5.0	-	N/A
3	R, T	Aqueous Liquid pH = 8.6	-	N/A
4	R, T	Semi-Solid Cake 50% Water	-	N/A
5	Not Identified	Unconfined Gas (Scrubber Vents)	-	N/A
6	Not Identified	Unconfined Gas (Boiler Stack Gasses)	-	N/A

[1] RESIDUAL CONCENTRATION CODE

Code	Range
A	>50%
B	>10% to 50%
C	>1% to 10%
D	>0.1% to 1%
E	>0.01% to 0.1%
[Actual Concentration]*	≤ 0.0.1%

[2] SEE CONFIDENTIAL INFORMATION

* If concentration is less than 0.01%, specify as known, the typical concentration in ppm.

Table I - Response to Question 4

A. Product Process: Acrylonitrile via Ammoxidation of Propylene

B. Residual Identification Number	C. RCRA Identification (I,C,R,E, T or M)	D. Properties of Residual	E.[2] Known Compounds, Concentrations, Ranges[1]	F. Other Expected Compounds
7	R, I	Organic Liquid	-	N/A
8	R	Organic Liquid	-	N/A
9	Not Identified	Contaminated Solids	-	N/A
10	I	Spent Solvents and Washwater	-	N/A

[1] RESIDUAL CONCENTRATION CODE

Code	Range
A	>50%
B	>10% to 50%
C	>1% to 10%
D	>0.1% to 1%
E	>0.01% to 0.1%
[Actual Concentration]*	≤ 0.0.1%

[2] SEE CONFIDENTIAL INFORMATION

* If concentration is less than 0.01%, specify as known, the typical concentration in ppm.

3. Residuals Management Information - General

For each process used to manufacture the chemicals listed in Question 2, complete Table II by providing the following information for each identified residual. An example is provided below (Example IV).

A. Identify the product process.

B. Specify the Residual Identification Number.

C. Specify residual category in accordance with codes provided.

Code	Categories of Residuals
C1	Process precipitates, sludges or filtration residues
C2	Decantates or filtrates
C3	Sludges or filtration residues from wastewater treatment: a. biological b. other (specify)
C4	Spent activated carbon or other adsorber (specify)
C5	Spent catalysts
C6	Heavy ends: a. distillation residues b. miscellaneous heavy ends
C7	Spent solvents
C8	Untreated process wastewater: a. acid (pH $\leq$ 2) b. caustic (pH $\geq$ 12.5) c. neutral (2 < pH < 12.5)
C9	Treated wastewater discharge
C10	Containers, liners, cleaning rags, gloves, etc.
C11	Off-specification products or feedstocks
C12	Other (specify)
C13	By-products
C14	Light ends[1]: a. condensable b. noncondensable
C15	Miscellaneous wastewater: a. equipment washdown b. boiler blowdown c. other nonprocess wastewater (specify)
C16	Spent scrubber liquor: a. aqueous b. organic
C17	Treated organic residuals
C18	Solids from treatment of other residuals

[1] Light ends are condensable if they exist as liquids or solids at ambient temperature and pressure.

D. Specify management methods in accordance with codes provided. If a residual is subject to a sequence of methods (e.g., storage in a tank, incineration), list the methods in sequence. If a residual is handled alternatively by more than one method (e.g., either incinerated or burned in a boiler), identify the alternate methods.

Code	Management Methods
M1	Storage in: a. tank b. container c. pile d. surface impoundment
M2	Treatment of organics in: a. tank b. container c. surface impoundment
M3	Burning in boiler
M4	Recovery/reclamation: a. recovery b. reuse same process c. reuse different process d. sales
M5	Incineration
M6	Landfill
M7	Underground injection
M8	On-site wastewater treatment in: a. tank b. surface impoundment c. container
M9	Discharge to publicly-owned wastewater treatment works
M10	Discharge to surface water under NPDES
M11	Discharge to off-site privately-owned wastewater treatment works
M12	Other (specify)
M13	Scrubber: a. caustic b. water c. other (specify)
M14	Landfarm/land application
M15	Vent to: a. atmosphere b. flare c. other

E. Indicate the amount of each residual managed by each method in 1986 (specify units) except for discharges to a publicly-owned treatment works (POTW) or to surface water under a NPDES permit.

F. Indicate whether the residual is managed on site or off site. If managed off site, identify the site in the space provided in Table III.

G. For residuals managed off site, except for discharges to a POTW or surface water under a NPDES permit, indicate the average management cost per unit quantity of residual in 1986.

H. Indicate planned changes in residual management methods by specifying the codes for the new management methods, and indicate the anticipated date of change.

Example IV - Response to Question 5

A. Product Process: Nitroparaffins via Nitration of Propane

B. Residual Identification Number	C Residual Code	D. Management Code	E. 1986 Residual Quantities	F. Management Onsite/Offsite		G. 1986 Costs for off-site Management	H. Changes in Management methods
2	C3-e	M8-e	5×10^6 lbs	X		NA	None
3	C14-e	M1-e (storage)	4×10^6 lbs	X		NA	None
		M3		X			

Table II - Response to Question 5

A. Product Process: Acrylonitrile via Ammoxidation of Propylene

B. Residual Identification Number	C. Residual Code	D. Management Code	E.[1] 1986 Residual Quantities (specify units)	F. Management* Onsite/Offsite		G.[1] 1986 Costs for off-site Management	H.[2] Changes in Management methods
1	C8-C	M8-A		X		N/A	?
		M7					
2	C8-C	M8-A		X		N/A	?
		M7					
3	C-9	M7		X		N/A	?
	C15a						
	C15c						
	Storm						
	Water						
4	C1	M1-B			X	See 1	?
		M6					
5	C14-B	M15-A		X		N/A	?
6	C14-B	M15-A		X		N/A	?
7	C14-A	M3		X		N/A	?
8	C14-A	M3		X		N/A	?

*Identify off-site waste management or recycling/reuse facility as indicated in the following Table (Table III).

Table continued...

Example IV - Response to Question 5

A. Product Process: Nitroparaffins via Nitration of Propane

B. Residual Identification Number	C. Residual Code	D. Management Code	E. 1986 Residual Quantities	F. Management Onsite/Offsite		G. 1986 Costs for off-site Management	H. Changes in Management methods
2	C3-e	M6-e	2×10^6 lbs	X		NA	None
3	C14-e	M1-e (storage)	4×10^6 lbs	X		NA	None
		M5		X			

Table II - Response to Question 5

A. Product Process: Acrylonitrile via Ammoxidation of Propylene

B. Residual Identification Number	C. Residual Code	D. Management Code	[1] E. 1986 Residual Quantities (specify units)	F. Management[a] Onsite/Offsite		[1] G. 1986 Costs for off-site Management	[2] H. Changes in Management methods
9	C10	M6			X		?
	C12	Offsite					
10	C7	M5			X		?
	C15a	Offsite					

[2] An estimate of type and timing of residual management changes is difficult to determine because of the fluid nature of environmental regulations.

[a] Identify off-site waste management or recycling/reuse facility as indicated in the following Table (Table III).

[1] SEE CONFIDENTIAL INFORMATION

Table III - Response to Question 5-7

Name of Facility: Rollins Environmental Services	Name of Facility:
Residual Identification Numbers 4	Residual Identification Numbers
Facility Mailing Address:	Facility Mailing Address:
Street of P.O. Box: 609	Street of P.O. Box:
City or Town: Deer Park	City or Town:
State: Texas Zip: 77536	State: Zip:
Facility Location (if different from above)	Facility Location (if different from above)
2027 Battleship Road	
City or Town: Deer Park	City or Town:
State: Texas Zip: 77536	State: Zip:
Hazardous Waste Facility I.D. Number (if any): TXD055141378	Hazardous Waste Facility I.D. Number (if any):

6. Specific On site Residuals Management Information

The Agency needs site-specific waste management data to: (1) determine how residuals are currently managed, (2) estimate potential changes in management should residuals be listed as hazardous, (3) and to provide information on waste storage, treatment, and disposal to other groups within the Agency. These operations include the following methods: storage or treatment in tanks, containers, or piles; burning in a boiler; incineration; land treatment (including surface spreading, spray irrigation, and subsurface injection); surface impoundments (defined as holding, storage, settling, and aeration pits, ponds, or lagoons formed primarily of earthen materials); or landfills.

A. Storage or Treatment in Tanks

Have identified residuals been stored or treated in onsite tanks at any time since January 1, 1986? _X__Yes _____No

If yes, provide the following information for the 10 largest tanks:

Tank	Residuals Managed[1]	Design Capacity[2]	Used for Storage(S) and/or Treatment(T) (indicate (S) and/or (T))	Type of Treatment[3] Used	Average Length of Storage Train[4]	Part of Wastewater Treatment	Covered (circle Yes or No)	Secondary Containment Provided[5]
1	1,2	D	S	N/A	N/A	Yes No	Yes No	Yes No
2	1,2	D	S	N/A	N/A	Yes No	Yes No	Yes No
3	1,2	D	S	N/A	N/A	Yes No	Yes No	Yes No
4	1,2	C	S/T	F(1)	N/A	Yes No	Yes No	Yes No
5	1,2	B	S	N/A	N/A	Yes No	Yes No	Yes No
6	1,2	B	S	N/A	N/A	Yes No	Yes No	Yes No
7	1,2	B	S	N/A	N/A	Yes No	Yes No	Yes No
8	1,2	A	S	N/A	N/A	Yes No	Yes No	Yes No
9	1,2	A	S/T	F(2)	N/A	Yes No	Yes No	Yes No
10	1,2	A	S/T	F(2)	N/A	Yes No	Yes No	Yes No

[1] Use Residual Identification Numbers to identify residuals.

[2] Use the following code to designate tank capacity:
- A. less than 10,000 gallons
- B. 10,000 gallons to 100,000 gallons
- C. 100,000 gallons to 1,000,000 gallons
- D. greater than 1,000,000 gallons

[3] Use the following codes to specify treatment type:
- A. Utilization
- B. Equalization
- C. Settling
- D. Aeration
- E. Evaporation
- F. Other, please specify

F(1) = Clarification
F(2) = Filtration

[4] Treatment train from which wastewater is discharged undera NPDES permit or through a sewer system to a publicly-owned treatment works.

[5] Secondary containment is provided when the tank is located in a diked area where the volume of liquid that the diked area can contain is at least equivalent to the capacity of the largest tank.

B. Storage or Treatment in Containers*

Have identified residuals been stored or treated on-site in containers at any time since January 1, 1986? X Yes ____ No

If yes, provide the following information (if the facility has several storage areas, provide information only on the primary container storage area):

1. Fill in for each residual in 1986:

Residual No.[1]	Average Daily Quantity[2]	Maximum Daily Quantity[2]	Average Length of Storage
4	B	B	8.5 Days

1 Use Residual Identification Numbers.
2 Use the following code to designate the quantity of residual(s) in storage on any day in 1986.

A. ≤550 gallons
B. >550 to 5500 gallons
C. >5500 to 55,000 gallons
D. >55,000 gallons

2. Identify the storage area base material:
X Concrete __Asphalt __Soil __Other (specify) _____

3. If liquid residuals or residuals containing free liquids+ are stored, is the storage area designed and operated to collect and contain surface runoff?

X Yes ____No ____Liquids are not stored

* Container means any portable device in which residuals were stored, treated, or otherwise handled.

+ A residual contains free liquids if liquids readily separate from the solid portion of the residual under ambient temperature and pressure.

C. Storage or Treatment in Piles

Have identified residuals been stored or treated in on-site piles at any time since January 1, 1986? ____Yes __X__No

If yes, provide the following information for the 10 largest piles:

Pile	Residuals Managed[1]	Typical Quantity[2] Managed	Under Roofed Structure (Circle Yes or No)	Containment[3] Provided (Circle Yes or No)	Synthetic[4] Liner Base (Circle Yes or No)
1	_____	_____	Yes No	Yes No	Yes No
2	_____	_____	Yes No	Yes No	Yes No
3	_____	_____	Yes No	Yes No	Yes No
4	_____	_____	Yes No	Yes No	Yes No
5	_____	_____	Yes No	Yes No	Yes No
6	_____	_____	Yes No	Yes No	Yes No
7	_____	_____	Yes No	Yes No	Yes No
8	_____	_____	Yes No	Yes No	Yes No
9	_____	_____	Yes No	Yes No	Yes No
10	_____	_____	Yes No	Yes No	Yes No

[1] Use Residual Identification Numbers to identify residuals.

[2] Use the following code to designate the typical quantity of residual(s) contained in the pile on any day in 1986.

A. <20 cubic yards
B. <20 to 200 cubic yards
C. >200 to 2,000 cubic yards
D. >2,000 to 20,000 cubic yards
E. >20,000 cubic yards

[3] Containment is provided when the pile base is designed, operated, and maintained to contain leachate and run-off.

[4] Is a synthetic liner installed in the pile base? Waste may lie directly on synthetic liner or the liner may be covered with clay layer.

B. Burning in a Boiler No. 1

Have identified residuals been burned in an on-site boiler at any time since January 1, 1986? XX Yes ____ No

If yes, provide the following information for each boiler:

1. Boiler and fuel type:

Type (circle one)	Boiler Capacity (Heat Input in Million BTU/hr)	Primary Boiler Fuel	Percentage of Fuel Replaced by Residuals (Heat Input Basis)	Typical Boiler Load When Firing Residual (% of Capacity)	Boiler Temperature (°C) Inlet 132 Outlet 388
___Fire tube	__ ≤ 10 million	___Oil	__ ≤ 5%	__ ≤ 50%	Normal Range
XX Water tube	__ > 10 million	X Gas	__ > 5-10%	__ > 50-75%	Min 1300°F 1.75 sec
	X to 100 million	___Wood	X > 10-25%	X > 75%	Max 1720 1.4 sec
	__ > 100 million	___or Other	__ > 25-50%		
			__ > 50%		

Size of combustion zone (length and volume) 34 feet, 7428 cubic feet.

Total air used by boiler N/A* SCFM.

Residence time 1.4 (sec).

2. Provide the following information for each of the residuals burned:[1]

Residual No.	Feed Rate (lbs./hr.)	Typical BTU Content (BTU/lb)	Typical Total Ash Content (% by wt.)	Typical Total Halogen Content (% by wt.)	Total Water Content (% by wt.)	Total Metals Content (% by wt.)

3.[1] Provide the following information on the total feed mixture when residual is burned:

Feed Rate (Pounds per hour)	
Typical BTU Content (BTU/lb)	
Typical Total Ash Content (% by wt.)	
Typical Halogen Content (% by wt.)	
Typical Water Content (% by wt.)	

*Absorber Vent Gas Provides Fuel and O_2

[1]SEE CONFIDENTIAL INFORMATION

4. If the boiler is equipped with an air pollution control device, specify the type of device: N/A

_____Scrubber _____ Electrostatic precipitator _____Other (specify)

5. Stack Data

Are incinerator stack emission data available?

__XX__Yes _____No See Page 8

If yes, provide destruction efficiency of residuals (use additional space if necessary).

Residual No.	Destruction Efficiency (%)

Stack height 175 feet.

Stack diameter 7.5 feet.

Exit velocity 58 feet/sec.

Temperature 350 $^{o}_{F.}$ (Avg)

B. Burning in a Boiler No. 2

Have identified residuals been burned in an on-site boiler at any time since January 1, 1987? XX Yes ____ No

If yes, provide the following information for each boiler:

1. Boiler and fuel type:

Type (circle one)	Boiler Capacity (Heat Input in Million BTU/hr)	Primary Boiler Fuel	Percentage of Fuel Replaced by Residuals (Heat Input Basis)	Typical Boiler Load When Firing Residual (% of Capacity)	Boiler Temperature (°F) Inlet / Outlet
					132° / 388°
___ Fire tube	___ ≤ 10 million	___ Oil	___ ≤ 5%	___ ≤ 50%	Normal Range
X Water tube	___ > 10 million to 100 million	X Gas	___ > 5-10%	___ > 50-75%	Min 1300°F 1.75 sec
	X > 100 million	___ Wood or Other	X > 10-25%	X > 75%	Max 1720 1.4 sec
			___ > 25-50%		
			___ > 50%		

Size of combustion zone (length and volume) 34 feet, 7428 cubic feet.

Total air used by boiler N/A* SCFM.

Residence time 1.4 (sec).

2. Provide the following information for each of the residuals burned: [1]

Residual No.	Feed Rate (lbs./hr.)	Typical BTU Content (BTU/lb)	Typical Total Ash Content (% by wt.)	Typical Total Halogen Content (% by wt.)	Total Water Content (% by wt.)	Total Metals Content (% by wt.)

[1]

3. Provide the following information on the total feed mixture when residual is burned:

Feed Rate (Pounds per hour)	
Typical BTU Content (BTU/lb)	
Typical Total Ash Content (% by wt.)	
Typical Halogen Content (% by wt.)	
Typical Water Content (% by wt.)	

[1] SEE CONFIDENTIAL INFORMATION

*Absorber Vent Gas Provides Both Fuel and O_2.

4. If the boiler is equipped with an air pollution control device, specify the type of device: N/A

_____Scrubber _____ Electrostatic precipitator _____Other (specify)

5. Stack Data

Are incinerator stack emission data available?

XX Yes _____No See Page 8

If yes, provide destruction efficiency of residuals (use additional space if necessary).

Residual No.	Destruction Efficiency (%)

Stack height 175 feet.

Stack diameter 7.5 feet.

Exit velocity 58 feet/sec.

Temperature 350 ^{o}F.

B. Incineration

Have identified residuals been incinerated onsite at any time since January 1, 1969?

____Yes ___X___ No

If yes, provide the following information for each incinerator:

1. Incinerator type:

Type	Incinerator Capacity (Heat Input in MMBtu/hr.)	Feed Type	Percentage of Auxiliary Fuel Required (Heat Input Basis)
__ Liquid injection __ Rotary kiln __ Hearth __ Other _____ (specify)	___ ≤ 10 million ___ > 10 million to 100 million ___ > 100 million	__ Liquid-nozzle type (specify) _____ __ Atomizing pressure _____ (specify) __ Solid __ Batch charge __ Continuous charge	_____%

Total air used by the incinerator _____ SCFM.

2. Combustion Chamber Design Parameters:

	PRIMARY CHAMBER	SECONDARY CHAMBER
Combustion Chamber Temp.	_____ °C	_____ °C
Location of Temp. Monitor	_____	_____
Residence Time	_____ (sec)	_____ (sec)
Size of Combustion Zone (length and volume)	_____ feet,	_____ feet^3.

3. If the incinerator is equipped with an air pollution control device, specify the type(s) of device(s):

___ Scrubber ___Electrostatic precipitator ___Other _____ (specify)

4. Stack Data

Are incinerator stack emission data available?

___ Yes ___ No

If yes, provide destruction efficiency of residuals (use additional space if necessary).

Residual No.	Destruction Efficiency (%)
_____	_____
_____	_____
_____	_____
_____	_____

Stack height _____ feet.

Stack diameter _____ feet.

Exit velocity _____ feet/sec.

Temperature _____ ^{o}F.

5. Provide the following information for each of the residuals burned:

Residual No.	Feed Rate (lbs./ hr.)	Typical BTU Content (BTU/lb)	Typical Total Ash Content (% by wt.)	Typical Total Halogen Content (% by wt.)	Total Water Content (% by wt.)	Total Metals Content (% by wt.)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

6. Provide the following information on the auxiliary fuel:

Type of fuel _____

Heating value (BTU/lb)_____

Fuel feed rate (lbs/hr.) _____

F. Land Treatment

Have identified residuals been managed in an on-site land treatment operation at any time since January 1, 1986? ___ Yes X No

If yes, provide the following information:

1. Year land treatment initiated at site: _____

2. Year land treatment of identified residuals initiated: _____

3. Have residuals other than identified residuals been land treated at any time since January 1, 1986? ___ Yes ___ No

4. What was the total area actively used for land treatment in 1986? _____ acres

5. What is the average slope of the land treatment site? _____ percent

6. Is surface water run-off from the site collected for treatment, re-application to the site, or analyzed prior to discharge? ___ Yes ___ No

7. Check method(s) used to apply residuals to the land treatment site.

a. ___ Surface spreading or spray irrigation without plow or disc incorporation. Indicate residuals applied in this manner using Residual Identification Numbers: _____

b. ___ Surface spreading or spray irrigation with plow or disc incorporation to a depth of _____ (specify). Indicate residuals applied in this manner using Residual Identification Numbers: _____

c. ___ Subsurface injection to a depth of _____ (specify). Indicate residuals applied in this manner using Residual Identification Numbers: _____

d. ___ Other methods (specify method and residuals): _____

8. Is soil core monitoring performed? ___ Yes ___ No

9. Is soil pore monitoring performed? ___ Yes ___ No

C. Surface Impoundments*

Have identified residuals been stored, treated, or disposed of in an onsite surface impoundment at any time since January 1, 1986? ____ Yes _X_ No

If yes, complete Table IV.

* Holding, storage, settling, and aeration pits, ponds and lagoons formed primarily of earthen materials.

Table IV - Response to Question 6-6

If more than 5 surface impoundments have been used since January 1, 1986 to manage identified residuals, provide information only on the 5 impoundments with the largest capacities. Use Residual Identification Numbers to identify residuals. If you do not know whether a liner has been installed, circle both "Yes and No". If you do not know the thickness of the liner, indicate "UNK" for unknown.

Impoundment	Total Capacity (Gallons)[1]	Residuals Disposed (RIN)	Storage or Treatment (specify)	Specify Treatment Type if Applicable[2]	Synthetic Liner Installed	Synthetic Liner Thickness (mils)	Synthetic Liner No. of Liners
1					Yes No		
2					Yes No		
3					Yes No		
4					Yes No		
5					Yes No		

Impoundment	Clay Liner Installed	Clay Liner Thickness (in)	Clay Liner No. of Liners	Leachate Collection System Installed	Leachate Generated
1	Yes No			Yes No	Yes No
2	Yes No			Yes No	Yes No
3	Yes No			Yes No	Yes No
4	Yes No			Yes No	Yes No
5	Yes No			Yes No	Yes No

[1] Use the following code to designate the quantity of residual(s) in storage on any day in 1986.
A. ≤ 550 gallons
B. > 550 to 5,500 gallons
C. > 5,500 to 55,000 gallons
D. > 55,000 gallons

[2] Use the following codes to specify treatment type:
A. Utilization
B. Equalization
C. Settling
D. Aeration
E. Evaporation
F. Other, please specify

H. Landfills

1. Have identified residuals been landfilled on site at any time that you owned or operated this facility? ____ Yes __X__ No
If yes, answer questions 2 and 3.

2. Has any on-site landfill (or landfill cell) that was used to dispose of identified residuals been closed (i.e., no longer used to dispose of wastes)?
If yes, complete Table V. ____ Yes ____ No

3. Have any identified residuals been landfilled on-site at any time since January 1, 1986 in a cell that has not been closed? ____ Yes ____ No
If yes, complete Table VI.

Table V - Response to Question 6-H-2

Closed Landfill Cells

If more than 5 cells containing identified residuals have been closed, provide information only on the 5 cells that were most recently closed. Use Residual Identification Numbers to identify residuals. If you do not know whether a layer or liner was installed, circle both "Yes and No". If you do not know the thickness of a layer or liner, indicate "UNK" for unknown.

A. Cap/Cover Design

Cell	Residuals Disposed (RID)	Cap Design: Drainage Layer Installed	Drainage Layer Thickness (in)	Clay Layer Installed	Clay Layer Thickness (in)	Synthetic Liner Installed	Synthetic Liner Thickness (mils)
1	_____	Yes No	_____	Yes No	_____	Yes No	_____
2	_____	Yes No	_____	Yes No	_____	Yes No	_____
3	_____	Yes No	_____	Yes No	_____	Yes No	_____
4	_____	Yes No	_____	Yes No	_____	Yes No	_____
5	_____	Yes No	_____	Yes No	_____	Yes No	_____

B. Bottom Liner Design/Leachate Collection

Cell Number	Synthetic Liner Installed	Synthetic Liner Thickness (mils)	Synthetic Liner No. of Liners	Clay Liner Installed	Clay Liner Thickness (in)	Clay Liner No. of Liners	Leachate Collection System Installed	Leachate Collection System Leachate Generated
1	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
2	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
3	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
4	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
5	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No

Table VI - Response to Question 6-H-3

Landfill Cells Used to Dispose of Identified Residuals At Any Time Since January 1, 1986.

If more than 5 cells have been used since January 1, 1986 to dispose of identified residuals, provide information only on the 5 containing the greatest quantities of identified residuals. Use Residual Identification Numbers to identify residuals. If you do not know whether a liner has been installed, circle both "Yes" and "No". If you do not know the thickness of a liner, indicate "unk" for unknown.

Cell Number	Residuals Disposed (RIN)	Synthetic Liner Installed	Synthetic Liner Thickness (mils)	Synthetic Liner No. of Liners	Clay Liner Installed	Clay Liner Thickness (in)	Clay Liner No. of Liners	Leachate Collection System Installed	Leachate Collection System Leachate Generated
1	_____	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
2	_____	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
3	_____	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
4	_____	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No
5	_____	Yes No	_____	_____	Yes No	_____	_____	Yes No	Yes No

HYDROGEOLOGIC, WATER SOURCE AND MONITORING INFORMATION

The Agency has developed models that predict the fate and transport of hazardous constituents via air, ground water, and surface water. These models predict exposure from the disposal of wastes in landfills, surface impoundments, boilers, and incinerators. The following questions have been developed by the Office of Solid Waste's (OSW's) Modeling Section to supplement the available data, which will be used as inputs to these models.

If residuals are managed on site, please provide responses to each of these hydrogeologic questions for all wastes generated from the subject process using the best information available, even if this requires you to make estimates. Also, so that the responses may be evaluated along with the source of information upon which they are based, complete Section A below.

If the data requested in the following questions have already been provided to the U. S. EPA in a RCRA Part B application, identify those questions covered by the Part B application and you will not have to answer those questions. You must still try to answer questions not covered in your Part B application. Please provide the name and address of the Agency office and the date submitted for such an application, below:

Name/Address: _____

_____

_____

_____

Date submitted: _____

If no residuals are managed on site, do not complete the remainder of this questionnaire; instead, circle Number 4 below.

A. SOURCE OF INFORMATION FOR HYDROGEOLOGIC QUESTIONS [CIRCLE ONE NUMBER ONLY]

Site-Specific Hydrogeologic Study Data Used..... (1)
Hydrogeologic Information Obtained From General Literature Sources (e.g., County Report)..... 2
No Hydrogeologic Data Available; "Best Estimates" Provided..... 3
No Residuals Are Managed On Site In Tanks, Containers, Piles; Surface Impoundments; Landfills; Burned In Boilers Or Incinerators; By Land Treatment; Therefore, These Questions Do Not Need To Be Answered..... 4

[illegible]. There are no land disposal facilities used to manage acrylonitrile process residuals but in accordance with agency requests the following questions are answered with respect to general plant conditions where possible.

B. HYDROGEOLOGIC INFORMATION

1. Are any part of these land disposal facilities located in: [CIRCLE ONE NUMBER FOR EACH CATEGORY LISTED]

		YES		NO
a.	a 100-year floodplain[1]	1	...	(2)
b.	an area designated as wetland[2]	1	...	(2)
c.	karst terrain[3]	1	...	(2)

2. Identify the single most predominant type of soil (one only) between bedrock and the bottom of the land disposal units. Also, identify all other soil types occurring between bedrock and the bottom of the waste disposal units (all that apply).

		PREDOMINANT [CIRCLE ONE ONLY]		ALL OTHER TYPES [CIRCLE ALL THAT APPLY]
a.	Sand	1	..	(1)
b.	Clayey Sand	2	..	(2)
c.	Silt	3	..	(3)
d.	Sandy Clay	4	..	(4)
e.	Clay	(5)	..	5

---

1 100-YEAR FLOODPLAIN: any land area that is subject to a one percent or greater chance of flooding in any given year from any source (or) any land area that is subject to flooding once every 100 years. The boundaries of the 100-year floodplain are delineated on Flood Hazard Boundary Maps (FHBM) along the waterways of virtually all political jurisdictions that have been identified as "flood prone." These maps are available as part of the National Flood Insurance Program (NFIP).

2 WETLAND: an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland generally includes swamps, marshes, bogs, and similar areas.

3 KARST TERRAIN: irregular topography characterized by sink holes (abrupt, often circular depressions in the land surface), streamless valleys, and streams that disappear underground — all developed by action of surface and underground water in soluble rock, such as limestone.

3. Are disposal units at this facility located completely above the seasonal high water table?[1]

YES ..... [GO ON TO QUESTION B-4] 1
NO ..... [SKIP TO QUESTION B-5] ..... 2 N/A

4. What is the average distance from the bottom of the land disposal units, i.e., surface impoundments or landfill, to the seasonal high water table?

a. Surface Impoundment _____ feet
b. Landfill _____ feet N/A

5. What is the average distance from the bottom of the ~~disposal~~ plant units to bedrock? > 1000'

a. Surface Impoundment _____ feet
b. Landfill _____ feet N/A

6. What is the average permeability (hydraulic conductivity), porosity, and hydraulic gradient of the uppermost aquifer at this facility?

a. Permeability .....1.4×10^{-3} cm/sec;
b. Porosity ..... 0.25 percent
c. Hydraulic Gradient .... 0.005 percent

7. What is the average horizontal flow rate of the ground water in the upper aquifer beneath this facility?

Average Horizontal Flow Rate 2 feet per year

8. What is the shortest distance from the edge of the disposal unit to the property boundary?

a. Surface Impoundment _____ feet
b. Landfill _____ feet N/A

[1] SEASONAL HIGH WATER TABLE: the upper surface of the saturated zone during the time of the year when the ground-water level is closest to the ground surface.

8 feet

2. What is the distance from the edge of the nearest surface impoundment and landfill at this facility to the closest downgradient drinking water wells? Give the distance separately from the closest private and public well, if within 1 mile. Also, estimate the number of people who use each of these two types of wells for drinking water.

[IF THERE ARE NO SUCH WELLS OF A GIVEN TYPE (EITHER PUBLIC OR PRIVATE), ENTER "NA" in BOTH COLUMNS FOR THAT TYPE]

a. For Surface Impoundment

	DISTANCE FROM WELL TO EDGE OF NEAREST LAND DISPOSAL UNIT	NUMBER OF PEOPLE WHO USE THIS WELL FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
Private Well	N/A feet		☐
Public Well	N/A feet		☐

b. For Landfill

	DISTANCE FROM WELL TO EDGE OF NEAREST LAND DISPOSAL UNIT	NUMBER OF PEOPLE WHO USE THIS WELL FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
Private Well	N/A feet		☐
Public Well	N/A feet		☐

3. Does the closest downgradient drinking water well use the uppermost aquifer or a combination of aquifers? (CIRCLE ONE NUMBER ONLY)

Uppermost Aquifer 1
Combination of Aquifers ..... 2 N/A

4. How many downgradient rivers/streams and lakes/reservoirs that are used for drinking water are within 1 mile of the edge of the land disposal units at this facility? Also, estimate the number of people who use these sources for drinking water. N/A

[IF THERE ARE NO SUCH WATER SOURCES OF A GIVEN TYPE (EITHER RIVERS/STREAMS OR LAKES/RESERVOIRS), ENTER "NA" IN BOTH COLUMNS FOR THAT TYPE]

a. For Surface Impoundment

	TOTAL NUMBER OF DRINKING WATER SOURCES WITHIN 1 MILE	NUMBER OF PEOPLE WHO USE THESE SOURCES FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
Rivers/Streams	N/A		☐
Lakes/Reservoirs	N/A		☐

b. For Landfill

	TOTAL NUMBER OF DRINKING WATER SOURCES WITHIN 1 MILE	NUMBER OF PEOPLE WHO USE THESE SOURCES FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
Rivers/Streams	N/A		☐
Lakes/Reservoirs	N/A		☐

5. What is the distance from the edge of the land disposal unit at this facility to the closest downgradient river/stream and lake/reservoir that ~~are within one mile~~ and also used for drinking water? Give the distance separately for the closest river/stream and lake/reservoir. Also, estimate the number of people who use each of these sources for drinking water.

[IF THERE ARE NO SUCH SOURCES OF A GIVEN TYPE (EITHER RIVERS/STREAMS OR LAKES/RESERVOIRS), ENTER "NA" IN BOTH COLUMNS FOR THAT TYPE]

a. For Surface Impoundment

	DISTANCE FROM SOURCE TO EDGE OF NEAREST LAND DISPOSAL UNIT	NUMBER OF PEOPLE WHO USE THIS SOURCE FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
River/Stream	N/A feet		☐
Lake/Reservoir	N/A feet		☐

b. For Landfill

	DISTANCE FROM SOURCE TO EDGE OF NEAREST LAND DISPOSAL UNIT	NUMBER OF PEOPLE WHO USE THIS SOURCE FOR DRINKING WATER	IF NUMBER OF PEOPLE IS UNKNOWN, CHECK BOX
River/Stream	N/A feet		☐
Lake/Reservoir	N/A feet		☐

6. How many downgradient rivers/streams, lakes/reservoirs, and wetlands that are not used for drinking water are within 1 mile of the edge of any land disposal unit at this facility?

[IF THERE ARE NO SUCH WATER BODIES OF A GIVEN TYPE (EITHER RIVERS/STREAMS, LAKES/RESERVOIRS, OR WETLANDS), ENTER "NA" FOR THAT TYPE.

	NUMBER WITHIN 1 MILE
a. Rivers/Streams	N/A
b. Lakes/Reservoirs	N/A
c. Wetlands	N/A

7. What is the distance from the edge of the nearest surface impoundment and landfill at this facility to the closest downgradient river/stream, lake/reservoir, and wetland that are not used for drinking water? Give the distance separately for each such water body that is within 1 mile.

[IF THERE IS NO SUCH WATER BODY OF A GIVEN TYPE (EITHER RIVER/STREAM, LAKE/RESERVOIR, OR WETLAND), ENTER "NA" FOR THAT TYPE]

a. For Surface Impoundment

	DISTANCE FROM WATER BODY TO LAND DISPOSAL UNIT
River/Stream	N/A feet
Lake/Reservoir	N/A feet
Wetland	N/A feet

b. For Landfill

	DISTANCE FROM WATER BODY TO LAND DISPOSAL UNIT
River/Stream	N/A feet
Lake/Reservoir	N/A feet
Wetland	N/A feet

8. What is the average width and the average depth of the closest downgradient river/stream and lake/reservoir within 1 mile of the edge of the land disposal unit at this facility that are not used for drinking water? Is water present continuously in each water body?

[IF THERE IS NO SUCH WATER BODY OF A GIVEN TYPE (EITHER RIVER/STREAM OR LAKE/RESERVOIR), ENTER "NA" IN BOTH COLUMNS FOR THAT TYPE]

a. For Surface Impoundment

	AVERAGE WIDTH OF WATER BODY	AVERAGE DEPTH OF WATER BODY	WATER PRESENT CONTINUOUSLY? YES	NO
River/Stream	N/A feet	____ feet	1	2
Lake/Reservoir	N/A feet	____ feet	1	2

b. For Landfill

	AVERAGE WIDTH OF WATER BODY	AVERAGE DEPTH OF WATER BODY	WATER PRESENT CONTINUOUSLY? YES	NO
River/Stream	N/A feet	____ feet	1	2
Lake/Reservoir	N/A feet	____ feet	1	2

D. GAS MONITORING

1. Does all or part of any land disposal unit at this facility have any of the following? [CIRCLE ONE NUMBER FOR EACH ITEM LISTED]

Not Applicable

	YES	NO
a. A Landfill Gas Monitoring or Detection System?	1	2
b. A Landfill Gas Migration Control System?	1	2
c. A Landfill Gas Recovery System?	1	2

2. If this facility has a gas migration control system, is the gas migration control system an active[1] or passive[2] system of wells or trenches?

Not Applicable

	YES	NO
a. An Active Mechanical System of Wells?	1	.. 2
b. A Passive System of Wells or Trenches?	1	.. 2

E. GROUND-WATER MONITORING

1. Is the ground water monitored at this facility? [CIRCLE ONE NUMBER ONLY]

YES ..... [GO ON TO QUESTION E-2] .. (1)
NO ..... [SKIP TO QUESTION E-4] ... 2

2. How is the ground water monitored? [CIRLCE ONE NUMBER FOR EACH CATEGORY]

	YES	NO
a. Individual Units Have Monitoring Wells	(1)	.. 2
b. Overall Facility Has a Monitoring System	(1)	.. 2

3. Complete the following table describing the upgradient and downgradient ground-water monitoring wells at this facility.

	UPGRADIENT WELLS	DOWNGRADIENT WELLS
a. Number of Monitoring Wells at This Facility	7	45
b. Average Depth of Wells From Ground Surface	35 ft	35 ft
c. Average Number of Times Wells are Sampled per Year	>2	but varies
d. Number of Samples per Well per Sampling Period		quadruplicate for RC single or duplicate for non-RCRA
e. Maximum Number of Years Any of These Wells Have Been Sampled	6 yrs	6 yrs

4. Has this facility ever been found to be a source of ground-water contamination by any government authority? [CIRCLE ONE NUMBER ONLY]

YES ..... [GO ON TO QUESTION E-5] 1
NO ..... [SKIP TO QUESTION F] ..... (2)

1 ACTIVE GAS MIGRATION CONTROL SYSTEM: a gas control system of wells or trenches that mechanically forces gas to the site perimeter or atmosphere using vacuum blowers, pumps, compressors, etc.

2 PASSIVE GAS MIGRATION CONTROL SYSTEM: a gas control system of wells or trenches that diverts the path of gas migration to the site perimeter or atmosphere without using mechanical components. Gases are conveyed by their natural tendency to rise.

5. List below the ground-water parameters/constituents for which this facility was cited.

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

F. SURFACE WATER MONITORING

1. Does this facility discharge effluents to surface waters?

(YES) ..... [GO TO QUESTION F-2]
NO ..... [GO TO QUESTION F-6]

2. How often is the effluent sampled?

Continuously

3. Is the effluent subject to an NPDES permit?

YES X NO _____

4. Is the effluent monitored for any 40 CFR 261; Appendix VIII constituents?

YES X NO _____

5. Are any of the above constituents regulated by the NPDES permit?

YES X NO _____

6. Does this facility monitor surface water? [CIRCLE ONE NUMBER ONLY]

(YES) ..... [GO ON TO QUESTION F-7] .. 1
NO ..... [GO ON TO QUESTION G] .. 2

7. Where is the surface water monitored?

	YES	NO
a. At each NPDES Outfall?	1	(2)
b. Downstream of NPDES Outfall?	1	(2)
c. Upstream of NPDES Outfall?	(1)	2

8. How many times per year is surface water sampled at this facility?

Continuously
_____ Times Per Year

G. AIR EMISSIONS MONITORING

1. Does this facility monitor air emissions? [CIRCLE ONE NUMBER ONLY]

YES .....(1)
NO 2

B. ADDITIONAL INFORMATION ON DISPOSAL/TREATMENT UNITS.

1. Surface Impoundments Not Applicable

Provide the following information on the five surface impoundments with the largest capacities.

IMPOUNDMENT	LENGTH (FT)	WIDTH (FT)
1		
2		
3		
4		
5		

2. Landfill Not Applicable

Provide the following information for the five landfill cells with the largest capacities.

CELL NO.	OPEN AREA (FT^2)	CLOSED AREA (FT^2)
1		
2		
3		
4		
5		

ATTACHMENT 2

MATERIAL SAFETY DATA SHEET

Sterling Chemicals, Inc.
P.O. Box 1311
Texas City, TX 77590
Emergency Phone No.
(Call Collect)
(409) 942-3343

ACRYLONITRILE

PRODUCT IDENTIFICATION

Issue Date: 08/86 Rev Date: 09/87
MSDS No: 00010131

Synonyms: Propenoic acid, nitrile, vinyl cyanide, cyanoethylene, acrylic acid, nitrile
Chemical Formula: C_3H_3N
Chemical Family: Nitrile
CAS No.: 107-13-1
DOT Proper Shipping Name: Acrylonitrile
DOT Hazard Class/I.D. No.: Flammable Liquid, Poison/UN 1093
DOT Label: Flammable Liquid and Poison
Reportable Quantity (RQ) Under
DOT Regulations (49 CFR Part 172): 100 lbs.
U.S. Surface Freight Classification: Acrylonitrile

This substance is identified a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and is listed as a carcinogen by the National Toxicology Program (NTP), by the International Agency for Research on Cancer (IARC) and under 29 CFR 1910, Subpart Z (OSHA).

WARNING STATEMENTS

DANGER!
FLAMMABLE.
MAY BE FATAL IF INHALED, SWALLOWED OR ABSORBED THROUGH SKIN: If exposed, take first aid action immediately. Symptoms of exposure may be delayed.
CONTAINS ACRYLONITRILE (AN)
CANCER HAZARD
CAUSES IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT.

PRECAUTIONARY MEASURES

AMYL NITRITE IS AN ANTIDOTE. Always have a cyanide first aid kit on hand. This consists of a bag mask, oxygen equipment, and amyl nitrite. A cyanide antidote kit should be available for Medical personnel to administer; contains IV injectable medications.
Keep away from heat, sparks and flame.
Do not breathe vapor or mist.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

EMERGENCY AND FIRST AID PROCEDURES

Wear protective equipment including rubber gloves, rubber apron, rubber footwear, goggles and face shield. Wash protective equipment with water after each use.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

IF IN EYES OR ON SKIN, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

FIRST AID

Quick action is the essential key to prevent further harm or death from AN-related HCN exposure. Many things must be done quickly or simultaneously.

- Summon help.
- Protect yourself with protective equipment for rescue.
- Remove victim from contaminated area.
- Remove contaminated clothing and shoes.
- Wash off contaminated skin with water.
- Irrigate eyes with copious amounts of water.
- Administer oxygen and amyl nitrite ampules.

First-aid given rapidly using amyl nitrite and oxygen is usually the only treatment needed. Medical treatment is given if the individual does not respond to first-aid. (It must be administered by qualified medical personnel as it requires the use of intravenous injections.)

FIRST-AID TREATMENT FOR HCN OVEREXPOSURE

Inhalation, Absorption, Swallowing

1. Victim is conscious and breathing - administer oxygen.

2. Victim not fully conscious but breathing - administer oxygen and amyl nitrite. Break an amyl nitrite pearl in a handkerchief or a gauze pad. Hold it 1-inch from nose or put in oxygen mask and administer for 15 seconds followed by 15 seconds of oxygen alone. Use a new pearl every 3-4 minutes. Repeat until consciousness improves and victim rejects amyl nitrite.

3. Victim unconscious and not breathing - administer artificial respiration with oxygen and a bag mask and give amyl nitrite. Break amyl nitrite pearl and place in mask for 15 seconds while giving artificial respiration. Then remove amyl nitrite and give oxygen through bag mask for 15 seconds. Repeat until consciousness and breathing re-occur. Be careful that pearl doesn't enter victim's mouth as it may cause choking.

4. Victim remains unconscious - medical personnel will need to administer cyanide antidote.

EMERGENCY AND FIRST AID PROCEDURES

NOTE TO PHYSICIANS: If patient has not responded to amyl nitrite, inject intravenously 10 milliliters of a 3% solution of sodium nitrite at a rate not greater than 2.5 to 5.0 milliliters per minute. Follow directly with 50 milliliters of a 25% solution of sodium thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear, repeat nitrite and thiosulfate injections 1 hour later in one-half the original doses.

IF SWALLOWED: If conscious or when consciousness returns, give two glasses of water to dilute and induce vomiting immediately by sticking finger down throat. Continue until vomit is clear. Never give anything by mouth to an unconscious person.

IN CASE OF

FIRE: Use water spray, "alcohol foam", dry chemical or carbon dioxide.

SPILL or LEAK: Keep unnecessary people away. Stay upwind. Eliminate all sources of ignition. Shut off leak if without risk. Spray with water or foam to reduce fire and fume hazard. If it is necessary to enter spill area, wear full protective clothing including boots and a self-contained breathing apparatus. Small spills can be collected on sand or other non-combustible absorbent material. Collect large spills by pumping into salvage tank or with vacuum truck (see "Spill, Leak & Disposal Information" section).

OCCUPATIONAL CONTROL PROCEDURES

Eye Protection: Wear chemical goggles and have eye baths immediately available where there is potential for eye contact.

Skin Protection: Wear appropriate chemical resistant gloves and clothing to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application. Wear chemical goggles, a full face shield and a chemical resistant apron when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Respiratory Protection: Avoid breathing vapor or mist. Use NIOSH/MSHA approved equipment when airborne exposure limits (see below) are exceeded. Full facepiece equipment is recommended and, if used, replaces need for full face shield and chemical goggles. Consult OSHA Standard (29 CFR 1910.1045) to determine required type equipment for given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

Ventilation: Provide ventilation to control exposure levels below airborne exposure limits (see below). Use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

OCCUPATIONAL CONTROL PROCEDURES (continued)

Airborne Exposure Limits:

Product: Acrylonitrile

OSHA PEL/8-hour Time-weighted average:	2 ppm
Ceiling:	10 ppm
ACGIH TLV/8-hour Time-weighted average:	2 ppm (Skin)*

Listed in Appendix A2 - Industrial Substance Suspect of Carcinogenic Potential for MAN.

* Skin notation means that skin absorption may add to the overall exposure. Avoid skin contact.

FIRE PROTECTION INFORMATION

Flash Point: 32°F Method: Open Cup

Ignition Temperature: 898°F

Flammable Limits (In Air) (% by Volume): 3.0% Lower
17.0% Upper

Extinguishing Media: Water spray, "alcohol" foam, dry chemical, CO_2 or any Class B extinguishing agent. Water spray should be used to cool exposed containers.

Special Firefighting Procedures: When exposed to vapors, liquid, or products of combustion, full protective (impervious) clothing including boots, and self-contained breathing apparatus must be worn. Hydrogen cyanide gas may be produced when acrylonitrile is burned. Equipment must be thoroughly decontaminated after use.

Unusual Fire and Explosion Hazards: Will polymerize violently when contacted with strong alkali.

REACTIVITY DATA

Materials to Avoid: Avoid contact with strong oxidizing agents, alkali, bromine, ammonia, amines, copper or copper alloys and mineral acids.

Hazardous Decomposition Products: Oxidative decomposition can produce toxic gases and vapors such as hydrogen cyanide, nitrogen oxides, and carbon monoxide.

Hazardous Polymerization: Contact with strong alkali will cause violent polymerization. May also polymerize spontaneously in the absence of oxygen or on exposure to light.

MATERIAL SAFETY DATA SHEET

HEALTH EFFECTS SUMMARY

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of acrylonitrile on the health of industrially exposed individuals and to support the Precautionary Measures and Occupational Control Procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

Human Experience

Dermal contact and inhalation are expected to be the primary routes of occupational exposure to acrylonitrile. Acrylonitrile is considered to be highly toxic by absorption through the skin, by inhalation of vapor and by ingestion. Contact with acrylonitrile can result in irritation, reddening of the skin and blisters. Delayed removal of acrylonitrile from the skin, especially when acrylonitrile is present in contaminated clothing or shoes, may lead to blistering of the skin, even if no immediate irritation was noted during this prolonged exposure. Repeated dermal exposure may product scaling dermatitis. Skin sensitization has been reported but has not been clearly attributed to acrylonitrile.

Acrylonitrile vapor is irritating to the eyes and upper respiratory tract and can produce inflammation of the respiratory tract and mucous membranes. Symptoms of acute overexposure include nausea, vomiting, diarrhea, headache, insomnia, weakness, fatigue, sneezing, shortness of breath, light-headedness, mild jaundice, and mild anemia and leukocytosis. Heavier exposures to acrylonitrile have resulted in loss of consciousness, convulsions and death. Effects reported in workers exposed chronically to higher concentrations of acrylonitrile include headache, nausea, vomiting, nosebleeds, insomnia and chest pains; effects were variable in nature and no consistent correlation with the extent of exposure at these higher levels appears to have been established.

The increased blood and urine thiocyanate levels observed in acrylonitrile exposed individuals indicates that acrylonitrile is metabolized to cyanide. Consequently, the acute toxic effects noted for exposure to acrylonitrile may result, in part, from the metabolism of acrylonitrile to cyanide.

Toxicological Data

Data from studies conducted on this material and from the available scientific literature indicate the following:

Oral LD_{50} (Rat): 186 mg/kg, Moderately Toxic
Dermal LD_{50} (Rabbit): 280 mg/kg, Moderately Toxic
Eye Irritation (Rabbit): Severely Irritating
Skin Irritation (Rabbit): Severely Irritating
Inhalation 4-hr LC_{50} (Rat): ~366 ppm
Inhalation 1-hr LC_{50} (Rat): >1,008 ppm, Slightly Toxic

HEALTH EFFECTS SUMMARY (continued)

Acrylonitrile has been administered to several animal species (mouse, rat, guinea pig, rabbit, cat, dog, primate) by various routes of exposure (oral, dermal, injection, inhalation) to investigate its potential toxicity. While the susceptibility of various animal species to acrylonitrile toxicity varies, overexposure has generally been shown to produce adverse effects on organs such as the stomach (oral exposure), lungs (inhalation exposure), liver, adrenals, kidney and brain (all routes of exposure). Inhalation, oral or dermal exposure to fatal or near fatal levels of acrylonitrile has produced respiratory distress, lethargy, convulsions and coma in test animals. At high exposure levels, these symptoms may be due in part to the metabolism of acrylonitrile to cyanide.

When acrylonitrile was administered to rats in their drinking water at concentrations of 10 to 300 ppm (1 to 30 mg/kg/day) for 2 years, significant increases of neoplastic lesions of the brain, ear canal, stomach and mammary gland were observed. No increase in tumor incidence was observed at concentrations less than 3 ppm (0.3 mg/kg/day) acrylonitrile in the drinking water. Acrylonitrile was also carcinogenic to rats by inhalation exposure to 44 or 174 mg/m^3 (20 or 80 ppm) 6 hours per day, 5 days per week for 24 months. In this study, increased incidences of neoplastic lesions of the brain, ear canal, tongue, stomach, small intestine, mammary gland and nasal turbinates were reported.

In rats, mice and hamsters, acrylonitrile has produced embryotoxic and teratogenic effects, but only at exposure levels that induce maternal toxicity (~65 mg/kg/day). Administration of acrylonitrile to rats in drinking water at concentrations of 100 and 500 ppm for 3 generations did not interfere with reproductive performance in parental animals, although reduced fertility was reported in an earlier 1-generation reproduction study in rats administered 500 ppm acrylonitrile in drinking water. In the 3-generation study, progeny survival was reduced at the 500 ppm exposure levels; an increased incidence of neoplasms was also noted, particularly in high-dose parental female animals.

Acrylonitrile has been reported to induce mutagenic responses in various in vitro tests such as mammalian point mutation assays, DNA repair and cytogenetic assays and cell transformation tests. In vitro tests have shown that acrylonitrile metabolites can bind covalently to DNA. Acrylonitrile was not mutagenic in vivo when tested in dominant lethal and cytogenetics tests. No increase in chromosomal abnormalities was reported in the lymphocytes of workers occupationally exposed to acrylonitrile for 15 years.

Additional Information

Acrylonitrile is listed as a substance that may "reasonably be anticipated to be a carcinogen" by the National Toxicology Program (NTP) in their Third Annual Report on Carcinogens, is classified as "probably carcinogenic to humans" by the International Agency for Research on Cancer (IARC Monographs, Vol. 19), and is regulated by OSHA as a carcinogen (29 CFR 1910.1045). The NTP and IARC listings are based on their determination that there is limited evidence for the carcinogenicity of acrylonitrile in humans and sufficient evidence for the carcinogenicity of acrylonitrile in laboratory animals.

HEALTH EFFECTS SUMMARY (continued)

Early epidemiological studies cited by the International Agency for Research on Cancer report increased incidences of several types of cancers in workers exposed to acrylonitrile for long periods. However, recent epidemiological studies have failed to demonstrate any consistent increase in tumor incidences among workers in plants involved in the production or use of acrylonitrile.

A Threshold Limit Value (TLV) has been established by the American Conference of Governmental Industrial Hygienists (ACGIH) for acrylonitrile. For further information on this material, please refer to the current edition of the Documentation of Threshold Limit Values.

PHYSICAL DATA

Appearance: Clear, water white liquid
Odor: Pungent odor detectable as low as 13-19 ppm
Boiling Point (760 mm): 77.3°C
Vapor Pressure @ 25°C: 100 mm Hg
Vapor Density at Bp (Air = 1): 1.8
Specific Gravity (20/4°C): 0.806
Solubility in Water (20°C): 7.35 wt%
Percent Volatile: 100
Freezing Point: -83.5°C
Molecular Weight: 53.1

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

SPILL, LEAK & DISPOSAL INFORMATION

Waste Disposal: Because of its toxicity, Acrylonitrile is designated as a hazardous waste by the Environmental Protection Agency (EPA) under authority of the Resource Conservation and Recovery Act (RCRA). The waste would have EPA Hazardous Waste number U009 as designated in 40 CFR 261.33. All applicable local, state, and federal laws and regulations should be followed when disposing of this material. This material should not be dumped, spilled or flushed into sewers or public waterways. Waste liquids may be reclaimed or disposed of in an approved hazardous waste incinerator. Contaminated soils and solid material should be disposed of in an approved hazardous waste landfill.

Spill or Leak Procedures: Keep unnecessary people away. Stay upwind. Elminiate all sources of ignition . Shut off leak if without risk. Spray with water or foam to reduce fire and fume hazard. If necessary to enter spill area, wear self-contained breathing apparatus and full protective clothing including boots. Contain spill. Small spills can be collected on sand or other non-combustible absorbent material, then flush area with large quantities of water. Do not touch spilled material. Collect large spills by pumping into salvage tank or with vacuum truck. Residual soils may be contaminated, remove for disposal. Guard against watershed, waterway, and water supply contaminations. If not possible, notify health and pollution control authorities.

MATERIAL SAFETY DATA SHEET

SPILL, LEAK & DISPOSAL INFORMATION (continued)

Acrylonitrile is designated as a hazardous substance by the Environmental Protection Agency (EPA) under the Federal Water Pollution Control Act - 40 CFR 116.4 and CERCLA 40 CFR 302.5. Spills of 100 lbs or greater must be reported to the appropriate Regulatory Authorities.

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

MSDS COORDINATOR
STERLING CHEMICALS, INC.
(409) 942-3729

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ATTACHMENT 3

DATA SUBMITTED TO THE TEXAS AIR CONTROL BOARD REGARDING ACRYLONITRILE EMISSIONS FROM THE TEXAS CITY PLANT SITE.

1984 Inventory

Tank Emissions	**12.72 tons/year**
Scrubber & Vents	**1.09 tons/year**
Loading Emissions	**9.24 tons/year**
Fugitives	**25.84 tons/year**
Flares & Incinerators	**17.15 tons/year**

ATTACHMENT 4

Evaluation Report of Acrylonitrile Sources in the State of Texas

This report has been prepared in accordance with the Memorandum Of Understanding between the Texas Air Control Board (TACB) and the U. S. Environmental Protection Agency (EPA) dated November 28, 1984. The report includes final emissions evaluation of acrylonitrile (AN) from five major sources and five minor sources.

The five major AN sources consist of four major producers of AN and one major user of AN. The producers are E.I. Du Pont de Nemours and Company (Du Pont) at Beaumont, Monsanto, Inc. at Chocolate Bayou, Sterling Chemical, Inc. (formerly Monsanto, Inc.) at Texas City and Sohio Chemical Company at Port Lavaca. The major user is Goodyear Tire and Rubber Company at Houston. A preliminary technical evaluation report dated December 13, 1985 on AN producers in Texas has been previously submitted to the EPA. The evaluation consisted of a description and comparison of AN production processes and comparison of AN emissions associated with process, storage, loading, and fugitive emissions at each of the facilities. Also, the TACB staff completed on-site inspections at these facilities and reviewed their emission inventories. Thorough emission inventories were established prior to the dispersion modeling application for the determination of ground level concentration of AN at each of the facilities. The AN emission rates from these facilities are shown in Table 1.

Acrylonitrile has been shown to be an animal and human carcinogen at relatively high levels of exposure. Health effects data are from controlled animal studies in the laboratory or from epidemiological studies of workplace exposure. Data from these types of studies are based on exposures at much higher concentrations than those found in the ambient air near the facilities producing acrylonitrile. It is more difficult to demonstrate a relationship between the much lower levels found in community air with an increase in the risk of cancer. However, the current scientific consensus is that lowering the levels of carcinogens in the ambient air will result in a lower risk of cancer to the public.

Except for criteria air pollutants, there are no nationally established ambient standards for most chemical compounds or elements. However, for the protection of health, welfare, and safety of workers at the work place, there are federally established occupational standards, such as threshold limit values (TLV's), for most chemical compounds. Since no ambient standards exist, ambient concentrations for most pollutants have to be judged on a case-by-case basis to determine if there is a potential for adverse effects. In order to assist in making case-by-case decisions on individual compounds, the TACB staff has developed guidelines or screening values for toxic compounds found in ambient air. These guidelines may then be compared to modeled (or measured) concentrations of each compound. If the modeled concentrations are below the screening value then impacts are considered to be insignificant and no further review is performed. If modeled concentrations are above the screening value then a case-by-case review of the extent of public exposure and health effects information related to the compound is conducted to determine whether the predicted exposure level offers a sufficient margin of safety in protecting public health.

The TACB guideline screening levels for chemical compounds are conservative: usually equal to one one-hundredth (1.0%) of the TLV or other occupational standard for short-term, 30-minute averages and one one-thousandth (0.1%) of the TLV for long term, annual averages. They are conservative in order to account for longer exposure averaging times than encountered in a work environment and because of the potential to affect a broader spectrum of the population. TACB health effects staff may estimate an acceptable occupational exposure level in cases where an occupational limit has not been established or has not been updated to consider recent health effects studies.

As can be seen from this discussion, guideline screening levels are not ambient standards. They have been established to aid in eliminating negligible ambient concentrations from

further review. Since the guideline levels are used as a screening tool, predicting ambient concentrations above the guidelines does not necessarily imply that adverse health effects are likely to occur. The screening values for review of AN modeling results were established as 20 ppb to be compared to a short-term, 30-minute average and 2 ppb to be compared to an annual average.

Short-term (30-minute average) and long-term (annual average) modeling was performed using AN emission rates to determine the off-property, ground-level concentration, including the building downwash characteristics. Predicted results are shown in Table 2.

Review of the initial modeling results for three facilities (Du Pont, Sohio Chemical Company and Goodyear Tire & Rubber Company) concluded that the predicted levels of AN do not significantly exceed either screening value. Also, considering the stringency of the occupational standard on which the screening level is based, it was determined that the operation of these facilities at the current emission levels (and ambient impacts) offered a sufficient margin of safety in ensuring that there was not a significant increase in the risk of cancer for the exposed population. However, both 30-minute and the annual off-property predicted concentrations of AN from Monsanto Chemical, Inc. and Sterling Chemical, Inc. significantly exceeded the corresponding review guidelines.

The maximum predicted impact listed for the Monsanto facility occurred inside an adjacent industrial property owned by Monsanto Chemical, Inc. and leased to another chemical company. In order to evaluate impacts on property not owned by the company, further modeling was done to determine the maximum AN concentration for 30-minute and annual averages at two

residential areas nearest to Monsanto. The predicted results are shown in Table 3. Review of these results concluded that they do not significantly exceed screening guidelines. Also, assuming that there will not be any future development of residential buildings in the marsh land between the facility and the existing nearest dwellings and also that the current level of emissions is maintained, it was concluded that operation of the existing facility would not result in a significant increase in the risk of cancer for the exposed population.

The emissions from the Sterling Chemical facility were further modeled to determine the maximum predicted 30-minute and annual AN exposure at the nearest residential areas. The results are also given in Table 3. The predicted concentrations significantly exceeded corresponding review guidelines and were considered to be at a level which could warrant further AN control methods to reduce AN emissions and lower the level of potential public exposure to AN. Fugitive emissions from components have been identified as the major contributor to the predicted higher level of AN concentrations near residential areas. A detailed technology review conducted on the plant fugitive emissions reveals that acceptable AN exposure limits can be achieved by implementing a monitoring and maintenance program similar to the requirements for petroleum refineries and Synthetic Organic Chemical Manufacturing in TACB Regulation V. The primary difference in the control requirements would be that the action level would need to be 1,000 ppm (volume) instead of 10,000 ppm (volume). In addition, a repaired component would have to be monitored at less than 200 ppm to be accepted as repaired. Based on actual component counts from the company, calculations indicate that the effectiveness of such a fugitive monitoring program would reduce emissions by approximately 81.2%. Dispersion modeling was again performed assuming such a fugitive monitoring program had been implemented. The results indicate that the

screening values would not be significantly exceeded and that no adverse health effects would be expected to result from the operation of the Sterling Chemical facility after the fugitive emission reduction program has been implemented. It is recommended that the agency consider issuing a Board Order in accordance with Section 3.12 of the Texas Clean Air Act to Sterling Chemical Inc. requiring implementation of such a fugitive monitoring and maintenance program at this site.

Additionally, five minor AN sources have been identified in Texas. Four of them are minor AN users, where AN is used as a feedstock in the production of specialty chemicals. They are Dow Chemical U.S.A. at Freeport, Dixie Chemical Company at Pasadena, Texaco Chemical Company at Conroe, and Petrolite Corporation at Bayport. The fifth source is Intercontinental Terminals Company at Deer Park, a public storage facility. The AN emission rates from these facilities are shown in Table 4. Only one of the AN minor sources was subjected to dispersion modeling. The source with the highest emission rate (Intercontinental Terminals Company) was initially modeled to determine the order of magnitude of AN ground-level concentration outside the company property line. The annual model predicted results for Intercontinental Terminals fell far below the AN review guidelines, so no further review was considered to be warranted for the other AN minor sources.

Table 1

Acrylonitrile Emissions From Major Sources

Company Name	Emission Rate (Tons/Year)
E.I. Du Pont	25.94
Monsanto Chemical	176.32
Sterling Chemical	53.23
Sohio	13.22
Goodyear Tire and Rubber	7.15

Table 2

Acrylonitrile Dispersion Modeling

Company Name	Ground Level Concentration (ppb)	
	30-Minute (Short Term)	Annual (Long Term)
E.I. Du Pont	79.19	1.18
Monsanto Chemical	808.14	12.31
Sterling Chemical	1395.0	59.5
Sohio	36.88	0.36
Goodyear Tire and Rubber	39.37	1.54

Table 3

Predicted Acrylonitrile Concentrations at Residential Areas Near Monsanto and Sterling Facilities

Company	30-Minute (ppb)	Annual (ppb)	Residential Location
Monsanto	131.9	2.1	Area 1
	70.7	1.3	Area 2
Sterling	386.8	4.0	Area 1

Table 4

Acrylonitrile Minor Emission Sources

Company Name	Emission Rate (Tons/Year)
Dow Chemical	0.04
Texaco Chemical	0.93
Petrolite Corp.	0.02
Dixie Chemical	1.96
Intercontinental Terminals	5.3