Commonwealth Edison Company
Braidwood Generating Station
Route #1, Box 84
Braceville, IL 60407-9619
Tel 815-458-2801

ComEd

March 16, 2000
BW000031

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Notification of Renewal of the Braidwood Station National Pollutant Discharge Elimination System (NPDES) Permit No. IL0048321

Reference: Letter from G. Vanderheyden (ComEd) to T. G. McSwiggin (Illinois Environmental Protection Agency), "Renewal of NPDES Permit No. IL0048321 Braidwood Nuclear Generating Station," dated February 29, 2000.

The Reference letter submitted copies of the Consolidated Permit Application Forms for the renewal of the Braidwood Station NPDES Permit No. IL0048321 to the Illinois Environmental Protection Agency. In accordance with the Braidwood Station Technical Specifications, Appendix B, "Environmental Protection Plan (Non-Radiological)," we are providing the NRC a copy of the application for renewal of the NPDES Permit.

If you have any questions about this letter, please contact T. W. Simpkin at (815) 458-2801, extension 2980.

Respectfully,

T. J. Tulon
Vice President – Braidwood Station

Attachment

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Braidwood Station

C001

ATTACHMENT

BRAIDWOOD STATION NPDES PERMIT NO. IL0048321

Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515-5701

ComEd

February 29, 2000

CERTIFIED MAIL

Mr. Thomas G. McSwiggin, P. E.
Manager, Permit Section
Water Pollution Control, Permit Section #15
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Subject: Renewal of NPDES Permit No. IL0048321
Braidwood Nuclear Generating Station

Dear Mr. McSwiggin:

Commonwealth Edison Company hereby submits two copies of Consolidated Permit Application Forms 1 and 2C for the renewal of the subject permit. As confirmed by your letter dated July 24, 1997, the only Form 2C, Part V-A pollutants reported are those required by the station's existing NPDES permit, and no analytical data is presented for outfalls 001(e) – Intake Screen Backwash, 002 – North Site Stormwater Runoff Basin, 003 – South Site Stormwater Runoff Basin, and 004 – Switchyard Area Runoff. Additionally, pollutants categorized as GC/MS Fraction Compounds in Part V-C are not reported for any outfalls, as per your letter received on February 4, 1998.

Pollutant levels for all permit-required parameters were derived from station data reported from June 1998 through May 1999. In most cases, only one analysis was conducted for all other pollutant data. All color analyses were performed as "true" (i.e., the samples were centrifuged prior to analysis). Mass load values were calculated using long term average flows.

Form 2C, Part IIB requires descriptions of wastewater treatment processes. In addition to this requirement, we are listing the water treatment additives that have the potential of being discharged by way of various outfalls. Material Safety Data Sheets (MSDS) have been enclosed where available.

Outfall 001 – Cooling Pond Blowdown, receives no treatment as wastewater, however, the circulating water and service water systems are treated for scale inhibition, silt dispersion, corrosion inhibition and biofouling control as follows:

DepositTrol BL5400, a liquid acidic scale inhibitor consisting of 60% 1-Hydroxyethylidene-1, 1-DiPhosphonic Acid (HEDP), is applied to the cooling systems at a concentration of approximately 10 to 65 parts per billion (ppb) as product to minimize the risk of calcium carbonate scale formation. Either DepositTrol PY5203, a 50% active blend of polyacrylic acid (PAA), or Dianodic DN2300, a 30% active blend of the polyacrylic acid based copolymer HPS-1, is applied to the service water systems to aid in silt dispersion. FloGard POT6102, a polyphosphate corrosion inhibitor containing 35% sodium hexametaphosphate, is applied to the service water systems to inhibit corrosion. Lastly, the circulating water and service water systems are treated with sodium hypochlorite and sodium bromide for biofouling control.

Outfall 001(a) – Wastewater Treatment Plant Effluent, may be treated with cationic and anionic polymers to aid coagulation/flocculation. There also exists a slight possibility that a small amount of nitrite may be discharged from outfall 001(a) when the station's closed cycle bearing cooling water system is drained for service. This system is treated with 400 mg/L nitrite, but occurrences of release are expected to be very rare. In the past, the system's 5000 gallon holding tank has discharged, at most, once per year. Due to the fact that this system discharges into outfall 001(c) and that nitrites degrade rapidly under aerobic conditions, we believe that the environmental impact of such a discharge is minimal.

Outfall 001(b) – Sewage Treatment Plant Effluent, may be treated with sodium bicarbonate for pH adjustment and carbonate addition during the treatment process.

Outfall 001(d) – Demineralizer Regenerant Wastes, consists of excess sulfuric acid, excess caustic, and rinse water used to regenerate the ion exchange the ion exchange resin beds that supply ultra-pure water required by the generating process. Additionally, please note that the station utilizes a portable demineralizer system to supplement demineralized water make-up. This portable system utilizes reverse osmosis (RO), electrodialysis reversal (EDR), and ultra-filtration (UF) technologies. Reject from the EDR and UF systems are recycled. Reject from the RO unit combines with regenerant wastes from the demineralizer system and is discharged via outfall 001(d).

In addition to the chemicals listed above, secondary-side steam water (non-radioactive) containing hydrazine is discharged to the Kankakee River via Outfall 001 during unit outages. These outages typically result in the semi-annual discharge of about 200,000 gallons of a 100 mg/l hydrazine solution. This solution is discharged to the cooling pond at approximately 55 GPM via the station's wastewater treatment plant - Outfall 001a, resulting in a maximum possible hydrazine concentration of 2.7 ug/l in the cooling pond blowdown (Outfall 001). Please note that this concentration is overly conservative as no dilution from other sources is considered; hydrazine readily undergoes a degradation reaction to ammonia in the presence of oxygen; and this discharge must travel the entire length of the cooling pond prior to reaching the blowdown point (approximately 4.5 days travel time). Also, the station has the ability to utilize Nalco Elimin-Ox, a carbohydrazide-based product, in place of hydrazine to lay up the steam generators during unit outages.

Lastly, no chemical treatment is applied to outfall 001(e) – Intake Screen Backwash.

Agency guidance relative to previous NPDES permit applications for ComEd nuclear generating stations indicated a need to provide additional detail on the contributing wastestreams for each outfall. As such, we request that the new permit be amended to reflect that the following systems discharge via outfall 001(a) – Wastewater Treatment Plant Effluent:

Under 1. Turbine building fire and oil sump; please add:

h. Miscellaneous non-contaminated auxiliary building drains

Should you have any questions, or require additional information, please call Kevin K. Hersey at (630) 663-3094.

Sincerely,

George Vanderheyden
Generation Support Vice President

k/sheila/letters/braidwood renewal.doc

Enclosure (2 copies)

(Fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved. OMB No. 2040-0086 Approval expires 7-31-88

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA NUMBER

F | ILD000800505 | | D

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a discharge to waters of the U.S.?		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above?	X		X
E. Does or will this facility treat, store, or dispose of hazardous wastes?		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons?		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area?		X	

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.?		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.?		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water?		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy?		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area?		X	

III. NAME OF FACILITY

1 | SKIP | Commonwealth Edison Braidwood Station

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 TIDMORE JOSEPH ENV. ANALYST	815 458 2801

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 | RURAL ROUTE 1 Box 84

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 BRACEVILLE	IL	60407

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 | Rural Route 1, Box 84

B. COUNTY NAME

Will

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 Braceville	IL	60407	

EPA Form 3510-1 (Rev. 10-80)

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
4911 (specify) Electrical Generation & Distributio	(specify)

C. THIRD	D. FOURTH
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: Commonwealth Edison Company

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; M = PUBLIC (other than federal or state); S = STATE; O = OTHER (specify); P = PRIVATE
P (specify)

D. PHONE (area code & no.): A 630 663 3094

E. STREET OR P.O. BOX: 1400 OPUS PLACE SUITE 500

F. CITY OR TOWN: DOWNERS GROVE

G. STATE: IL

H. ZIP CODE: 60515

IX. INDIAN LAND
Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
9 N IL0048321	9 P

B. UIC (Underground Injection of Fluids)	E. OTHER (specify)
9 U	9 82110055 (specify) Air-Radwaste Vol. Reduct. System

C. RCRA (Hazardous Wastes)	E. OTHER (specify)
9 R	9 79020011 (specify) Air-Aux. Boilers, Tanks Diesel Generator

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Generation and Distribution of Electric Power

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
GENERATION SUPPORT VICE PRESIDENT		2.29.00

COMMENTS FOR OFFICIAL USE ONLY

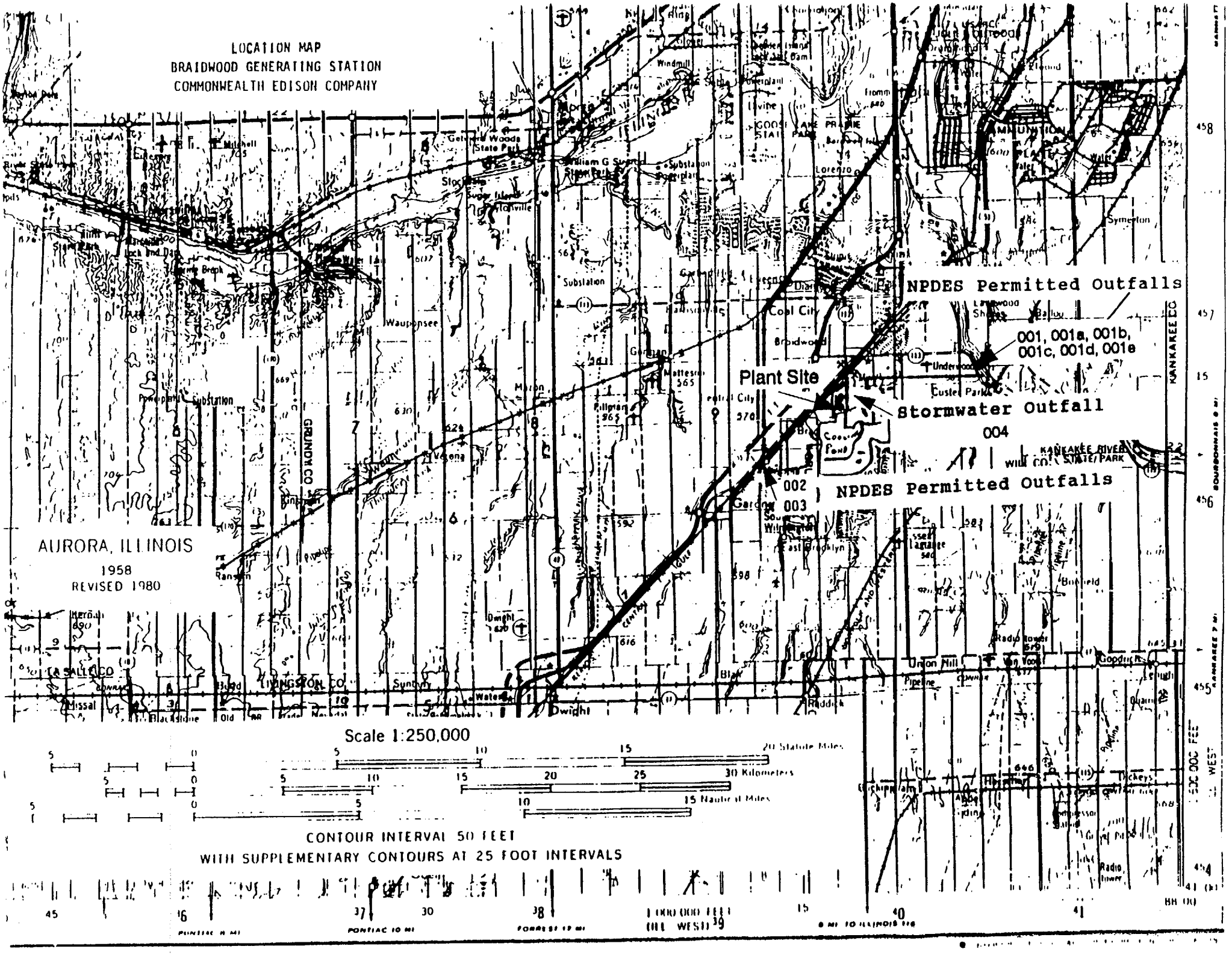
C

ILD 000 800 505

Braidwood Station

Form 1, Part X – Other Permits (Cont.)

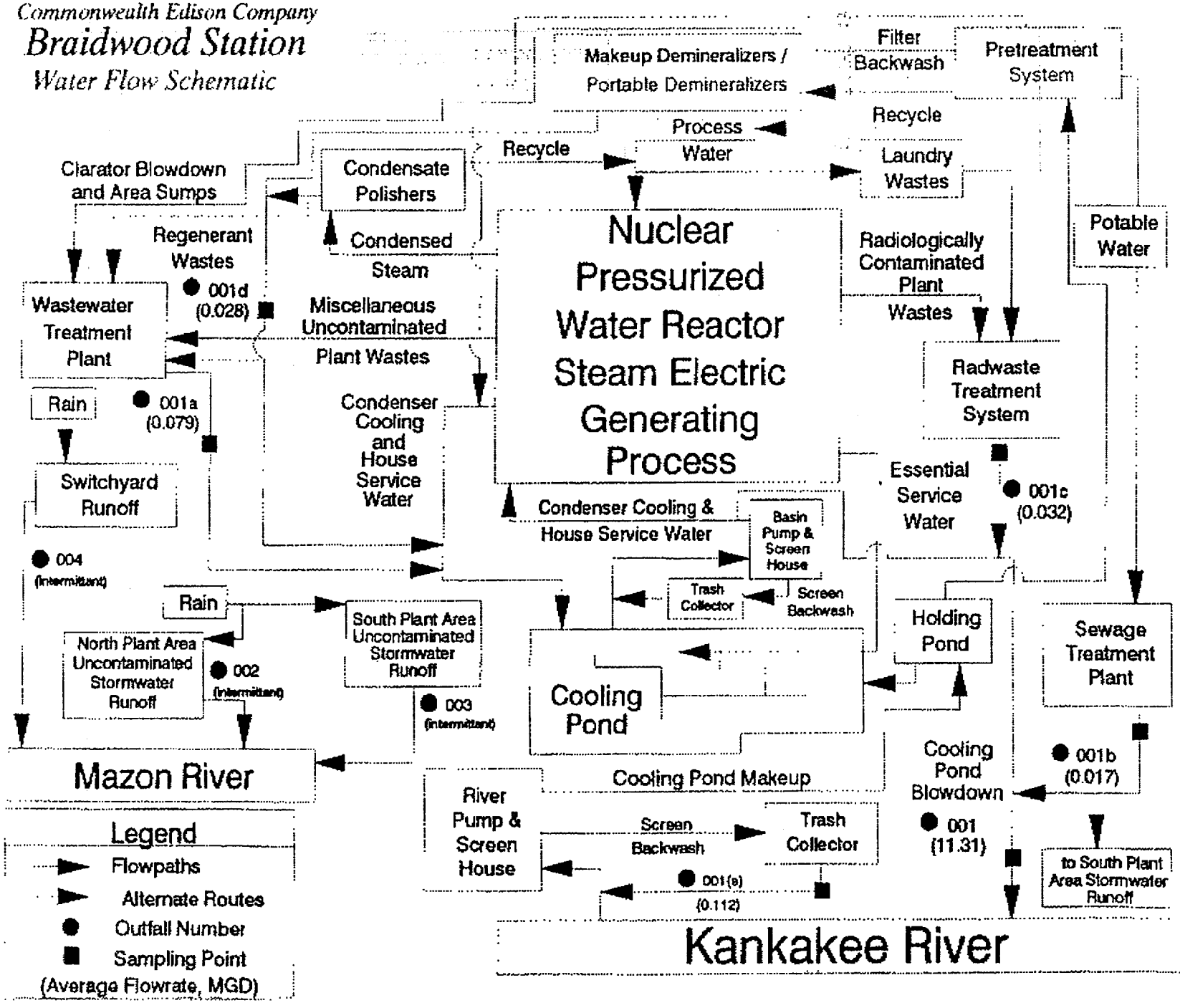
1996 – SC – 2148 Sewage Sludge Land Application Permit


LOCATION MAP
BRAIDWOOD GENERATING STATION
COMMONWEALTH EDISON COMPANY
NPDES Permitted Outfalls
001, 001a, 001b,
001c, 001d, 001e
Plant Site
Stormwater Outfall
004
002
003
NPDES Permitted Outfalls
AURORA, ILLINOIS
1958
REVISED 1980
Scale 1:250,000
CONTOUR INTERVAL 50 FEET
WITH SUPPLEMENTARY CONTOURS AT 25 FOOT INTERVALS

Commonwealth Edison Company

Braidwood Station

Water Flow Schematic



Please print or type in the unshaded areas only.

EPA I.D. NUMBER *(copy from Item 1 of form 1)*
ILD000800505

Form Approved.
OMB No. 2000-0059 Approval
expires 12-31-85

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN.	3. SEC.	1. DEG	2. MIN.	3. SEC.	
001	41	15	00	88	08	00	Kankakee River
001(a)	41	15	00	88	08	00	Kankakee River
001(b)	41	15	00	88	08	00	Kankakee River
001(c)	41	15	00	88	08	00	Kankakee River
001(d)	41	15	00	88	08	00	Kankakee River
001(e)	41	15	00	88	08	00	Kankakee River
002	41	12	15	88	16	45	Mazon River
003	41	12	15	88	16	45	Mazon River
004	41	12	15	88	16	45	Mazon River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g. for certain mining activities)*, provide a pictorial description of the nature and amount of any source of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Cooling Pond Blowdown		Evaporative Heat Loss;	X-X	
	(Condenser Cooling Water; House Service Water;		Discharge to Surface Water	4-A	
	Essential Service Water; Demineralizer				
	Regenerant Waste; Wastewater Treatment Plant				
	Effluent; House Service Water and Essential				
	Service Water Strainer Backwashes; Sewage				
	Treatment Plant Effluent; Water Pretreatment				
	System Filter Backwash; River Intake Screen				
	Backwash; Cooling Pond Intake Screen				
	Backwash)				
001(a)	Wastewater Treatment Plant Effluent		Oil/Water Separation, Equalization	X-X	X-X
	(Turbine Building Fire and Oil Sump [Turbine		(Turbine Building Fire and Oil Sump		
	Building Floor Drain Tank consisting of turbine		Only); Sedimentation; Equalization	1-U	X-X
	building floor drain sumps, essential service water		(Water Pre-treatment Lime Softening		
	drain sumps, condensate pit sumps; Turbine		Clarator Blowdown only);		
	Building Equipment Drain Tank; Units 1&2 Tendon		Equalization, Coagulation,	X-X	2-D
	Tunnel Sumps; Aux. Boiler Blowdown; Unit 1&2		Flocculation, Floatation,	1-G	1-H
	Diesel Fuel Storage Tanks Sumps; Oil Water		Multimedia Filtration, Microstraining	1-Q	1-N
	Separator No. 1 Effluent; Secondary-Side Drain		Buffering with Circulating Water,	X-X	
	Water] Water Pretreatment Area Floor and		Sludge - air dried, Landfill	X-X	5-Q
	Equipment Drain Sumps; Water Treatment Lime				
	Softening Clarator Blowdown;				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

Please print or type in the unshaded areas only.

EPA I.D. NUMBER *(copy from Item 1 of form 1)*
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FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

1. OUTFALL NO *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001(a) con't	Wastewater Treatment System Sand Filter				
	Backwash; Condensate Polisher Regenerant				
	Wastes (alternate route); Make-up Demineralizer				
	Regenerant Waste (alternate route))				
001(b)	Sewage Treatment Plant		Grinding, Equalization	1-L	X-X
			Activated Sludge; Sedimentation,	3-A	1-U
			Gravity Filtration, Disinfection;	X-X	2-F
			Sludge to Landfill	5-Q	
001(c)	Radwaste Treatment System Effluent		Ion Exchange; Evaporation;	2-J	1-F
	(Steam Generator Condensate Blowdown;		Reuse/Recycle of Treated Effluent;	4-C	
	Cooling Jacket Blowdown; Auxiliary Building		Microstraining, Oil/Water Separation;	1-H	X-X
	Floor Drains; Laundry Waste Treatment System		Carbon Adsorption;	2-A	
	Drains; Chemical and Volume Control System		Buffering with Circulation Water -	X-X	
	Drains; Boron Recycle System Blowdown;		(the above treatment may be used		
	Radwaste Demineralizer Regenerant Wastes;		singularly or together in combination)		
	Reactor Building Floor and Equipment Drains;				
	Turbine Building Fire and Oil Sump (alternate				
	route); Turbine Building Equipment Drain Tank				
	(alternate route); Turbine Building Floor Drain				
	Tank (alternate route); Evaporator Wastewater)				
001(d)	Demineralizer Regenerant Wastes		Microstraining (Condensate	1-N	
	(Make-up Demineralizer Regenerant Waste;		Polisher Regenerant Waste);		
	Condensate Polisher Waste; Regenerant		Buffering with Circulation Water	X-X	
	Chemical Area Drains; Portable Demineralizer				
	Regenerant Wastes [electrodialysis reversal		Reuse/Recycle (EDR and UF	4-C	
	(EDR), ultrafiltration (UF), and reverse osmosis		wastes)		
	(RO)])				
001(e)	River Intake Screen Backwash		Screening	1-T	
002	North Site Stormwater Runoff Basin	Intermittant	Oil/Water Separation	X-X	
	(Parking Lot Runoff; Transformer Area Runoff;				
	North Station Area Runoff; Turbine Building,				
	Aux Building and Waste Treatment Building				
	Roof Drains)				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

Please print or type in the unshaded areas only.

EPA I.D. NUMBER *(copy from Item 1 of form 1)*
ILD000800505

Form Approved.
OMB No. 2000-0059 Approval expires 12-31-85

FORM **2C** NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

1. OUTFALL NO *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
003	South Site Stormwater Runoff Basin	Intermittant			
	(South Station Area Runoff; Parking Lot Runoff;				
	Sewage Treatment Plant Effluent (alternate				
	route)				
004	Switchyard Area Runoff	Intermittant	Oil/Water Separation	X-X	

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

CONTINUED FROM THE FRONT

C. except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

[X] YES *(complete the following table)* [ ] NO *(go to Section III)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY a. DAYS PER WEEK *(specify average)*	3. FREQUENCY b. MONTHS PER YEAR *(specify average)*	4. FLOW a. FLOW RATE *(in mgd)* 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE *(in mgd)* 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME *(specify with units)* 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME *(specify with units)* 2. MAXIMUM DAILY	4. FLOW c. DURATION *(in days)*
001(c)	Rad Waste Treatment System Effluent							
001(d)	Demineralizer Regenerant Wastes							
001(e)	River Intake Screen Backwash							

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

[X] YES *(complete Item III-B)* [ ] NO *(go to Section IV)*

B. Are limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

[ ] YES *(complete Item III-C)* [X] NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	2. AFFECTED OUTFALLS *(list outfall numbers*
		N/A	

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or Local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

[ ] YES *(complete the following table)* [X] NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. NO.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED

B. OPTIONAL: You may wish to attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

[ ] MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED.

EPA I.D. NUMBER *(copy from Item 1 of form 1)*
ILD000800505

Form Approved.
OMB No. 2000-0059 Approval
expires 12-31-85

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B,& C: See instructions before proceeding - Complete one set of tables for each outfall - Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
	N/A		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

[ ] YES *(list all such pollutants below)* [X] NO *(go to Item VI-B)*

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of you discharges or on a receiving water in relation to your discharge within the last 3 years?

[ ] YES *(identify the test(s) and describe their purposes below)* [X] NO *(go to Section VIII)*

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

[X] YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* [ ] NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Test America	850 W. Bartlett Road Bartlett, IL 60103	(630) 289-3100	All parameters except radioactivity for outfalls 001, 001(a), 001(b) and 001(d)
Quanterra Labs	13715 Rider Trail North Earth City, MO 63045	(800) 333-3305	All analyses for outfall 001(c) and radioactivity for all outfalls

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Generation Support Vice President	630-663-7995
C. SIGNATURE	D. DATE SIGNED
[signature]	2-29-00

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

EPA I.D. NUMBER *(copy from Item1 of Form 1)*: ILD000800505

Form Approved
OMB No. 2000-0059
Approval expires 12-31-85

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	3. UNITS a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) d. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)								mg/L	lbs/day			
b. Chemical Oxygen Demand (COD)								mg/L	lbs/day			
c. Total Organic Carbon (TOC)								mg/L	lbs/day			
d. Total Suspended Solids (TSS)								mg/L	lbs/day			
e. Ammonia								mg/L	lbs/day			
f. Flow	VALUE	19.79	VALUE	15.71	VALUE	11.77	365	MGD		VALUE		
g. Temperature *(winter)*	VALUE	17.8	VALUE	13.3	VALUE	11.3	120	°C		VALUE	3.3	120
h. Temperature *(summer)*	VALUE	33.3	VALUE	31.7	VALUE	29	120	°C		VALUE	22.8	120
i. pH	MINIMUM 7.81	MAXIMUM 8.8	MINIMUM	MAXIMUM			52	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		5.50	540.21					1	mg/L	lbs/day	< 0.50		1
b. Chlorine, Total Residual	X		0.05	4.91	< 0.04	< 3.44	< 0.03	< 2.95	12	mg/L	lbs/day			
c. Color	X		34						1	Pt-Co		61		1
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		3.34	328.06					1	mg/L	lbs/day	0.22		1
f. Nitrate-Nitrite *(as N)*	X		< 1.0	< 98.2					1	mg/L	lbs/day	< 1.0		1

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		1.11	109.02					1	mg/L	lbs/day	0.62		1
h. Oil and Grease	X		< 5	< 491					4	mg/L	lbs/day	5		4
i. Phosphorus (as P), Total (7723-14-0)	X		0.09	8.84					1	mg/L	lbs/day	0.10		1
j. Radioactivity														
(1) Alpha, Total	X		8							pCi/L				
(2) Beta, Total	X		15.1							pCi/L				
(3) Radium, Total	X		< 1.0							pCi/L				
(4) Radium 226, Total	X		< 1.0							pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		250	24555					1	mg/L	lbs/day	113		1
l. Sulfide (as S)	X		< 0.1	< 9.8					1			< 0.10		1
m. Sulfite (as SO_3) (14266-46-3)		X												
n. Surfactants	X		< 0.05	< 4.91					1	mg/L	lbs/day	< 0.05		1
o. Aluminum, Total (7429-90-5)	X		0.10	9.82					1	mg/L	lbs/day	0.340		1
p. Barium, Total (7440-39-3)	X		0.038	3.732					1	mg/L	lbs/day	0.042		1
q. Boron, Total (7440-42-8)	X		0.363	35.654					1	mg/L	lbs/day	0.292		1
r. Cobalt, Total (7440-48-4)	X		< 0.10	< 9.82					1	mg/L	lbs/day	< 0.10		1
s. Iron, Total (7439-89-6)	X		0.359	35.261					1	mg/L	lbs/day	0.590		1
t. Magnesium, Total (7439-95-4)	X		82	8054					1	mg/L	lbs/day	28		1
u. Molybdenum, Total (7439-98-7)	X		< 0.10	< 9.82					1	mg/L	lbs/day	< 0.10		1
v. Manganese, Total (7439-96-5)	X		0.016	1.572					1	mg/L	lbs/day	0.054		1
w. Tin, Total (7440-31-5)	X		< 1.0	< 98.2					1	mg/L	lbs/day	< 1.0		1
x. Titanium, Total (7440-32-6)	X		< 0.10	< 9.82					1	mg/L	lbs/day	< 0.10		1

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb of greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are seven pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			< 0.50	< 49.11					1	mg/L	lbs/day	< 0.50		1
2M. Arsenic, Total (7440-38-2)	X			< 0.0050	< 0.4911					1	mg/L	lbs/day	< 0.0050		1
3M. Beryllium, Total (7440-41-7)	X			< 0.0050	< 0.4911					1	mg/L	lbs/day	< 0.0050		1
4M. Cadmium, Total (7440-43-9)	X			< 0.010	< 0.982					1	mg/L	lbs/day	< 0.010		1
5M. Chromium, Total (7440-47-3)	X			< 0.040	< 3.929					1	mg/L	lbs/day	< 0.040		1
6M. Copper, Total (7440-50-8)	X			< 0.004	< 0.393					1	mg/L	lbs/day	0.004		1
7M. Lead, Total (7439-92-1)	X			< 0.200	< 19.644					1	mg/L	lbs/day	< 0.200		1
8M. Mercury, Total (7439-97-6)	X			< 0.0002	< 0.0196					1	mg/L	lbs/day	< 2E-04		1
9M. Nickel, Total (7440-02-0)	X			< 0.050	< 4.911					1	mg/L	lbs/day	< 0.050		1
10M. Selenium, Total (7782-49-2)	X			< 0.0050	< 0.4911					1	mg/L	lbs/day	< 0.0050		1
11M. Silver, Total (7440-22-4)	X			< 0.040	< 3.929					1	mg/L	lbs/day	< 0.040		1
12M. Thallium, Total (7440-28-0)	X			< 0.20	< 19.64					1	mg/L	lbs/day	< 0.20		1
13M. Zinc, Total (7440-66-6)	X			< 0.020	< 1.964					1	mg/L	lbs/day	< 0.020		1
14M. Cyanide, Total (57-12-5)	X			< 0.005	< 0.491					4	mg/L	lbs/day	< 0.005		4
15M. Phenols, Total	X			< 0.020	< 1.964					4	mg/L	lbs/day	< 0.020		4
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	**DESCRIBE RESULTS**											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X												
8V Chlorodibromomethane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromomethane (75-27-4)			X												
13V. Dichlorodifluoromethane (75-71-8)			X												
14V. 1,1-Dichloroethane (75-34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V. 1,3-Dichloropropylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V. Methyl bromide (74-83-9)			X												
21V. Methyl chloride (74-87-3)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. CONCEN TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS *(continued)*															
22V. Methylene chloride (75-09-2)			X												
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)			X												
24V. Tetrachloroethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans-dichloro-ethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V. Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoro-methane (75-69-4)			X												
31V. Vinyl chloride (75-01-4)			X												
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120-83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-06-2)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c.LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Antracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) anthracene (56-55-3)			X												
6B. Benzo (a) pyrene (50-32-8)			X												
7B. 3,4-Benzofluoranthene (205-99-2)			X												
8B. Benzo (ghi) perylene (191-24-2)			X												
9B. Benzo (k) fluoranthene (207-08-9)			X												
10B. Bis (2chloroethox-y) methane (111-91-1)			X												
11B. Bis (2-chloroethyl) ether (111-44-4)			X												
12B. Bis (2-chloroiso-propyl) ether (102-60-1)			X												
13B. Bis (2-ethylhexyl) phthalate (117-81-7)			X												
14B. 4-Bromophenyl phenyl ether (101-55-3)			X												
15B. Butyl benzyl phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)			X												
17B. 4-Chlorophenyl phenyl ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) anthracene (53-70-3)			X												
20B. 1.2-Dichlorobenzene (95-50-1)			X												
21B 1,3-Dichlorobenzene (541-73-1)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzedine (91-94-1)			X												
24B. Diethyl phthalate (84-66-2)			X												
25B. Dimethyl phthalate (131-11-3)			X												
26B. Di-N-butyl phthalate (84-74-2)			X												
27B. 2,4-Dinitrotolune (121-14-2)			X												
28B. 2,6-Dinitrotolune (606-20-2)			X												
29B. Di-N-octyl phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachlorobenzene (118-74-1)			X												
34B. Hexachlorobutadiene (87-68-3)			X												
35B. Hexachlorocyclopentadiene (77-47-4)			X												
36B. Hexachloroethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitrosodimethylamine (62-75-9)			X												
42B. N-Nitrosodi-N-propylamine (621-64-7)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c.LONG TERM AVRG. VALUE (if available)		d. NO. OF ANAL-YSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodi-phenylamine (86-30-6)			X												
44B. Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Trichloro-benzene (120-82-1)			X												
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Alde-hyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

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V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001(a)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANAL-YSES	3. UNITS a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCEN-TRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) d. NO. OF ANAL-YSES
a. Biochemical Oxygen Demand (BOD)								mg/L	lbs/day			
b. Chemical Oxygen Demand (COD)								mg/L	lbs/day			
c. Total Organic Carbon (TOC)								mg/L	lbs/day			
d. Total Suspended Solids (TSS)	11.6	6.00	5.8	2.98	< 3.0	< 1.58	52	mg/L	lbs/day			
e. Ammonia								mg/L	lbs/day			
f. Flow	VALUE	0.110	VALUE	0.075	VALUE	0.062	365	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANAL-YSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCEN-TRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANAL-YSES
a. Bromide (24959-67-9)		X								mg/L	lbs/day			
b. Chlorine, Total Residual		X								mg/L	lbs/day			
c. Color	X		111						1	Pt-Co				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		0.13	0.07					1	mg/L	lbs/day			
f. Nitrate-Nitrite *(as N)*	X		< 1.0	< 0.5					1	mg/L	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
g. Nitrogen, Total Organic *(as N)*	X		1.10	0.57					1	mg/L	lbs/day			
h. Oil and Grease	X		5	2.3	5	2.3	< 2	< 1.3	12	mg/L	lbs/day			
i. Phosphorus *(as P)* , Total (7723-14-0)	X		0.05	0.03					1	mg/L	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		1						1	pCi/L				
(2) Beta, Total	X		3.5						1	pCi/L				
(3) Radium, Total	X		< 1.0						1	pCi/L				
(4) Radium 226, Total	X		< 1.0						1	pCi/L				
k. Sulfate *(as SO_4)* (14808-79-8)	X		87	45					1	mg/L	lbs/day			
l. Sulfide *(as S)*	X		< 2.0	< 1.0					1					
m. Sulfite *(as SO_3)* (14266-46-3)		X												
n. Surfactants	X		0.19	0.10					1	mg/L	lbs/day			
o. Aluminum, Total (7429-90-5)	X		< 0.10	< 0.05					1	mg/L	lbs/day			
p. Barium, Total (7440-39-3)	X		< 0.020	< 0.010					1	mg/L	lbs/day			
q. Boron, Total (7440-42-8)	X		0.172	0.089					1	mg/L	lbs/day			
r. Cobalt, Total (7440-48-4)	X		< 0.10	< 0.05					1	mg/L	lbs/day			
s. Iron, Total (7439-89-6)	X		0.102	0.053					1	mg/L	lbs/day			
t. Magnesium, Total (7439-95-4)	X		18	9.3					1	mg/L	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		< 0.10	< 0.05					1	mg/L	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.011	0.006					1	mg/L	lbs/day			
w. Tin, Total (7440-31-5)	X		< 1.0	< 0.5					1	mg/L	lbs/day			
x. Titanium, Total (7440-32-6)	X		< 0.10	< 0.05					1	mg/L	lbs/day			

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PART C - if you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb of greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are seven pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)		X		< 0.50	< 0.26					1	mg/L	lbs/day			
2M. Arsenic, Total (7440-38-2)		X		< 0.0050	< 0.0026					1	mg/L	lbs/day			
3M. Beryllium, Total (7440-41-7)		X		< 0.0050	< 0.0026					1	mg/L	lbs/day			
4M. Cadmium, Total (7440-43-9)		X		< 0.010	< 0.005					1	mg/L	lbs/day			
5M. Chromium, Total (7440-47-3)		X		< 0.040	< 0.021					1	mg/L	lbs/day			
6M. Copper, Total (7440-50-8)		X		0.006	0.003					1	mg/L	lbs/day			
7M. Lead, Total (7439-92-1)		X		< 0.200	< 0.103					1	mg/L	lbs/day			
8M. Mercury, Total (7439-97-6)		X		< 0.0002	< 0.0001					1	mg/L	lbs/day			
9M Nickel, Total (7440-02-0)		X		< 0.050	< 0.026					1	mg/L	lbs/day			
10M. Selenium, Total (7782-49-2)		X		< 0.0050	< 0.0026					1	mg/L	lbs/day			
11M. Silver, Total (7440-22-4)		X		< 0.040	< 0.021					1	mg/L	lbs/day			
12M. Thallium, Total (7440-28-0)		X		< 0.20	< 0.10					1	mg/L	lbs/day			
13M. Zinc, Total (7440-66-6)		X		< 0.020	< 0.010					1	mg/L	lbs/day			
14M. Cyanide, Total (57-12-5)		X		< 0.005	< 0.003					4	mg/L	lbs/day			
15M. Phenols, Total		X		< 0.020	< 0.010					4	mg/L	lbs/day			
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)			X	**DESCRIBE RESULTS**											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c.LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X												
8V. Chlorodibromomethane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromomethane (75-27-4)			X												
13V. Dichlorodifluoromethane (75-71-8)			X												
14V. 1,1-Dichloroethane (75-34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V. 1,3-Dichloropropylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V. Methyl bromide (74-83-9)			X												
21V. Methyl chloride (74-87-3)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. CONCEN TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS *(continued)*															
22V. Methylene chloride (75-09-2)			X												
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)			X												
24V. Tetrachloroethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans-dichloro-ethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V. Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoro-methane (75-69-4)			X												
31V. Vinyl chloride (75-01-4)			X												
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120-83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-06-2)			X												

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Antracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) anthracene (56-55-3)			X												
6B. Benzo (a) pyrene (50-32-8)			X												
7B. 3,4-Benzofluoranthene (205-99-2)			X												
8B. Benzo (ghi) perylene (191-24-2)			X												
9B. Benzo (k) fluoranthene (207-08-9)			X												
10B. Bis (2chloroethox-y) methane (111-91-1)			X												
11B. Bis (2-chloroethyl) ether (111-44-4)			X												
12B. Bis (2-chloroiso-propyl) ether (102-60-1)			X												
13B. Bis (2-ethylhexyl) phthalate (117-81-7)			X												
14B. 4-Bromophenyl phenyl ether (101-55-3)			X												
15B. Butyl benzyl phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)			X												
17B. 4-Chlorophenyl phenyl ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) anthracene (53-70-3)			X												
20B. 1,2-Dichlorobenzene (95-50-1)			X												
21B. 1,3-Dichlorobenzene (541-73-1)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzedine (91-94-1)			X												
24B. Diethyl phthalate (84-66-2)			X												
25B. Dimethyl phthalate (131-11-3)			X												
26B. Di-N-butyl phthalate (84-74-2)			X												
27B. 2,4-Dinitrotolune (121-14-2)			X												
28B. 2,6-Dinitrotolune (606-20-2)			X												
29B. Di-N-octyl phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachlorobenzene (118-74-1)			X												
34B. Hexachlorobutadiene (87-68-3)			X												
35B. Hexachlorocyclopentadiene (77-47-4)			X												
36B. Hexachloroethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitrosodimethylamine (62-75-9)			X												
42B. N-Nitrosodi-N-propylamine (621-64-7)			X												

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c.LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)			X												
44B Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Trichlorobenzene (120-82-1)			X												
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. CONCEN TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

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V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001(b)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	3. UNITS a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) d. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	65.0	10.8	35.2	5.9	< 10.1	< 1.7	52	mg/L	lbs/day			
b. Chemical Oxygen Demand (COD)								mg/L	lbs/day			
c. Total Organic Carbon (TOC)								mg/L	lbs/day			
d. Total Suspended Solids (TSS)	19.3	3.2	11.9	2.0	6.6	1.1	52	mg/L	lbs/day			
e. Ammonia								mg/L	lbs/day			
f. Flow	VALUE	0.045	VALUE	0.029	VALUE	0.020	260	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 6.15	MAXIMUM 8.15	MINIMUM	MAXIMUM			52	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
a. Bromide (24959-67-9)		X								mg/L	lbs/day			
b. Chlorine, Total Residual		X								mg/L	lbs/day			
c. Color	X		68						1	Pt-Co				
d. Fecal Coliform	X													
e. Fluoride (16984-48-8)	X		0.13	0.02					1	mg/L	lbs/day			
f. Nitrate-Nitrite *(as N)*	X		64.0	10.7					1	mg/L	lbs/day			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
g. Nitrogen, Total Organic *(as N)*	X		0.50	0.08					1	mg/L	lbs/day			
h. Oil and Grease	X		< 5	< 0.8					4	mg/L	lbs/day			
i. Phosphorus *(as P)*, Total (7723-14-0)	X		4.9	0.8					1	mg/L	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		2						1	pCi/L				
(2) Beta, Total	X		26.2						1	pCi/L				
(3) Radium, Total	X		< 1.0						1	pCi/L				
(4) Radium 226, Total	X		< 1.0						1	pCi/L				
k. Sulfate *(as SO_4)* (14808-79-8)	X		27	4					1	mg/L	lbs/day			
l. Sulfide *(as S)*	X		< 1.0	< 0.2					1					
m. Sulfite *(as SO_3)* (14266-46-3)		X												
n. Surfactants	X		0.09	0.02					1	mg/L	lbs/day			
o. Aluminum, Total (7429-90-5)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
p. Barium, Total (7440-39-3)	X		< 0.020	< 0.003					1	mg/L	lbs/day			
q. Boron, Total (7440-42-8)	X		0.153	0.026					1	mg/L	lbs/day			
r. Cobalt, Total (7440-48-4)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
s. Iron, Total (7439-89-6)	X		0.101	0.017					1	mg/L	lbs/day			
t. Magnesium, Total (7439-95-4)	X		19	3.2					1	mg/L	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
v. Manganese, Total (7439-96-5)	X		< 0.010	< 0.002					1	mg/L	lbs/day			
w. Tin, Total (7440-31-5)	X		< 1.0	< 0.2					1	mg/L	lbs/day			
x. Titanium, Total (7440-32-6)	X		< 0.10	< 0.02					1	mg/L	lbs/day			

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PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb of greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are seven pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)		X		< 0.50	< 0.08					1	mg/L	lbs/day			
2M. Arsenic, Total (7440-38-2)		X		< 0.0050	< 0.0008					1	mg/L	lbs/day			
3M. Beryllium, Total (7440-41-7)		X		< 0.0050	< 0.0008					1	mg/L	lbs/day			
4M. Cadmium, Total (7440-43-9)		X		< 0.010	< 0.002					1	mg/L	lbs/day			
5M. Chromium, Total (7440-47-3)		X		< 0.040	< 0.007					1	mg/L	lbs/day			
6M. Copper, Total (7440-50-8)		X		0.014	0.002					1	mg/L	lbs/day			
7M. Lead, Total (7439-92-1)		X		< 0.200	< 0.033					1	mg/L	lbs/day			
8M. Mercury, Total (7439-97-6)		X		< 0.0002	< 0.0000					1	mg/L	lbs/day			
9M. Nickel, Total (7440-02-0)		X		< 0.050	< 0.008					1	mg/L	lbs/day			
10M. Selenium, Total (7782-49-2)		X		< 0.0050	< 0.0008					1	mg/L	lbs/day			
11M. Silver, Total (7440-22-4)		X		< 0.040	< 0.007					1	mg/L	lbs/day			
12M. Thallium, Total (7440-28-0)		X		< 0.20	< 0.03					1	mg/L	lbs/day			
13M. Zinc, Total (7440-66-6)		X		0.114	0.019					1	mg/L	lbs/day			
14M. Cyanide, Total (57-12-5)		X		< 0.005	< 0.001					4	mg/L	lbs/day			
15M. Phenols, Total		X		< 0.020	< 0.003					4	mg/L	lbs/day			
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	**DESCRIBE RESULTS**											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c.LONG TERM AVRG. VALUE (if available)		d. NO. OF ANAL-YSES	a. CONCEN TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X												
8V. Chlorodibromo-methane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromo-methane (75-27-4)			X												
13V. Dichlorodifluoro-methane (75-71-8)			X												
14V. 1,1-Dichloroethane (75-34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V 1,3-Dichloro-propylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V Methyl bromide (74-83-9)			X												
21V. Methyl chloride (74-87-3)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANAL-YSES	a. CONCEN TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS *(continued)*															
22V. Methylene chloride (75-09-2)			X												
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)			X												
24V. Tetrachloroethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans-dichloro-ethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V. Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoro-methane (75-69-4)			X												
31V. Vinyl chloride (75-01-4)			X												
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120-83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-06-2)			X												

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Antracene (120-12-7)			X												
4B Benzidine (92-87-5)			X												
5B. Benzo (a) anthracene (56-55-3)			X												
6B. Benzo (a) pyrene (50-32-8)			X												
7B. 3,4-Benzofluoranthene (205-99-2)			X												
8B. Benzo (ghi) perylene (191-24-2)			X												
9B. Benzo (k) fluoranthene (207-08-9)			X												
10B Bis (2chloroethox-y) methane (111-91-1)			X												
11B. Bis (2-chloroethyl) ether (111-44-4)			X												
12B Bis (2-chloroiso-propyl) ether (102-60-1)			X												
13B. Bis (2-ethylhexyl) phthalate (117-81-7)			X												
14B. 4-Bromophenyl phenyl ether (101-55-3)			X												
15B. Butyl benzyl phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)			X												
17B. 4-Chlorophenyl phenyl ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) anthracene (53-70-3)			X												
20B. 1,2-Dichlorobenzene (95-50-1)			X												
21B. 1,3-Dichlorobenzene (541-73-1)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzedine (91-94-1)			X												
24B. Diethyl phthalate (84-66-2)			X												
25B. Dimethyl phthalate (131-11-3)			X												
26B. Di-N-butyl phthalate (84-74-2)			X												
27B. 2,4-Dinitrotolune (121-14-2)			X												
28B. 2,6-Dinitrotolune (606-20-2)			X												
29B. Di-N-octyl phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachlorobenzene (118-74-1)			X												
34B. Hexachlorobutadiene (87-68-3)			X												
35B. Hexachlorocyclopentadiene (77-47-4)			X												
36B. Hexachloroethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitrosodimethylamine (62-75-9)			X												
42B. N-Nitrosodi-N-propylamine (621-64-7)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)			X												
44B. Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Trichlorobenzene (120-82-1)			X												
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
ILD000800505	001(b)

Form Approved.
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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

EPA I.D. NUMBER *(copy from Item1 of Form 1)*: ILD000800505

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V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001(c)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	3. UNITS a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE *(optional)* d. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)								mg/L	lbs/day			
b. Chemical Oxygen Demand (COD)								mg/L	lbs/day			
c. Total Organic Carbon (TOC)								mg/L	lbs/day			
d. Total Suspended Solids (TSS)	14.0	2.69	4.3	0.82	< 2.2	< 0.42	52	mg/L	lbs/day			
e. Ammonia								mg/L	lbs/day			
f. Flow	VALUE	0.047	VALUE	0.025	VALUE	0.023	167	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	c. LONG TERM AVRG. VALUE *(if available)* (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE *(optional)* d. NO. OF ANALYSES
a. Bromide (24959-67-9)		X	< 0.25	< 0.0						mg/L	lbs/day			
b. Chlorine, Total Residual		X								mg/L	lbs/day			
c. Color	X								1	Pt-Co				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		0.65	0.13					1	mg/L	lbs/day			
f. Nitrate-Nitrite *(as N)*	X		< 0.1	< 0.0					1	mg/L	lbs/day			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	X								1	mg/L	lbs/day			
h. Oil and Grease	X		5	1.0	5	1.0	< 2	< 0.4	12	mg/L	lbs/day			
i. Phosphorus *(as P)*, Total (7723-14-0)	X		0.059	0.0					1	mg/L	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		35.7						1	pCi/L				
(2) Beta, Total	X		3350.0						1	pCi/L				
(3) Radium, Total	X		< 1.0						1	pCi/L				
(4) Radium 226, Total	X		< 1.0						1	pCi/L				
k. Sulfate *(as SO_4)* (14808-79-8)	X		< 2.5	< 0					1	mg/L	lbs/day			
l. Sulfide *(as S)*	X		< 1.0	< 0.2					1					
m. Sulfite *(as SO_3)* (14266-46-3)		X												
n. Surfactants	X								1	mg/L	lbs/day			
o. Aluminum, Total (7429-90-5)	X		< 0.20	< 0.04					1	mg/L	lbs/day			
p. Barium, Total (7440-39-3)	X		< 0.20	< 0.038					1	mg/L	lbs/day			
q. Boron, Total (7440-42-8)	X		< 0.20	< 0.038					1	mg/L	lbs/day			
r. Cobalt, Total (7440-48-4)	X		< 0.05	< 0.01					1	mg/L	lbs/day			
s. Iron, Total (7439-89-6)	X		< 0.10	< 0.019					1	mg/L	lbs/day			
t. Magnesium, Total (7439-95-4)	X		< 5	< 1.0					1	mg/L	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		< 0.04	< 0.01					1	mg/L	lbs/day			
v. Manganese, Total (7439-96-5)	X		< 0.015	< 0.003					1	mg/L	lbs/day			
w. Tin, Total (7440-31-5)	X		< 0.1	< 0.0					1	mg/L	lbs/day			
x. Titanium, Total (7440-32-6)	X		< 0.05	< 0.01					1	mg/L	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
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PART C - if you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb of greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are seven pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)		X		< 0.06	< 0.01					1	mg/L	lbs/day			
2M. Arsenic, Total (7440-38-2)		X		< 0.010	< 0.0019					1	mg/L	lbs/day			
3M. Beryllium, Total (7440-41-7)		X		< 0.005	< 0.0010					1	mg/L	lbs/day			
4M. Cadmium, Total (7440-43-9)		X		< 0.005	< 0.001					1	mg/L	lbs/day			
5M. Chromium, Total (7440-47-3)		X		< 0.010	< 0.002					1	mg/L	lbs/day			
6M. Copper, Total (7440-50-8)		X		< 0.025	< 0.005					1	mg/L	lbs/day			
7M. Lead, Total (7439-92-1)		X		< 0.003	< 0.001					1	mg/L	lbs/day			
8M. Mercury, Total (7439-97-6)		X		< 0.0002	< 0.0000					1	mg/L	lbs/day			
9M. Nickel, Total (7440-02-0)		X		< 0.040	< 0.008					1	mg/L	lbs/day			
10M. Selenium, Total (7782-49-2)		X		< 0.005	< 0.0010					1	mg/L	lbs/day			
11M. Silver, Total (7440-22-4)		X		< 0.010	< 0.002					1	mg/L	lbs/day			
12M. Thallium, Total (7440-28-0)		X		< 0.01	< 0.00					1	mg/L	lbs/day			
13M. Zinc, Total (7440-66-6)		X		< 0.020	< 0.004					1	mg/L	lbs/day			
14M. Cyanide, Total (57-12-5)		X		< 0.005	< 0.001					4	mg/L	lbs/day			
15M. Phenols, Total		X		< 0.050	< 0.010					4	mg/L	lbs/day			
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	**DESCRIBE RESULTS**											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108 90-7)			X												
8V. Chlorodibromo-methane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromo-methane (75-27-4)			X												
13V. Dichlorodifluoro-methane (75-71-8)			X												
14V. 1,1-Dichloroethane (75 34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V. 1,3-Dichloro-propylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V. Methyl bromide (74-83-9)			X												
21V. Methyl chloride (74-87-3)			X												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS *(continued)*															
22V. Methylene chloride (75 09-2)			X												
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X												
24V Tetrachloroethylene (127-18-4)			X												
25V Toluene (108-88-3)			X												
26V. 1,2-Trans-dichloroethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V. Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoromethane (75-69-4)			X												
31V. Vinyl chloride (75-01-4)			X												
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120 83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-06-2)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Anthracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) anthracene (56-55-3)			X												
6B. Benzo (a) pyrene (50-32-8)			X												
7B. 3,4-Benzofluoranthene (205-99-2)			X												
8B. Benzo (ghi) perylene (191-24-2)			X												
9B. Benzo (k) fluoranthene (207-08-9)			X												
10B. Bis (2chloroethox-y) methane (111-91-1)			X												
11B. Bis (2-chloroethyl) ether (111-44-4)			X												
12B. Bis (2-chloroiso-propyl) ether (102-60-1)			X												
13B. Bis (2-ethylhexyl) phthalate (117-81-7)			X												
14B. 4-Bromophenyl phenyl ether (101-55-3)			X												
15B. Butyl benzyl phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)			X												
17B. 4-Chlorophenyl phenyl ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) anthracene (53-70-3)			X												
20B. 1,2-Dichlorobenzene (95-50-1)			X												
21B. 1,3-Dichlorobenzene (541-73-1)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzedine (91-94-1)			X												
24B. Diethyl phthalate (84-66-2)			X												
25B. Dimethyl phthalate (131-11-3)			X												
26B. Di-N-butyl phthalate (84-74-2)			X												
27B. 2,4-Dinitrotolune (121-14-2)			X												
28B. 2,6-Dinitrotolune (606-20-2)			X												
29B. Di-N-octyl phthalate (117-84-0)			X												
30B. 1,2-Diphenyl-hydrazine (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachlorobenzene (118-74-1)			X												
34B. Hexachlorobutadiene (87-68-3)			X												
35B. Hexachlorocyclo-pentadiene (77-47-4)			X												
36B. Hexachloroethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitrosodimethyl-amine (62-75-9)			X												
42B. N-Nitrosodi-N-propylamine (621-64-7)			X												

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)			X												
44B. Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Trichlorobenzene (120-82-1)			X												
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. □-BHC (319-84-6)			X												
3P. □-BHC (319-85-7)			X												
4P. □-BHC (58-89-9)			X												
5P. □-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. □-Endosulfan (115-29-7)			X												
12P. □-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT						d. NO. OF ANAL-YSES	4.UNITS		5. INTAKE *(optional)*		
	a. TEST-ING RE-QUIR-ED	b. BE-LIEVED PRE-SENT	c. BE-LIEVED AB-SENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*			a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANAL-YSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCEN-TRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

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V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 001(d)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c.LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c.LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANAL-YSES	3.UNITS a. CONCEN TRATION	3.UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCEN-TRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) d. NO. OF ANAL-YSES
a. Biochemical Oxygen Demand (BOD)								mg/L	lbs/day			
b. Chemical Oxygen Demand (COD)								mg/L	lbs/day			
c. Total Organic Carbon (TOC)								mg/L	lbs/day			
d. Total Suspended Solids (TSS)	2.2	0.42	< 1.1	< 0.21	< 0.8	< 0.15	52	mg/L	lbs/day			
e. Ammonia								mg/L	lbs/day			
f. Flow	VALUE	0.105	VALUE	0.030	VALUE	0.023	365	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in you discharge. Complete one table for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X' b. BE-LIEVED PRE-SENT	2. MARK 'X' c. BE-LIEVED AB-SENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c.LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c.LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANAL-YSES	4.UNITS a. CONCEN TRATION	4.UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCEN-TRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANAL-YSES
a. Bromide (24959-67-9)		X							1	mg/L	lbs/day			
b. Chlorine, Total Residual		X								mg/L	lbs/day			
c. Color	X		6						1	Pt-Co				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		0.15	0.03					1	mg/L	lbs/day			
f. Nitrate-Nitrite *(as N)*	X		1.3	0.2					1	mg/L	lbs/day			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) d. NO. OF ANALYSES
g. Nitrogen, Total Organic *(as N)*	X		< 0.50	< 0.10					1	mg/L	lbs/day			
h. Oil and Grease	X		6	1.2					4	mg/L	lbs/day			
i. Phosphorus *(as P)* , Total (7723-14-0)	X		0.3	0.1					1	mg/L	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		1						1	pCi/L				
(2) Beta, Total	X		8.2						1	pCi/L				
(3) Radium, Total	X		< 1.0						1	pCi/L				
(4) Radium 226, Total	X		< 1.0						1	pCi/L				
k. Sulfate *(as SO_4)* (14808-79-8)	X		664	127					1	mg/L	lbs/day			
l. Sulfide *(as S)*	X		< 2.0	< 0.4					1					
m. Sulfite *(as SO_3)* (14266-46-3)		X												
n. Surfactants	X		< 0.05	< 0.01					1	mg/L	lbs/day			
o. Aluminum, Total (7429-90-5)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
p. Barium, Total (7440-39-3)	X		0.196	0.038					1	mg/L	lbs/day			
q. Boron, Total (7440-42-8)	X		0.196	0.038					1	mg/L	lbs/day			
r. Cobalt, Total (7440-48-4)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
s. Iron, Total (7439-89-6)	X		0.094	0.018					1	mg/L	lbs/day			
t. Magnesium, Total (7439-95-4)	X		33	6.3					1	mg/L	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		< 0.10	< 0.02					1	mg/L	lbs/day			
v. Manganese, Total (7439-96-5)	X		< 0.010	< 0.002					1	mg/L	lbs/day			
w. Tin, Total (7440-31-5)	X		< 1.0	< 0.2					1	mg/L	lbs/day			
x. Titanium, Total (7440-32-6)	X		< 0.10	< 0.02					1	mg/L	lbs/day			

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PART C - if you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb of greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are seven pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)		X		< 0.50	< 0.10					1	mg/L	lbs/day			
2M. Arsenic, Total (7440-38-2)		X		< 0.0050	< 0.0010					1	mg/L	lbs/day			
3M. Beryllium, Total (7440-41-7)		X		< 0.0050	< 0.0010					1	mg/L	lbs/day			
4M. Cadmium, Total (7440-43-9)		X		< 0.010	< 0.002					1	mg/L	lbs/day			
5M. Chromium, Total (7440-47-3)		X		< 0.040	< 0.008					1	mg/L	lbs/day			
6M. Copper, Total (7440-50-8)		X		< 0.004	< 0.001					1	mg/L	lbs/day			
7M. Lead, Total (7439-92-1)		X		< 0.200	< 0.038					1	mg/L	lbs/day			
8M. Mercury, Total (7439-97-6)		X		< 0.0002	< 0.0000					1	mg/L	lbs/day			
9M. Nickel, Total (7440-02-0)		X		< 0.050	< 0.010					1	mg/L	lbs/day			
10M. Selenium, Total (7782-49-2)		X		< 0.0050	< 0.0010					1	mg/L	lbs/day			
11M. Silver, Total (7440-22-4)		X		< 0.040	< 0.008					1	mg/L	lbs/day			
12M. Thallium, Total (7440-28-0)		X		< 0.20	< 0.04					1	mg/L	lbs/day			
13M. Zinc, Total (7440-66-6)		X		< 0.020	< 0.004					1	mg/L	lbs/day			
14M. Cyanide, Total (57-12-5)		X		< 0.005	< 0.001					4	mg/L	lbs/day			
15M. Phenols, Total		X		< 0.020	< 0.004					4	mg/L	lbs/day			
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X												
8V. Chlorodibromomethane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromomethane (75-27-4)			X												
13V. Dichlorodifluoromethane (75-71-8)			X												
14V. 1,1-Dichloroethane (75-34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V. 1,3-Dichloropropylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V. Methyl bromide (74-83-9)			X												
21V. Methyl chloride (74-87-3)			X												

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1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS *(continued)*															
22V. Methylene chloride (75-09-2)			X												
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X												
24V. Tetrachloroethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans-dichloroethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V. Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoromethane (75-69-4)			X												
31V. Vinyl chloride (75-01-4)			X												
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120-83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-06-2)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Antracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) anthracene (56-55-3)			X												
6B. Benzo (a) pyrene (50-32-8)			X												
7B. 3,4-Benzofluoranthene (205-99-2)			X												
8B. Benzo (ghi) perylene (191-24-2)			X												
9B. Benzo (k) fluoranthene (207-08-9)			X												
10B. Bis (2chloroethox-y) methane (111-91-1)			X												
11B. Bis (2-chloroethyl) ether (111-44-4)			X												
12B. Bis (2-chloroiso-propyl) ether (102-60-1)			X												
13B. Bis (2-ethylhexyl) phthalate (117-81-7)			X												
14B. 4-Bromophenyl phenyl ether (101-55-3)			X												
15B. Butyl benzyl phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)			X												
17B. 4-Chlorophenyl phenyl ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) anthracene (53-70-3)			X												
20B. 1,2-Dichlorobenzene (95-50-1)			X												
21B. 1,3-Dichlorobenzene (541-73-1)			X												

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	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c.LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzedine (91-94-1)			X												
24B. Diethyl phthalate (84-66-2)			X												
25B. Dimethyl phthalate (131-11-3)			X												
26B. Di-N-butyl phthalate (84-74-2)			X												
27B. 2,4-Dinitrotolune (121-14-2)			X												
28B. 2,6-Dinitrotolune (606-20-2)			X												
29B. Di-N-octyl phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachlorobenzene (118-74-1)			X												
34B. Hexachlorobutadiene (87-68-3)			X												
35B. Hexachlorocyclopentadiene (77-47-4)			X												
36B. Hexachloroethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitrosodimethylamine (62-75-9)			X												
42B. N-Nitrosodi-N-propylamine (621-64-7)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4.UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)			X												
44B. Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Trichlorobenzene (120-82-1)			X												
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. -BHC (319-84-6)			X												
3P. -BHC (319-85-7)			X												
4P. -BHC (58-89-9)			X												
5P. -BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. -Endosulfan (115-29-7)			X												
12P. -Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
ILD000800505	001(d)

Form Approved.
OMB No. 2000-0059 Approval
expires 12-31-85

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		d. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X												

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
120 ERIE BOULEVARD
SCHENECTADY, N.Y. 12305

MATERIALS INFORMATION SERVICES

NO. [illegible]

SODIUM HYPOCHLORITE, AQUEOUS SOLUTION (5-12%)

DATE February 1983

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SODIUM HYPOCHLORITE, AQUEOUS SOLUTION (5-12%)
OTHER DESIGNATIONS: Soda Bleach Liquor Bleach Solution, Hypochlorite Solution, NaOCl Solution, SUNNY SOL Bleach (Jones Chemicals), Household Bleach (i.e. CLOROX®, PUREX®)
MANUFACTURER: Available from many suppliers, including:

Canadian Industries Limited Chemicals
Box 10
Montreal, Quebec H3C 2R3

Jones Chemicals, Inc.
100 Sunny Sol Blvd
Caledonia, NY 14423
Tel: (716) 538-2311

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Sodium hypochlorite (CAS #007 681 529) Water, sodium chloride and sodium hydroxide (if present in excess). (Excess NaOH will pose an increased alkalinity hazard.) *Solution concentration can also be stated in terms of "available chlorine" which is about 95% of NaOCl content by weight.	ca 5-12 Balance	No TLV Established Rat, Oral (12% Solution) LD_{50} ca 12 mg/kg *5% soln is reported to be much less toxic.

SECTION III. PHYSICAL DATA

Boiling point --- decomposes (see Sect V)
Vapor pressure, 20 C, mm Hg ------- 17.5
Water solubility ---------- complete
pH ("neutral" solution)* ---------- 9-10
Molecular weight ---------- 74.4

Specific gravity (20/4C):
5.25% (Household bleach) - 1.09
8.0% ---------- 1.15
12.0% ---------- 1.21
Freezing point, 12.0%, deg C - ca -25

Appearance & Odor: Clear, pale yellow or greenish liquid with a chlorine odor.
*Some products may contain an excess of NaOH and have a higher pH.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
Nonflammable			---	---

Use extinguishing media that is appropriate for surrounding fire. Use water spray from a safe distance to cool fire-exposed containers, to dilute liquid, and control vapors. It is an oxidizing agent. Vigorous reactions can occur with oxidizable materials in a fire situation. It can be decomposed by heat. Chlorine liberated on contact with acid.
If safe, remove containers from fire area to prevent pressure rupture.
Firefighters should wear full protective clothing and self-contained breathing apparatus. (Protection is needed against corrosive fumes and liquid if released.)

SECTION V. REACTIVITY DATA

Anhydrous material is unstable, but these water solutions can be satisfactorily stable for months under proper storage conditions. Rate of decomposition increases with the concentration and with the temperature. (12% NaOCl solution decomposes slowly at 40 C to yield NaCl and $NaClO_3$). Exposure to sunlight accelerates decomposition.
It is incompatible with acids (liberates chlorine), ammonia, urea, oxidizable materials, and metals such as nickel, copper, tin, manganese and iron (which cause liberation of oxygen).

GENERAL ELECTRIC

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 9
SULFURIC ACID, CONCENTRATED
Revision C
Issued: October 1980
Revised: February 1986

SECTION 1. MATERIAL IDENTIFICATION

MATERIAL NAME: SULFURIC ACID, CONCENTRATED

OTHER DESIGNATIONS: Oil of Vitriol, Hydrogen Sulfate; H_2SO_4; CAS #7664-93-9

MANUFACTURER/SUPPLIER: Available from many suppliers, including:
Allied Corporation, PO Box 2064R, Morristown, NJ 07960; Telephone: 800 631-8050

HMIS
H:3
F: 0
R: 2
PPE: *
* See Sect. 8

SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Hydrogen Sulfate (H_2SO_4) Water	93-98 Balance*	8-hr TWA: 1 mg/m^3 Human, Mist Inhalation, TCLo: 3 mg/m^3, 24 wk. (Toxic Mouth Effects) Rat, Oral, LD_{50}: 2140 mg/kg

* Material is obtained by the reaction of SO_3 and water. Can contain low impurity levels, such as 0.02% max of iron as Fe. Properties vary with H_2SO_4 content.

Current OSHA standard and ACGIH (1985-86) TLV. NIOSH has a 10-hr TWA, 40-hr. work week, of 1 mg/m^3.

SECTION 3. PHYSICAL DATA

	93.19% H_2SO_4	98.33% H_2SO_4	100% H_2SO_4
Boiling Point, 1 atm, deg C	ca 281	ca 338	ca 330 (dc)
Specific Gravity (60/60°F)	1.8354	1.84	1.84
Volatiles, % @ 340°C	ca 100	ca 100	ca 100
Melting Point, deg C	ca -34	ca 3	10.4

Water Solubility ... Complete Miscible
Vapor Pressure, mm Hg @ 100°F ... <1 (93.19% H_2SO_4); Deg. Baume ... 66 (93.19% H_2SO_4) - Density of H_2SO_4 is often reported in degrees Baume Be). Formula is Be=145 [145/sp gr for liquids heavier than water].

Appearance and odor: Clear, colorless, hygroscopic, oily liquid with no odor. Mists greater than 1 mg/m^3 are easily recognizable. Those at 5 mg/m^3 are distinctly objectionable.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - Nonflammable	NA	NA	NA	NA

Sulfuric acid is nonflammable; however, it is a strong oxidizing agent and may cause ignition by contact with combustible materials. Small fires may be smothered with suitable dry chemical. Cool exterior of storage tanks of H_2SO_4 with water to avoid rupture if exposed to fire. Do not add water or other liquid to the acid! The acid, especially when diluted with water, can react with metals to liberate flammable hydrogen gas.
Sulfuric acid mists and vapors from a fire area are corrosive (see sect. 5).
Fire fighters must wear self-contained breathing equipment and fully protective clothing.

SECTION 5. REACTIVITY DATA

Sulfuric acid is stable under normal conditions of use and storage. It does not undergo hazardous polymerization. It is a strong mineral acid reacting with bases and metals. The concentrated acid is also a dehydrating agent, picking up moisture readily from the air or other materials. Hydrogen gas may be generated within a H_2SO_4 container. Vent drums cautiously.

This material reacts exothermically with water. (Acid should always be added slowly to water. Water added to acid can cause boiling and uncontrolled splashing of the acid.) Sulfur oxides can result from decomposition and from oxidizing reactions of sulfuric acid.

SECTION 6. HEALTH HAZARD INFORMATION | TLV

Concentrated sulfuric acid is a strong mineral acid, an oxidizing agent, and a dehydrating agent that is rapidly damaging to all human tissue with which it comes in contact. Ingestion may cause severe injury or death. Eye contact produces severe or permanent injury. Inhalation of mists can damage both the upper respiratory tract and the lungs. Sulfuric acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

FIRST AID: EYE CONTACT: Immediately flush eyes (including under eyelids) with plenty of running water for at least 15 minutes. Speed in diluting and rinsing out acid with water is extremely important if permanent eye damage is to be avoided. Obtain medical help as soon as possible.* SKIN CONTACT: Immediately flush affected areas with water, removing contaminated clothing while under the safety shower. Continue washing with water and get medical attention.* INHALATION: Remove to fresh air. Restore breathing. Call a physician immediately. INGESTION: Dilute acid immediately with large amounts of milk or water, then give milk of magnesia to neutralize. Never give anything by mouth to an unconscious person. Do not induce vomiting; if it occurs spontaneously, continue to administer fluid. Obtain medical attention as soon as possible.*

Maintain observation of patient for possible delayed onset of pulmonary edema.

* GET MEDICAL HELP = In plant, paramedic, community.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Handle major spills by a predetermined plan. Contact supplier for assistance in this planning, in meeting local regulations, and for disposing of large amounts. Notify safety personnel. Provide optimum ventilation; vapors are extremely irritating. Stop leak if you can do so without risk.

Cleanup personnel need protection against inhalation or contact. Keep upwind. Contain spill. Minor leaks or spills can be diluted with much water and neutralized with soda ash or lime. If water is not available, cover contaminated area with sand, ashes, or gravel and neutralize cautiously with soda ash or lime.

DISPOSAL: Follow Federal, state, and local regulations. Runoff to sewer may create hydrogen gas, which is a fire or explosion hazard. EPA (CWA) RQ 1000 lbs. (40 CFR 117).

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general ventilation to meet current TLV requirements in the workplace. Where mists are up to 50 mg/m^3, a high-efficiency particulate respirator with full facepiece is warranted; a type-C supplier-air respirator with full facepiece operated in pressure-demand mode is used to 100 mg/m^3.

Avoid eye contact by use of chemical safety goggles or face shield where splashing may occur. Acid-resistant protective clothing, such as rubber gloves, aprons, boots, and suits, is recommended to avoid body contact.

Eyewash fountain and safety showers with deluge type of heads should be readily available where this material is handled or stored.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

Comprehensive preplacement and annual medical examinations with emphasis on dental erosion, cardiopulmonary system, and mucous membrane irritation and cough are indicated.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Sulfuric acid in carboys or drums should be stored in clean, ventilated storage areas having acid-resistant floors with good drainage. Keep out of direct sunlight, do not store above 89.6°F (32°C). Storage facilities are to be separate from organic materials, metallic powders, chromates, chlorates, nitrates, carbides, oxidizables, etc. Soda ash, sand, or lime should be kept in general storage or work areas for emergency use. Protect containers against physical damage. Glass bottles need extra protection. Sulfuric acid is highly corrosive to most metals, especially below 77% H_2SO_4. Avoid breathing mist or vapors. Avoid contact with skin or eyes. Do not ingest. Do not add water to concentrated acid. Drums may contain hydrogen gas, so open cautiously. Use nonsparking tools free of oil, dirt, and grit and vapor-proof electrical fixtures

DOT Classification: Corrosive Material. ID No.: UN1830 Label: Corrosive

Data Source(s) Code: 1-12, 19, 20, 24, 26, 31, 37-39, 42, 82. CK

Approvals A. Marucco, 6/86.

Indust. Hygiene/Safety DW 6/86

Medical Review

MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION
1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854

From Genium's MSDS Collection, to be used as a reference.

MSDS # N 3A
SODIUM HYDROXIDE
50% LIQUID
Revision A
Issued: October, 1977
Revised: August, 1985

SECTION 1. MATERIAL IDENTIFICATION

MATERIAL NAME: SODIUM HYDROXIDE, 50% LIQUID
OTHER DESIGNATIONS: Liquid caustic soda, lye solution, CAS #1310-73-2 (NaOH).
MANUFACTURER: Available from many sources including:
Diamond Shamrock Co., Chlor-Alkali Div.
351 Phelps Court, Box 152300
Irving, TX 75015-2300
(800) 241-3134

SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
SODIUM HYDROXIDE (NaOH)	>48.5	Ceiling Limit: 2 mg/
TYPICAL IMPURITIES:		
Carbonate (as Na_2CO_3)	<0.25	1% NaOH Soln
Chloride (as NaCl)	<1.15	
Chlorate (as $NaClO_3$)	<0.25	Eye, rabbit: Severe irritation
Sulfate (as Na_2SO_4)	<0.03	
Silica (as SiO_2)	<0.01	
Water	balance	

* Current (1985-86) ACGIH TLV. Current OSHA PEL is 2.0 mg/m^3 averaged over 8 hours.

SECTION 3. PHYSICAL DATA

Boiling point, 1 atm .... ca 140°C
Volatiles (water) 50%
Water Solubility ..... complete
Viscosity @ 20°C, cps ... 50
Specific gravity, 60/60°F ... 1.53
Density, lbs/gal 12.76

APPEARANCE & ODOR: Clear liquid - No odor.

DESCRIPTION: A 50% solution of sodium hydroxide (NaOH) in water.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Up
None - not combustible	N/A	N/A	N/A	N/A

EXTINGUISHING MEDIA:
Use extinguishing agents suitable for the surrounding fire. Use water spray to cool containers of this material which are involved in a fire situation to help prevent rupture.
Sodium hydroxide will react with metals such as aluminum, tin, and zinc to generate flammable and explosi hydrogen gas.

Firefighters should wear self contained breathing apparatus and full protective gear to prevent contact w this corrosive material.

SECTION 5. REACTIVITY DATA

This material is stable under normal storage conditions in sealed containers. Polymerization will not oc There are no hazardous decomposition products. It reacts with CO_2 in the air to form sodium carbonate. I reacts violently with acids accompanied by heat generation and with many organic chemicals, especially nitrocarbons and halocarbons. It can react with trichloroethylene to form spontaneously flammable dichloroacetylene.
Avoid contact with leather and wool. Contact with aluminum, tin, magnesium, zinc, and alloys that contain these metals causes the formation of hydrogen gas (MSDS #65) (flammable).

SECTION 6. HEALTH HAZARD INFORMATION

TLV Ceiling Unit: 2 mg/m^3

Sodium Hydroxide is a strong alkali and is dangerous when improperly handled. It is destructive to all human tissue it contacts, producing severe burns. Eye contact causes severe, permanent injury. Skin contact causes irritation and, if not removed immediately, severe burns with scarring. The effects of inhalation of the mist varies from mild irritation to destructive burns. Pneumonitis may occur. Ingestion causes severe burns of the mouth, throat and stomach and may be fatal.

FIRST AID: Wash eyes immediately with plenty of running water for at least 15 minutes, including under eyelids and all surfaces. Speed in rinsing eyes with water is important if permanent injury is to be avoided. Get medical help immediately. SKIN CONTACT: Flush exposed area promptly with large quantities of water. Remove contaminated clothes while washing. Prolong washing in serious cases until medical help arrives. Get medical attention for serious exposure. INGESTION: Immediately give person large quantities of water or milk to drink. (Never give anything by mouth to an unconscious person). Do not induce vomiting. Obtain medical assistance immediately. INHALATION: Remove from exposure to mist and get prompt medical help. (Paramedic, Inplant, community).

SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Planning ahead is essential for handling spills. Clean-up personnel should wear protective equipment to prevent skin and eye contact. Pick-up spill with vacuum equipment (alkali resistant) for disposal or flush to holding area with water. Neutralize residue with dilute acid and rinse with water.

DISPOSAL: Waste caustic must never be discharged directly to sewers, drains or surface waters. Dilute well with water and carefully neutralize with acid. Follow all applicable federal, state and local regulations.

EPA HAZARDOUS WASTE NUMBER: D002, corrosive (soln c pH $\geq$12.5)-40CFR 261.22

REPORTABLE SPILL QUANTITY: 1000 lbs (40CFR117)

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide adequate general ventilation and exhaust ventilation to meet TLV requirement, especially where the possibility of mist formation exists. Use a NIOSH-approved respirator with full face covering for mist, where needed. Use chemical safety goggles. A plastic faceshield, in addition to safety goggles, should be worn if splashing is probable. Use rubber gloves, apron or protective clothing and rubber boots where needed to prevent contact with sodium hydroxide solution.

Eyewash stations and safety showers must be immediately available.

THIS MATERIAL POSES A SPECIAL HAZARD TO CONTACT LENSES WEARERS; the slippery nature of this solution would make it extremely difficult to remove the contact lenses. Critical rinsing of the contaminated eye would be delayed.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in well-sealed containers. Protect containers from physical damage. Avoid handling conditions which can lead to spills or mist formation. Have abundant water (preferably running water) available where material is stored, unloaded, and handled for emergency use. Drains servicing areas where this material is stored or used should have retention basins for pH adjustment and dilution of spills and flushings before discharge. Workers handling this material should be trained in proper handling precautions and emergency procedures, with proper protective equipment nearby.

DOT HAZARD CLASSIFICATION: Corrosive Material

DOT LABEL: Corrosive

DOT ID NUMBER: UN1824

DATA SOURCE(S) CODE (See Glossary) 2, 4, 9, 11, 12, 27, 55, 58.V.

APPROVALS. JO Accrocco, 11/85

INDUST. HYGIENE/SAFETY 11/85

MEDICAL REVIEW: Nov 85

GENIUM PUBLISHING

****
This is an MSDS from the Commonwealth Edison MSDS Program

ATTENTION: Safety and Industrial Hygiene advises users to review the intended use of this information with his/her supervisor or Safety and Industrial Hygiene advisor.

****

Contents for this MSDS

****
| 01 - GENERAL INFORMATION |
****

MATERIAL SAFETY DATA SHEET
NALCO CHEMICAL COMPANY
ONE NALCO CENTER
NAPERVILLE, ILLINOIS 60566-1024
AREA
312-961-9500
PRODUCT
NALCLEAR 7744 ANIONIC POLYMER
EMERGENCY TELEPHONE NUMBER
MEDICAL
(312) 920-1510 (24 HOURS)
PREPARED BY:
JOHN J. KASPER, MSC., MANAGER PRODUCT SAFETY
DATE CHANGED:
06/20/88
DATE PRINTED:
07/09/88

02 - SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME:
NALCLEAR 7744 ANIONIC POLYMER
DESCRIPTION:
AN AQUEOUS SOLUTION OF AN ACRYLAMIDE/ACRYLATE POLYMER
NFPA 704M/HMIS RATING:
1/1 HEALTH
1/1 FLAMMABILITY
0/0 REACTIVITY
0 OTHER
0=INSIGNIFICANT
1=SLIGHT
2=MODERATE
3=HIGH
4=EXTREME

03 - SECTION 2 HAZARDOUS INGREDIENTS

OUR HAZARD EVALUATION OF THE INGREDIENT(S) UNDER OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 HAS FOUND NONE OF THE INGREDIENT(S) HAZARDOUS.

04 - SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION:
MAY CAUSE IRRITATION TO SKIN AND EYES. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. AVOID PROLONGED OR REPEATED BREATHING OF VAPOR. USE WITH ADEQUATE VENTILATION. DO NOT TAKE INTERNALLY.
EMPTY CONTAINERS MAY CONTAIN RESIDUAL PRODUCT. DO NOT REUSE CONTAINER UNLESS PROPERLY RECONDITIONED.

05 - SECTION 4 FIRST AID INFORMATION

EYES:
FLUSH WITH WATER FOR 15 MINUTES. CALL A PHYSICIAN.
SKIN:
WASH THOROUGHLY WITH SOAP AND RINSE WITH WATER. CALL A PHYSICIAN.
NOTE TO PHYSICIAN:
NO SPECIFIC ANTIDOTE IS KNOWN. BASED ON THE INDIVIDUAL REACTIONS OF THE PATIENT, THE PHYSICIAN'S JUDGMENT SHOULD BE USED TO CONTROL SYMPTOMS AND CLINICAL CONDITION.
CAUTION:

IF UNCONSCIOUS, HAVING TROUBLE BREATHING OR IN CONVULSIONS, DO NOT INDUCE VOMITING OR GIVE WATER.

06 - SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE:
EYE, SKIN
EYE CONTACT:
MAY CAUSE IRRITATION WITH PROLONGED CONTACT.
SKIN CONTACT:
MAY CAUSE IRRITATION WITH PROLONGED CONTACT.
SYMPTOMS OF EXPOSURE:
A REVIEW OF AVAILABLE DATA DOES NOT IDENTIFY ANY SYMPTOMS FROM EXPOSURE.
AGGRAVATION OF EXISTING CONDITIONS:
A REVIEW OF AVAILABLE DATA DOES NOT IDENTIFY ANY WORSENING OF EXISTING CONDITIONS.

07 - SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES:
ACUTE TOXICITY STUDIES HAVE NOT BEEN CONDUCTED ON THIS PRODUCT, BUT ACUTE STUDIES HAVE BEEN CONDUCTED ON A SIMILAR PRODUCT. THE RESULTS ARE SHOWN BELOW.
ACUTE ORAL TOXICITY (ALBINO RATS):
LD50 = GREATER THAN 5,000 MG/KG
PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):
SKIN IRRITATION INDEX DRAIZE RATING:
0.0/8.0 NON-IRRITATING
COMMENTS:
A SIMILAR PRODUCT PRODUCED NO IRRITATION.
PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):
EYE IRRITATION INDEX DRAIZE RATING:
2.3/110.0 MINIMALLY IRRITATING

08 - SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR:
CREAM
FORM:
LIQUID
ODOR:
SLIGHT HYDROCARBON
DENSITY:
8.5 LBS/GAL.
SOLUBILITY IN WATER:
DISPERSIBLE

SPECIFIC GRAVITY:
 1.01 @ 60 DEGREES F
PH (NEAT) = 4.2 PLUS/MINUS 0.5
FLASH POINT:
 GREATER THAN 200 DEGREES F
ASTM D-1298
ASTM E-70
 NOTE: THESE PHYSICAL PROPERTIES ARE TYPICAL VALUES FOR THIS PRODUCT.

****
| 09 - SECTION 8 FIRE AND EXPLOSION INFORMATION |
****

FLASH POINT:
 GREATER THAN 200 DEGREES F
EXTINGUISHING MEDIA:
 THIS PRODUCT WOULD NOT BE EXPECTED TO BURN UNLESS ALL THE WATER IS BOILED AWAY. THE REMAINING ORGANICS MAY BE IGNITABLE. USE WATER TO COOL CONTAINERS EXPOSED TO FIRE.

****
| 10 - SECTION 9 REACTIVITY INFORMATION |
****

INCOMPATIBILITY:
 NONE KNOWN
THERMAL DECOMPOSITION PRODUCTS:
 IN THE EVENT OF COMBUSTION CO, CO2 MAY BE FORMED. DO NOT BREATHE SMOKE OR FUMES. WEAR SUITABLE PROTECTIVE EQUIPMENT.

****
| 11 - SECTION 10 PERSONAL PROTECTION EQUIPMENT |
****

RESPIRATORY PROTECTION:
 RESPIRATORY PROTECTION IS NOT NORMALLY NEEDED.
 FOR LARGE SPILLS, ENTRY INTO LARGE TANKS, VESSELS OR ENCLOSED SMALL SPACES WITH INADEQUATE VENTILATION, A PRESSURE-DEMAND, SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.
VENTILATION:
 GENERAL VENTILATION IS RECOMMENDED.
PROTECTIVE EQUIPMENT:
 USE IMPERMEABLE GLOVES AND CHEMICAL SPLASH GOGGLES (ANSI Z 87.1 REQUIREMENTS AND SELECTION OF GLOVES, GOGGLES, SHOES, ETC.) WHEN ATTACHING FEEDING EQUIPMENT OR DOING MAINTENANCE.
 IF CLOTHING IS CONTAMINATED, REMOVE CLOTHING AND THOROUGHLY WASH THE AFFECTED AREA. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

****
| 12 - SECTION 11 SPILL AND DISPOSAL INFORMATION |
****

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER
(312-920-1510)
SPILL CONTROL AND RECOVERY:
SMALL LIQUID SPILLS:
CONTAIN WITH ABSORBENT MATERIAL, SUCH AS CLAY, SOIL OR ANY COMMERCIALLY AVAILABLE ABSORBENT. SHOVEL RECLAIMED LIQUID AND ABSORBENT INTO RECOVERY OR SALVAGE DRUMS FOR DISPOSAL. REFER TO CERCLA IN SECTION 14.

LARGE LIQUID SPILLS:
DIKE TO PREVENT FURTHER MOVEMENT AND RECLAIM INTO RECOVERY OR SALVAGE DRUMS OR TANK TRUCK FOR DISPOSAL. REFER TO CERCLA IN SECTION 14.

DISPOSAL:
IF THIS PRODUCT BECOMES A WASTE, IT DOES NOT MEET THE CRITERIA OF A HAZARDOUS WASTE AS DEFINED UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) 40 CFR 261, SINCE IT DOES NOT HAVE THE CHARACTERISTICS OF SUBPART C, (I.E. D001 THROUGH D017) NOR IS IT LISTED UNDER SUBPART D. AS A NON-HAZARDOUS LIQUID WASTE, IT SHOULD BE SOLIDIFIED BEFORE DISPOSAL TO A SANITARY LANDFILL. CAN BE DEEP-WELL INJECTED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

13 - SECTION 12 ENVIRONMENTAL INFORMATION

IF RELEASED INTO THE ENVIRONMENT, SEE CERCLA IN SECTION 14.

14 - SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15 - SECTION 14 REGULATORY INFORMATION

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT.
FEDERAL REGULATIONS:
OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
BASED ON OUR HAZARD EVALUATION, NONE OF THE INGREDIENTS IN THIS PRODUCT ARE HAZARDOUS.

CERCLA/SUPERFUND, 40 CFR 117, 302:
NOTIFICATION OF SPILLS OF THIS PRODUCT IS NOT REQUIRED.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED IN APPENDIX A AND B AS AN EXTREMELY HAZARDOUS SUBSTANCE.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
OUR HAZARD EVALUATION HAS FOUND THAT THIS PRODUCT IS NOT HAZARDOUS UNDER 29 CFR 1910.1200.

UNDER SECTION 311, SUBMITTAL OF MSDS'S OR A LIST OF PRODUCT NAMES TO THE LOCAL EMERGENCY PLANNING COMMISSION, STATE EMERGENCY RESPONSE COMMISSION AND LOCAL FIRE DEPARTMENT IS REQUIRED AFTER OCTOBER 17, 1987 IF YOU HAVE:

- 10,000 POUNDS OR MORE OF A HAZARDOUS SUBSTANCE, OR
- 500 POUNDS OR THE THRESHOLD PLANNING QUANTITY, WHICHEVER IS LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.

AFTER OCTOBER 17, 1989, MSDS(S), OR A LIST OF PRODUCT NAMES FOR ALL HAZARDOUS SUBSTANCES BETWEEN ZERO (0) AND 10,000 POUNDS, NOT PREVIOUSLY REPORTED, MUST BE SUBMITTED.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
THIS PRODUCT CONTAINS THE FOLLOWING INGREDIENT(S), (WITH CAS # AND % RANGE) WHICH APPEAR(S) ON THE LIST OF TOXIC CHEMICALS.
SODIUM SULFATE 7757-82-6 1-10

TOXIC SUBSTANCES CONTROL ACT (TSCA):
THE CHEMICAL INGREDIENTS IN THIS PRODUCT ARE ON THE 8(B) INVENTORY LIST (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
IF THIS PRODUCT BECOMES A WASTE, IT DOES NOT MEET THE CRITERIA OF A HAZARDOUS WASTE.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 (FORMERLY SEC. 307), 40 CFR 116 (FORMERLY SEC. 311):
NONE OF THE INGREDIENTS ARE SPECIFICALLY LISTED.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
THIS PRODUCT DOES NOT CONTAIN INGREDIENTS COVERED BY THE CLEAN AIR ACT.
STATE REGULATIONS:
CALIFORNIA PROPOSITION 65:
THIS PRODUCT COMPLIES WITH THE MSDS AND LABELING REQUIREMENTS OF THE SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65).

MICHIGAN CRITICAL MATERIALS:
THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED ON THE MICHIGAN CRITICAL MATERIALS REGISTER.

STATE RIGHT TO KNOW LAWS:
THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED BY STATE RIGHT TO KNOW LAWS.

****

16 - SECTION 15 ADDITIONAL INFORMATION

****

NONE

HEADING: SECTION 16 USER'S RESPONSIBILITY
THIS PRODUCT MATERIAL SAFETY DATA SHEET PROVIDES HEALTH AND SAFETY INFORMATION. THE PRODUCT IS TO BE USED IN APPLICATIONS CONSISTENT WITH OUR PRODUCT LITERATURE. INDIVIDUALS HANDLING THIS PRODUCT SHOULD BE INFORMED OF THE RECOMMENDED SAFETY PRECAUTIONS AND SHOULD HAVE ACCESS TO THIS INFORMATION. FOR ANY OTHER USES, EXPOSURES SHOULD BE EVALUATED SO THAT APPROPRIATE HANDLING PRACTICES AND TRAINING PROGRAMS CAN BE ESTABLISHED TO ENSURE SAFE WORKPLACE OPERATIONS. PLEASE CONSULT YOUR LOCAL SALES REPRESENTATIVE FOR ANY FURTHER INFORMATION.

HEADING: SECTION 17 BIBLIOGRAPHY
ANNUAL REPORT ON CARCINOGENS, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, DOULL, J., KLAASSEN, C. D., AND AMDUR, M. O., EDS., MACMILLIAN PUBLISHING COMPANY, INC., N.Y., 2ND EDITION, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, PROCTOR, N. H., AND HUGHES, J. P., EDS., J. P. LIPINCOTT COMPANY, N. Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, SAX, N. IRVING, ED., VAN NOSTRAND REINHOLD COMPANY, N.Y., 6TH EDITION, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, GENEVA: WORLD HEALTH ORGANIZATION, INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, 1972-1977.

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, CLAYTON, G. D., CLAYTON, F. E., EDS., JOHN WILEY AND SONS, N. Y., 3RD EDITION, VOL. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE, CENTER FOR DISEASE CONTROL, NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, 1983 SUPPLEMENT OF 1981-1982 EDITION, VOL. 1-3, OH, 1984.

TITLE 29 CODE OF FEDERAL REGULATIONS PART 1910, SUBPART Z, TOXIC AND HAZARDOUS SUBSTANCES, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, OH.

****
This is an MSDS from the Commonwealth Edison MSDS Program

ATTENTION: Safety and Industrial Hygiene advises users to review the intended use of this information with his/her supervisor or Safety and Industrial Hygiene advisor.

****

Contents for this MSDS

01 - GENERAL INFORMATION

MATERIAL SAFETY DATA SHEET
ONE NALCO CENTER
NAPERVILLE, ILLINOIS 60563-1198
PRODUCT
NALCO 9249
Emergency Telephone Number
Medical (708) 920-1510 (24 hours)

02 - SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME:
NALCO 9248
DESCRIPTION:
An aqueous solution of a polyacrylate
NFPA 704M/HMIS RATING:
1/1 HEALTH

1/1 FLAMMABILITY
0/0 REACTIVITY
0 OTHER
0=Insignificant
1=Slight
2=Moderate
3=High
4=Extreme

03 - SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous.

04 - SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION:
May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

05 - SECTION 4 FIRST AID INFORMATION

EYES:
Flush with water for 15 minutes. Call a physician.
SKIN:
Flush with water for 15 minutes.
INGESTION:
Do not induce vomiting. Give water. Call a physician.
INHALATION:
Remove to fresh air. Treat symptoms. Call a physician.
NOTE TO PHYSICIAN:
No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.
CAUTION:
If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

06 - SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE:
Eye, Skin
EYE CONTACT:
May cause irritation with prolonged contact.
SKIN CONTACT:
May cause irritation with prolonged contact.
SYMPTOMS OF EXPOSURE:
A review of available data does not identify any symptoms from exposure not previously mentioned.
AGGRAVATION OF EXISTING CONDITIONS:
A review of available data does not identify any worsening of existing conditions.

07 - SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES:
Acute toxicity studies have been conducted on this product. The results are shown below.
ACUTE ORAL TOXICITY (ALBINO RATS):
LD50 = Greater than 5,000 mg/kg
ACUTE DERMAL TOXICITY (ALBINO RABBITS):
LD50 = Greater than 2,000 mg/kg
PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):
SKIN IRRITATION INDEX DRAIZE RATING:
0.0/8.0 Non-irritating
PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):
EYE IRRITATION INDEX DRAIZE RATING:
2.7/110.0 Minimally irritating

08 - SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR:
Clear water-white
FORM:
Liquid
ODOR:
Organic
DENSITY:
10.2 lbs/gal.
SOLUBILITY IN WATER:
Completely
SPECIFIC GRAVITY:
1.21 - 1.23 @ 60 Degrees F ASTM D-1298
pH (NEAT) =
3.6 - 4.0 ASTM E-70
VISCOSITY:
51 cps @ 60 Degrees F ASTM D-2983
FREEZE POINT:

20 Degrees F ASTM D-1177

FLASH POINT:

None (PMCC) ASTM D-93

NOTE:

These physical properties are typical values for this product.

****
| 09 - SECTION 8 FIRE AND EXPLOSION INFORMATION |
****

FLASH POINT:

None (PMCC) ASTM D-93

EXTINGUISHING MEDIA:

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use water to cool containers exposed to fire.

UNUSUAL FIRE AND EXPLOSION HAZARD:

May evolve NOx or under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure build up leading to a rupture.

****
| 10 - SECTION 9 REACTIVITY INFORMATION |
****

INCOMPATIBILITY:

Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release ot toxic fumes.

THERMAL DECOMPOSITION PRODUCTS:

In the event of combustion CO, CO2, NOx may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

****
| 11 - SECTION 10 PERSONAL PROTECTION EQUIPMENT |
****

RESPIRATORY PROTECTION:

Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION:

General ventilation is recommended.

PROTECTIVE EQUIPMENT:

Use impermeable gloves and chemical splash goggles when attaching feeding equipment or doing maintenance.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

12 - SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills:

Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills:

Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

DISPOSAL:

If this product becomes a wastes, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state and federal regulations.

13 - SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:

96 hour static acute LC50 to Bluegill Sunfish = Greater than 1,000 ppm

96 hour no observed effect concentration is 1,000 ppm based on no mortality or abnormal effects.

96 hour static acute LC50 to Rainbow Trout = Greater than 1,000 ppm

96 hour no observed effect concentration is 1,000 ppm based on no mortality or abnormal effects.

48 hour static acute LC50 to Daphnia Magna = Greater than 1,000 ppm

48 hour no observed effect concentration is 560 ppm based on no mortality or abnormal effects.

TOXICITY RATING:

Essentially non-toxic

96 hour static acute LC50 Mysid Shrimp = 464 mg/L

TOXICITY RATING:
Slightly toxic

96-hour static acute LC50 to Silversides (Menidia beryllina) =
Greater than 1,000 mg/L
TOXICITY RATING:
Essentially non-toxic

If released into the environment, see CERCLA in Section 14.

14 - SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE -
PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15 - SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.
FEDERAL REGULATIONS:
OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, none of the ingredients in this product are hazardous.
CERCLA, 40 CFR 117, 302:
Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:
SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.
SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.
SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product does not contain ingredients on the List of Toxic Chemicals.
TOXIC SUBSTANCES CONTROL ACT (TSCA):
This chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.
FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 (formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):
None of the ingredients are specifically listed.
CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
This product does not contain ingredients covered by the Clean Air Act.

Contents for this MSDS

01 - PRODUCT IDENTIFICATION

PRODUCT NAME: HYDRAZINE, ANHYDROUS (95%)
FORMULA: NH2NH2
FORMULA WT: 32.05
CAS NO.: 302-01-2
NIOSH/RTECS NO.: MU7175000
COMMON SYNONYMS: HYDRAZINE; DIAMIDE; DIAMINE
PRODUCT CODES: N360

- STANDARD PHRASE

CHEMTREC # (800) 424-9300
NATIONAL RESPONSE CENTER # (800) 424-8802
J. T. BAKER INC.
222 RED SCHOOL LANE
PHILLIPSBURG, NJ 08865
24-HOUR EMERGENCY TELEPHONE -- (201) 859-2151

EFFECTIVE: 06/10/88
REVISION #03

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(*) SYSTEM

HEALTH	-	3	SEVERE (CANCER CAUSING)
FLAMMABILITY	-	3	SEVERE (FLAMMABLE)
REACTIVITY	-	3	SEVERE (EXPLOSIVE)
CONTACT	-	3	SEVERE (LIFE)

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

PRECAUTIONARY LABEL STATEMENTS

POISON DANGER
CAUTION: CANCER HAZARD
MATERIAL MAY BE MUTAGENIC
FLAMMABLE - VAPOR MAY EXPLODE IN FIRE
CONTACT WITH OTHER MATERIALS MAY CAUSE FIRE - CAUSES BURNS
HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN
EXCEPTIONAL HEALTH AND CONTACT HAZARDS - READ MATERIAL SAFETY DATA SHEET
KEEP AWAY FROM HEAT, SPARKS, FLAME. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. DO NOT BREATHE VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER IN COOL AREA AWAY FROM DIRECT SUNLIGHT. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE WATER SPRAY, ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE. IN CASE OF SPILL, SOAK UP WITH SAND OR EARTH. DO NOT USE WATER.

SAF-T-DATA(*) STORAGE COLOR CODE: RED STRIPE (STORE SEPARATELY)

02 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
HYDRAZINE	95-100	302-01-2

03 - PHYSICAL DATA

BOILING POINT: 113 C (235 F)
VAPOR PRESSURE(MM HG): 10
MELTING POINT: 2 C (36 F)
VAPOR DENSITY(AIR=1): 1.1
SPECIFIC GRAVITY (H2O=1): 1.01
EVAPORATION RATE (BUTYL ACETATE=1): N/A
SOLUBILITY(H2O): COMPLETE (IN ALL PROPORTIONS)
% VOLATILES BY VOLUME: 100
APPEARANCE & ODOR: CLEAR, COLORLESS, FUMING LIQUID. AMMONIA-LIKE ODOR.

04 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (OPEN CUP): 38 C (100 F)
NFPA 704M RATING: 3-3-2
FLAMMABLE LIMITS: UPPER - 100 %
LOWER - 4.7 %

FIRE EXTINGUISHING MEDIA
USE WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL OR ORDINARY FOAM.

SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED

BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.
MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER
TO KEEP FIRE-EXPOSED CONTAINERS COOL.
FLUSH AREA WITH WATER UNTIL COOL SO REIGNITION WILL NOT OCCUR.

UNUSUAL FIRE & EXPLOSION HAZARDS
VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK.
CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG
OXIDIZERS MAY CAUSE FIRE.
CAN BE AN EXPLOSION HAZARD, ESPECIALLY WHEN HEATED.

TOXIC GASES PRODUCED
NITROGEN OXIDES, AMMONIA, HYDROGEN GAS

****
| 05 - HEALTH HAZARD DATA |
****

THIS SUBSTANCE IS LISTED AS AN ACGIH SUSPECTED HUMAN CARCINOGEN, A NTP ANTICIPATED HUMAN CARCINOGEN, AND AN IARC PROBABLE HUMAN CARCINOGEN (GROUPS 2A AND 2B). SOME REPORTS HAVE INDICATED THAT THIS SUBSTANCE MAY BE MUTAGENIC. TLV LISTED DENOTES (SKIN). THERE IS NO STEL VALUE ESTABLISHED FOR THIS PRODUCT.

THRESHOLD LIMIT VALUE (TLV/TWA): 0.1 MG/M3 (0.1 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): 1.3 MG/M3 (1 PPM)

TOXICITY:
LD50 (ORAL-RAT) (MG/KG)	- 60
LD50 (IPR-RAT) (MG/KG)	- 59
LD50 (SKIN-RABBIT) (MG/KG)	- 91
LC50 (INHL-RAT-4H) (PPM)	- 570

CARCINOGENICITY: NTP: YES IARC: YES Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE
INHALATION MAY CAUSE HEADACHE, NAUSEA, VOMITING, DIZZINESS, NARCOSIS, SUFFOCATION, LOWER BLOOD PRESSURE, CENTRAL NERVOUS SYSTEM DEPRESSION. INHALATION OF VAPORS MAY CAUSE SEVERE IRRITATION OR BURNS OF THE RESPIRATORY SYSTEM, PULMONARY EDEMA, OR LUNG INFLAMMATION.
CONTACT WITH SKIN OR EYES MAY CAUSE SEVERE IRRITATION OR BURNS. PROLONGED CONTACT MAY CAUSE SKIN SENSITIZATION. SUBSTANCE IS READILY ABSORBED THROUGH THE SKIN.
INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS, GASTROINTESTINAL IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION, AND BURNS TO MOUTH AND THROAT.
CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE DAMAGE TO KIDNEYS, LIVER, LUNGS, BLOOD, OR CENTRAL NERVOUS SYSTEM.

TARGET ORGANS
CENTRAL NERVOUS SYSTEM, RESPIRATORY SYSTEM, LUNGS, KIDNEYS, LIVER, BLOOD, EYES, SKIN

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
NONE IDENTIFIED

ROUTES OF ENTRY
INGESTION, INHALATION, ABSORPTION. EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES
CALL A PHYSICIAN.
IF SWALLOWED, DO NOT INDUCE VOMITING; IF CONSCIOUS, GIVE WATER, MILK, OR MILK OF MAGNESIA.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.
WASH CLOTHING BEFORE RE-USE.

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, THE STATE REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE:

WARNING: THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

06 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION, SUNLIGHT, LIGHT, SHOCK

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG ACIDS, NITRIC ACID, METAL OXIDES, MOST COMMON METALS, COPPER, ZINC, LEAD, COMBUSTIBLE MATERIALS, ORGANIC MATERIALS, POROUS MATERIALS; ESP. WOOD, ASBESTOS, SOIL, RUST

DECOMPOSITION PRODUCTS: OXIDES OF NITROGEN, AMMONIA, HYDROGEN

07 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING, OR FLAMES IN AREA.
FLUSH AREA WITH FLOODING AMOUNTS OF WATER. (USE CAUTION)
NEUTRALIZE WITH SODIUM HYPOCHLORITE SOLUTION.
TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL; THEN FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL

ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: U133 (TOXIC WASTE)

08 - PROTECTIVE EQUIPMENT

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS.

RESPIRATORY PROTECTION: A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. IF AIRBORNE CONCENTRATION EXCEEDS TLV, A SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

EYE/SKIN PROTECTION: SAFETY GOGGLES AND FACE SHIELD, UNIFORM, PROTECTIVE SUIT, BUTYL RUBBER GLOVES ARE RECOMMENDED.

09 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(*) STORAGE COLOR CODE: RED STRIPE (STORE SEPARATELY)

SPECIAL PRECAUTIONS

BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID. KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA.
ISOLATE FROM INCOMPATIBLE MATERIALS.
STORE IN LIGHT-RESISTANT CONTAINERS.
KEEP PRODUCT OUT OF LIGHT.
STORE UNDER NITROGEN.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME	HYDRAZINE, ANHYDROUS
HAZARD CLASS	FLAMMABLE LIQUID
UN/NA	UN2029
LABELS	FLAMMABLE LIQUID, POISON
REPORTABLE QUANTITY	1 LBS.

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME	HYDRAZINE, ANHYDROUS
HAZARD CLASS	3.3, 6.1
UN/NA	UN2029
LABELS	FLAMMABLE LIQUID, POISON, CORROSIVE

(*) AND (R) DESIGNATE TRADEMARKS.

N/A = NOT APPLICABLE OR NOT AVAILABLE

- STANDARD PHRASE

THE INFORMATION PUBLISHED IN THIS MATERIAL SAFETY DATA SHEET HAS BEEN COMPILE
FROM OUR EXPERIENCE AND DATA PRESENTED IN VARIOUS TECHNICAL PUBLICATIONS. I
IS THE USER'S RESPONSIBILITY TO DETERMINE THE SUITABILITY OF THIS INFORMATIO
FOR THE ADOPTION OF NECESSARY SAFETY PRECAUTIONS. WE RESERVE THE RIGHT T
REVISE MATERIAL SAFETY DATA SHEETS PERIODICALLY AS NEW INFORMATION BECOME
AVAILABLE. J.T.BAKER INC. MAKES NO WARRANTY OR REPRESENTATION ABOUT THE
ACCURACY OR COMPLETENESS NOR FITNESS FOR PURPOSE OF THE INFORMATION CONTAINE
HEREIN.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305
Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS INFORMATION SERVICES

No. 68

CALCIUM HYPOCHLORITE (Dry)

Date July 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CALCIUM HYPOCHLORITE (Dry)
OTHER DESIGNATIONS: Calcium Oxychloride, $Ca(OCl)_2$, CAS #007 778 543, HTH (Trade name)
MANUFACTURER: Available from several sources, including:

Canadian Industries Limited
Chemicals
Box 10
Montreal, Quebec, Canada H3C 2R3

Olin Corporation
120 Long Ridge Road
Stamford, CT 06904
Phone: (203) 356-2345

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Calcium Hypochlorite	*	No TLV Established
*Concentration usually stated in terms of weight % of available chlorine. (See ASTM D2022) HTH (high-test hypochlorite) contains about 70% available chlorine. Solid materials with less than 39% available chlorine include chloride of lime and bleaching powder; these contain much chloride ion and water and possibly other impurities, for example: $Ca(OCl)Cl \cdot 2H_2O$. The presence of magnesium hypochlorite in material of high available chlorine level may reduce its stability.		Rat, Oral LD_{50} 850 mg/kg

SECTION III. PHYSICAL DATA

Boiling point, deg C	N/A	Specific gravity	2.35
Vapor pressure, mm Hg	N/A	Melting point, deg C	decomposes @ 100
Solubility in water, 20 C, % by wt	14	Molecular weight	142.98

Appearance and Odor: White non-hygroscopic granules or tablets having a strong chlorine odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
N/A	N/A	N/A		

Use a water spray to cool fire-exposed containers of this material and drench area with large amounts of water from a safe position. When containers are heated in a fire situation, they are subject to violent rupture! Contamination or mixing with foreign materials (combustibles, grease, chemicals, etc.) can cause fires of great intensity.
Firefighters need to use self-contained breathing apparatus and full protective clothing for fires involving this material, especially in enclosed areas.

SECTION V. REACTIVITY DATA

Calcium hypochlorite is stable at room temperature in suitable closed containers when kept dry and free from contamination. It does not polymerize.
It is a powerful oxidizing agent which can readily ignite combustibles. Violent reactions or explosions can occur, for example with amines, carbon tetrachloride, charcoal, ethyl alcohol, metal oxides, mercaptans, organic sulfides, sulfur, turpentine, and strong reducing agents. A mixture with glycerine can ignite spontaneously. Material containing over 60% available chlorine will ignite on contact with lubricating oil (addition of about 20% or more of water will prevent this).
In the absence of combustibles and other chemicals, when heated above 100 C, it can undergo exothermic decomposition, evolving oxygen. On contact with acids it forms hypochlorous acid and liberates Cl_2.

GENERAL ELECTRIC

NO. 68

SECTION VI. HEALTH HAZARD INFORMATION

TLV None Established

All tissue contacted can be irritated and/or damaged by this strong oxidizing agent, the degree of injury depending on the dose, available chlorine level, and exposure time. Skin contact can produce vesicular eruptions and eczematoid dermatitis. Eye contact can result in severe eye damage. Inhalation of dust irritates the respiratory tract and may cause pulmonary edema. Ingestion irritates mouth, throat and stomach, and gastric acid will liberate hypochlorous acid. Fatalities can result from severe complications of local injury, shock, toxemia, hemorrhage, wall perforation & obstruction.

FIRST AID:

Eye Contact: Immediately flush with lots of running water for 15 minutes. Call physician.

Skin Contact: Immediately remove contaminated clothing. Flush affected area with water. Get medical help if contact area was large or if symptoms persist.

Inhalation: Remove to fresh air. Support breathing if needed. Get medical help.

Ingestion: Promptly rinse mouth with water and then give large amounts of milk or water to drink, followed by milk of magnesia. Contact physician or hospital. Do not induce vomiting unless instructed by physician.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel of spills. Remove combustibles and ignition sources. Those involved in clean up need protection against contact with solid or inhalation of dust. Prevent generation of dust. Prevent direct discharge into sewers or waterways.

Recover uncontaminated solid material in clean, dry containers. Other spilled material is covered with weak reducing agent, slurried with water, and then flushed with water to a suitable holding tank. Wash spill site well with soap solution containing a weak reducing agent.

DISPOSAL: Use reducing agents to destroy "available chlorine." Adjust pH of reduced liquid to neutral and decant. Discharge neutral liquid, diluting with much water. Dispose of neutral sludge (if any) in a landfill. Follow Federal, State, and Local regulations. (Contact supplier for detailed procedures.)

SECTION VIII. SPECIAL PROTECTION INFORMATION

Suppliers indicate no ventilation requirements in handling this material, but do suggest a dust mask be used for respiratory protection.

It is recommended that sufficient ventilation be provided to prevent any irritation from dust inhalation and to disperse any hypochlorite decomposition products. An approved respirator with a dust filter and cartridge or canister for chlorine absorption should be available.

Use neoprene rubber gloves, chemical goggles, and protective outer wear to prevent contact with the eyes, skin or clothing.

Eyewash stations, safety showers and washing facilities should be available to handling and use areas.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, dry, well-ventilated low fire-risk area, away from combustible and incompatible materials (see Sect. V). Prevent contamination of material. Protect containers from physical damage. Do not drop, roll, or skid containers.

This material is a powerful oxidizing agent; use with caution! Mix only with water.

Water solutions are not stable, but undergo a slow decomposition.

Prevent contact with eyes, skin, mucous membranes, and clothing. Do not ingest.'

DOT Classification (for over 39% available chlorine) - OXIDIZER

DATA SOURCE(S) CODE: 1,4-11,20,25,26,34

APPROVALS: MIS CRD J. M. Nielsen

Industrial Hygiene and Safety J W 7-25-80

MEDICAL REVIEW: 5 August 1980

GENERAL ELECTRIC

****

This is an MSDS from the Commonwealth Edison MSDS Program

ATTENTION: Safety and Industrial Hygiene advises users to review the intended use of this information with his/her supervisor or Safety and Industrial Hygiene advisor.

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Contents for this MSDS

01 - GENERAL INFORMATION

CE002125
NALCO
PRODUCT: NALCOLYTE 8103 COAGULANT
EMERGENCY TELEPHONE NUMBER: MEDICAL (312) 920-1510 (24 HOURS)
NALCO CHEMICAL COMPANY
ONE NALCO CENTER
NAPERVILLE, ILLINOIS 60566-1024
AREA 312-961-9500
PREPARED BY: JOHN J. KASPER, MSC., MANAGER PRODUCT SAFETY
DATE CHANGED: 01/25/88
DATE PRINTED: 02/03/88

02 - SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCOLYTE 8103 COAGULANT
DESCRIPTION: AN AQUEOUS SOLUTION OF A POLYQUATERNARY AMINE

NFPA 704M RATING:
 0 HEALTH
 1 FLAMMABILITY
 0 REACTIVITY
 0 OTHER
0 = INSIGNIFICANT
1 = SLIGHT
2 = MODERATE
3 = HIGH
4 = EXTREME

03 - SECTION 2 HAZARDOUS INGREDIENTS

OUR HAZARD EVALUATION OF THE INGREDIENT(S) UNDER OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 HAS FOUND NONE OF THE INGREDIENT(S) HAZARDOUS.

04 - SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: MAY CAUSE IRRITATION TO SKIN AND EYES. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. DO NOT TAKE INTERNALLY.
EMPTY CONTAINERS MAY CONTAIN RESIDUAL PRODUCT. DO NOT REUSE CONTAINER UNLESS PROPERLY RECONDITIONED.

05 - SECTION 4 FIRST AID INFORMATION

EYES: FLUSH WITH WATER FOR 15 MINUTES. CALL A PHYSICIAN.
SKIN: FLUSH WITH WATER FOR 15 MINUTES.
INGESTION: DO NOT INDUCE VOMITING. GIVE WATER. CALL A PHYSICIAN.
NOTE TO PHYSICIAN: NO SPECIFIC ANTIDOTE IS KNOWN. BASED ON THE INDIVIDUAL REACTIONS OF THE PATIENT, THE PHYSICIAN'S JUDGMENT SHOULD BE USED TO CONTROL SYMPTOMS AND CLINICAL CONDITION.
CAUTION: IF UNCONSCIOUS, HAVING TROUBLE BREATHING OR IN CONVULSIONS, DO NOT INDUCE VOMITING OR GIVE WATER.

06 - SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: EYE, SKIN
EYE CONTACT: NON-IRRITATING.
SKIN CONTACT: CAN CAUSE TRANSIENT IRRITATION.
SYMPTOMS OF EXPOSURE: A REVIEW OF AVAILABLE DATA DOES NOT IDENTIFY ANY SYMPTOMS FROM EXPOSURE.
AGGRAVATION OF EXISTING CONDITIONS: A REVIEW OF AVAILABLE DATA DOES NOT IDENTIFY ANY WORSENING OF EXISTING CONDITIONS.

07 - SECTION 6 TOXICOLOGY INFORMATION

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ACUTE TOXICITY STUDIES: ACUTE TOXICITY STUDIES HAVE BEEN CONDUCTED ON THIS PRODUCT. THE RESULTS ARE SHOWN BELOW.
ACUTE ORAL TOXICITY (ALBINO RATS): LD50 = 4,699 MG/KG
95% CONFIDENCE LIMIT = 3,772 - 5,854 MG/KG
ACUTE DERMAL TOXICITY (ALBINO RABBITS): LD50 = GREATER THAN 2,000 MG/KG
PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):
SKIN IRRITATION INDEX DRAIZE RATING: 0.84/8.0 MILDLY IRRITATING
PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):
EYE IRRITATION INDEX DRAIZE RATING: 1.0/110.0 PRACTICALLY NON-IRRITATING

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| 08 - SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES |
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COLOR: CLEAR LIGHT YELLOW
FORM: LIQUID
ODOR: ODORLESS
DENSITY: 9.1 LBS/GAL.
SOLUBILITY IN WATER: COMPLETELY
SPECIFIC GRAVITY: 1.09 @ 60 DEGREES F ASTM D-1298
PH (NEAT): 4.5 ASTM E-70
FREEZE POINT: 14 DEGREES F ASTM D-1177
FLASH POINT: 200 DEGREES F (PMCC) ASTM D-93
NOTE: THESE PHYSICAL PROPERTIES ARE TYPICAL VALUES FOR THIS PRODUCT.

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| 09 - SECTION 8 FIRE AND EXPLOSION INFORMATION |
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FLASH POINT: 200 DEGREES F (PMCC) ASTM D-93
EXTINGUISHING MEDIA: THIS PRODUCT WOULD NOT BE EXPECTED TO BURN UNLESS ALL THE WATER IS BOILED AWAY. THE REMAINING ORGANICS MAY BE IGNITABLE. USE WATER TO COOL CONTAINERS EXPOSED TO FIRE.
UNUSUAL FIRE AND EXPLOSION HAZARD: MAY EVOLVE NOX UNDER FIRE CONDITIONS.

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| 10 - SECTION 9 REACTIVITY INFORMATION |
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INCOMPATIBILITY: AVOID ALKALINE MATERIALS (EG. AMMONIA AND ITS SOLUTIONS, CARBONATES, SODIUM HYDROXIDE (CAUSTIC), POTASSIUM HYDROXIDE, CALCIUM HYDROXIDE (LIME), CYANIDES, SULFIDES, HYPOCHLORITES, CHLORITES) WHICH CAN GENERATE HEAT WITH SPLATTERING OR BOILING AND THE RELEASE OF TOXIC FUMES.
THERMAL DECOMPOSITION PRODUCTS: IN THE EVENT OF COMBUSTION CO, CO2, NOX MAY BE FORMED. DO NOT BREATHE SMOKE OR FUMES. WEAR SUITABLE PROTECTIVE EQUIPMENT.

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| 11 - SECTION 10 PERSONAL PROTECTION EQUIPMENT |
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RESPIRATORY PROTECTION: RESPIRATORY PROTECTION IS NOT NORMALLY NEEDED SINCE THE VOLATILITY AND TOXICITY ARE LOW. IF SIGNIFICANT VAPORS, MISTS

OR AEROSOLS ARE GENERATED, WEAR A NIOSH APPROVED OR EQUIVALENT RESPIRATOR, (ANSI Z 88.2, 1980 FOR REQUIREMENTS AND SELECTION).
FOR LARGE SPILLS, ENTRY INTO LARGE TANKS, VESSELS OR ENCLOSED SMALL SPACES WITH INADEQUATE VENTILATION, A PRESSURE-DEMAND, SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.
VENTILATION: GENERAL VENTILATION IS RECOMMENDED.
PROTECTIVE EQUIPMENT: USE IMPERMEABLE GLOVES AND CHEMICAL SPLASH GOGGLES (ANSI Z 87.1 REQUIREMENTS AND SELECTION OF GLOVES, GOGGLES, SHOES, ETC.) WHEN ATTACHING FEEDING EQUIPMENT OR DOING MAINTENANCE.
IF CLOTHING IS CONTAMINATED, REMOVE CLOTHING AND THOROUGHLY WASH THE AFFECTED AREA. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

12 - SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER: (312-920-1510)
SPILL CONTROL AND RECOVERY:
SMALL LIQUID SPILLS: CONTAIN WITH ABSORBENT MATERIAL, SUCH AS CLAY, SOIL OR ANY COMMERCIALLY AVAILABLE ABSORBENT. SHOVEL RECLAIMED LIQUID AND ABSORBENT INTO RECOVERY OR SALVAGE DRUMS FOR DISPOSAL. REFER TO CERCLA IN SECTION 14.
LARGE LIQUID SPILLS: DIKE TO PREVENT FURTHER MOVEMENT AND RECLAIM INTO RECOVERY OR SALVAGE DRUMS OR TANK TRUCK FOR DISPOSAL. REFER TO CERCLA IN SECTION 14.
THIS PRODUCT IS TOXIC TO FISH. IT SHOULD NOT BE DIRECTLY DISCHARGED INTO LAKES, PONDS, STREAMS, WATERWAYS OR PUBLIC WATER SUPPLIES.
DISPOSAL: IF THIS PRODUCT BECOMES A WASTE, IT DOES NOT MEET THE CRITERIA OF A HAZARDOUS WASTE AS DEFINED UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) 40 CFR 261, SINCE IT DOES NOT HAVE THE CHARACTERISTICS OF SUBPART C, (I.E. D001 THROUGH D017) NOR IS IT LISTED UNDER SUBPART D.
AS A NON-HAZARDOUS LIQUID WASTE, IT SHOULD BE SOLIDIFIED BEFORE DISPOSAL TO A SANITARY LANDFILL. CAN BE INCINERATED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

13 - SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:
96 HOUR STATIC ACUTE LC50 TO BLUEGILL SUNFISH = 0.90 PPM
72 HOUR STATIC ACUTE LC50 TO BLUEGILL SUNFISH = 0.90 PPM
48 HOUR STATIC ACUTE LC50 TO BLUEGILL SUNFISH = 1.0 PPM
24 HOUR STATIC ACUTE LC50 TO BLUEGILL SUNFISH = 1.6 PPM
95% CONFIDENCE LIMIT OF 96 HOUR LC50 = 0.8 - 1.1 PPM
96 HOUR NO OBSERVED EFFECT CONCENTRATION IS 0.56 PPM BASED ON NO MORTALITY OR ABNORMAL EFFECTS.
96 HOUR STATIC ACUTE LC50 TO RAINBOW TROUT = 0.47 PPM
72 HOUR STATIC ACUTE LC50 TO RAINBOW TROUT = 0.50 PPM
48 HOUR STATIC ACUTE LC50 TO RAINBOW TROUT = 0.56 PPM
24 HOUR STATIC ACUTE LC50 TO RAINBOW TROUT = 0.79 PPM
95% CONFIDENCE LIMIT OF 96 HOUR LC50 = 0.41 - 5.5 PPM
96 HOUR NO OBSERVED EFFECT CONCENTRATION IS 0.18 PPM BASED ON NO

MORTALITY OR ABNORMAL EFFECTS.
96 HOUR STATIC ACUTE LC50 TO SHEEPSHEAD MINNOW = GREATER THAN 1000 PPM
48 HOUR STATIC ACUTE LC50 TO SHEEPSHEAD MINNOW = GREATER THAN 1000 PPM
24 HOUR STATIC ACUTE LC50 TO SHEEPSHEAD MINNOW = GREATER THAN 1000 PPM
96 HOUR NO OBSERVED EFFECT CONCENTRATION IS 100 PPM BASED ON NO MORTALITY OR ABNORMAL EFFECTS.
IF RELEASED INTO THE ENVIRONMENT, SEE CERCLA IN SECTION 14.

14 - SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE: PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15 - SECTION 14 REGULATORY INFORMATION

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT.
FEDERAL REGULATIONS:
OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200: BASED ON OUR HAZARD EVALUATION, THIS PRODUCT IS NOT HAZARDOUS.
CERCLA, 40 CFR 117, 302: NOTIFICATION OF SPILLS OF THIS PRODUCT IS NOT REQUIRED.
SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:
SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED IN APPENDIX A AND B AS AN EXTREMELY HAZARDOUS SUBSTANCE.
SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370): OUR HAZARD EVALUATION HAS FOUND THAT THIS PRODUCT IS NOT HAZARDOUS UNDER 29 CFR 1910.1200.
UNDER SECTION 311, SUBMITTAL OF MSDS'S OR A LIST OF PRODUCT NAMES TO THE LOCAL EMERGENCY PLANNING COMMISSION, STATE EMERGENCY RESPONSE COMMISSION AND LOCAL FIRE DEPARTMENT IS REQUIRED AFTER OCTOBER 17, 1987 IF YOU HAVE: - 10,000 POUNDS OR MORE OF A HAZARDOUS SUBSTANCE, OR
- 500 POUNDS OR THE THRESHOLD PLANNING QUANTITY, WHICHEVER IS LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.
AFTER OCTOBER 17, 1989, MSDS(S), OR A LIST OF PRODUCT NAMES FOR ALL HAZARDOUS SUBSTANCES BETWEEN ZERO (0) AND 10,000 POUNDS, NOT PREVIOUSLY REPORTED, MUST BE SUBMITTED.
SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372): THIS PRODUCT DOES NOT CONTAIN INGREDIENTS (AT A LEVEL OF 1% OR GREATER) ON THE LIST OF TOXIC CHEMICALS.
TOXIC SUBSTANCES CONTROL ACT (TSCA): THE CHEMICAL INGREDIENTS IN THIS PRODUCT ARE ON THE 8(B) INVENTORY LIST (40 CFR 710).
U.S. EPA - OFFICE OF DRINKING WATER - ADDITIVES EVALUATION BRANCH: THE USEPA HAS APPROVED THIS PRODUCT FOR USE AS A COAGULATION AID IN THE TREATMENT OF POTABLE WATER. THE MAXIMUM RECOMMENDED PRODUCT DOSAGE LIMIT IS 50 PPM.
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D: IF THIS PRODUCT BECOMES A WASTE, IT DOES NOT MEET THE CRITERIA OF A HAZARDOUS WASTE.
FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15

(FORMERLY SEC. 307), 40 CFR 116 (FORMERLY SEC. 311): NONE OF THE INGREDIENTS ARE SPECIFICALLY LISTED.
CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112: THIS PRODUCT DOES NOT CONTAIN INGREDIENTS COVERED BY THE CLEAN AIR ACT.
STATE REGULATIONS:
CALIFORNIA PROPOSITION 65: THIS PRODUCT COMPLIES WITH THE MSDS AND LABELING REQUIREMENTS OF THE SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65).
MICHIGAN CRITICAL MATERIALS: THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED ON THE MICHIGAN CRITICAL MATERIALS REGISTER.
STATE RIGHT TO KNOW LAWS: THIS PRODUCT DOES NOT CONTAIN INGREDIENTS LISTED BY STATE RIGHT TO KNOW LAWS.

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| 16 - SECTION 15 ADDITIONAL INFORMATION |
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NONE
HEADING: SECTION 16 USER'S RESPONSIBILITY
THIS PRODUCT MATERIAL SAFETY DATA SHEET PROVIDES HEALTH AND SAFETY INFORMATION. THE PRODUCT IS TO BE USED IN APPLICATIONS CONSISTENT WITH OUR PRODUCT LITERATURE. INDIVIDUALS HANDLING THIS PRODUCT SHOULD BE INFORMED OF THE RECOMMENDED SAFETY PRECAUTIONS AND SHOULD HAVE ACCESS TO THIS INFORMATION. FOR ANY OTHER USES, EXPOSURES SHOULD BE EVALUATED SO THAT APPROPRIATE HANDLING PRACTICES AND TRAINING PROGRAMS CAN BE ESTABLISHED TO ENSURE SAFE WORKPLACE OPERATIONS. PLEASE CONSULT YOUR LOCAL SALES REPRESENTATIVE FOR ANY FURTHER INFORMATION.
HEADING: SECTION 17 BIBLIOGRAPHY
ANNUAL REPORT ON CARCINOGENS, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE, PB 33-135855, 1983.
CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, DOULL, J., KLAASSEN, C. D., AND AMDUR, M. O., EDS., MACMILLIAN PUBLISHING COMPANY, INC., N. Y., 2ND EDITION, 1980.
CHEMICAL HAZARDS OF THE WORKPLACE, PROCTOR, N. H., AND HUGHES, J. P., EDS., J. P. LIPINCOTT COMPANY, N.Y., 1981.
DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, SAX, N. IRVING, ED., VAN NOSTRAND REINHOLD COMPANY, N.Y., 6TH EDITION, 1984.
IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, GENEVA: WORLD HEALTH ORGANIZATION, INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, 1972-1977.
PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, CLAYTON, G. D., CLAYTON, F. E., EDS., JOHN WILEY AND SONS, N. Y., 3RD EDITION, VOL. 2 A-C, 1981.
REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE, CENTER FOR DISEASE CONTROL, NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, 1983 SUPPLEMENT OF 1981-1982 EDITION, VOL. 1-3, OH, 1984.
TITLE 29 CODE OF FEDERAL REGULATIONS PART 1910, SUBPART Z, TOXIC AND HAZARDOUS SUBSTANCES, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, OH.

NALCO

MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 92UM001 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 92UM001 LIQUID
DESCRIPTION: An organic amine

NFPA 704M/HMIS RATING: 3/3 HEALTH 1/1 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Monoethanolamine	141-43-5	20-40

SECTION 3 PRECAUTIONARY LABEL INFORMATION

WARNING: Causes burns to skin and eyes. Do not get in eyes, on skin, or on clothing. Wear goggles and face shield when handling. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Immediately flush for at least 15 minutes while holding eyelids open. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. For a large splash, flood body under a shower. Call a physician at once.

INGESTION: Do not induce vomiting. Give water. Call a physician at once.

INHALATION: Remove to fresh air. Treat symptoms. Call a physician at once.

NOTE TO PHYSICIAN: Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 4 FIRST AID INFORMATION (CONTINUED)

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: Corrosive to the eyes with possible permanent damage depending on the length of exposure and on the first aid action given.

SKIN CONTACT: Corrosive to the skin with possible permanent damage depending on the length of exposure and on the first aid action given.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

TOXICITY STUDIES: Toxicity studies have not been conducted on this product, but toxicity studies of the ingredient(s) in Section 2 have been reviewed. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS):
Monoethanolamine LD50 = 2.1 - 2.7 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS):
Monoethanolamine LD50 = Greater than 2 g/kg

ACUTE INHALATION TOXICITY (DOGS):
Monoethanolamine LC50 = Greater than 2 ppm (7-hour exposure)

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS): Monoethanolamine
SKIN IRRITATION INDEX DRAIZE RATING: 8.0/8.0 Corrosive

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS): Monoethanolamine
EYE IRRITATION INDEX DRAIZE RATING: 110.0/110.0 Corrosive

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Colorless	FORM: Liquid	ODOR: Slight ammonia
DENSITY:	8.5 lbs/gal.	
SOLUBILITY IN WATER:	Dispersible	
SPECIFIC GRAVITY:	1.02 @ 77 Degrees F	ASTM D-1298
pH (NEAT) =	12.6	ASTM E-70
VISCOSITY:	5 cps @ 71 Degrees F	ASTM D-2983
FLASH POINT:	Greater than 200 Degrees F (PMCC)	ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: Greater than 200 Degrees F (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NOx under fire conditions. This product should not be heated above 140 degrees F when in contact with aluminum due to potential release of flammable hydrogen gas.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: N-nitrosamines, many are cancer causing agents to laboratory animals, may be formed when certain amines are mixed with nitrous acid, organic or inorganic nitrites or atmospheres with high nitrous oxide concentrations.

Avoid contact with strong acids (eg. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) which can generate heat, splattering or boiling and the release of toxic fumes.

STORAGE: Do not store in aluminum. Will chemically react releasing flammable hydrogen gas.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO2, NOx may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Use either a chemical cartridge respirator with a dust/mist prefilter or supplied air.

SECTION 10 PERSONAL PROTECTION EQUIPMENT (CONTINUED)

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Wear impermeable gloves, boots, apron and a face shield with chemical splash goggles. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton and butyl (compatibility studies have not been performed). A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D002.

As a hazardous liquid waste, it must be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to a licensed industrial waste landfill (Hazardous Waste Treatment, Storage and Disposal facility). A hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - ETHANOLAMINE SOLUTIONS
8, UN 2491, III

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Monoethanolamine - Corrosive

Monoethanolamine = TWA 3 ppm, STEL 6 ppm ACGIH/TLV
8 mg/m3, 15 mg/m3 ACGIH/TLV

Monoethanolamine = TWA 3 ppm, STEL 6 ppm OSHA/PEL
8 mg/m3, 15 mg/m3 OSHA/PEL

CERCLA/SUPERFUND, 40 CFR 117, 302:
Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard
— Delayed (chronic) health hazard
XX Fire hazard
— Sudden release of pressure hazard

SECTION 14 REGULATORY INFORMATION (CONTINUED)

-- Reactive hazard

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product does not contain ingredients on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):
The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15/ formerly Sec. 307, 40 CFR 116/formerly Sec. 311:
None of the ingredients are specifically listed.

Clean Air Act, Sec. 111 (40 CFR 60), Sec. 112 (40 CFR 61, 1990 Amendments):
This product contains the following ingredients covered by the Clean Air Act:

Monoethanolamine - Section 111

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:
This product does not contain any chemicals which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS:
This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:
Regulated in those states using the TLV for monoethanolamine as a criteria for listing.

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill C-70 (Class E). The product contains the following substance(s), from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range

SECTION 14 REGULATORY INFORMATION (CONTINUED)

Monoethanolamine	141-43-5	20-40

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

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IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

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REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

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THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist
DATE CHANGED: 01/02/92 DATE PRINTED: 02/22/93

MONOETHANOLAMINE

MEA

Common Synonyms	Oily liquid	Colorless	Slight ammonia odor
beta-Aminoethyl alcohol 2-Hydroxyethylamine Ethanolamine 2-Aminoethanol	Soluble and mixes with water. Freezing point is 51°F		

Avoid contact with liquid
Wear goggles and self-contained breathing apparatus
Stop discharge if possible
Call fire department
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible
Wear goggles and self-contained breathing apparatus
Extinguish with dry chemical, alcohol foam, or carbon dioxide
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID OR SOLID
Irritating to skin and eyes
Harmful if swallowed
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES, hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS, have victim drink water
[illegible] milk

Water Pollution

Dangerous to aquatic life in high concentrations
May be dangerous if it enters water intakes

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Dissolve and flush

2. LABEL

2.1 Category: Corrosive
2.2 Class: 8

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Amines/amino
3.2 Formula: $HOCH_2CH_2NH_2$
3.3 IMO/UN Designation: Not listed
3.4 DOT ID No.: 2491
3.5 CAS Registry No.: 141-43-5

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Mildly ammoniacal

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Full face shield, goggles, eye wash facility
5.2 Symptoms Following Exposure: Vapor irritates eyes and nose. Liquid causes local injury to mouth, throat, digestive tract, skin, and eyes.
5.3 Treatment of Exposure: INGESTION: induce vomiting by giving large volumes of warm salt water (2 tablespoons per glass); call a doctor. EYES: flush with water for at least 15 min; call a doctor. SKIN: flush with water
5.4 Threshold Limit Value: 3 ppm
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 2, LD_{50} = 0.5 to 5 g/kg (rat)
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure
5.10 Odor Threshold: Data not available
5.11 IDLH Value: 1,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: 185°F C.C., 200°F O.C.
6.2 Flammable Limits in Air: Data not available
6.3 Fire Extinguishing Agents: Water spray, alcohol foam, dry chemical or carbon dioxide
6.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
6.5 Special Hazards of Combustion Products: Irritating vapors generated when heated.
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: Data not available
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Data not available
6.10 Adiabatic Flame Temperature: Data not available

(Continued)

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Flush with water
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 6

8. WATER POLLUTION

8.1 Aquatic Toxicity: >100 ppm/48 hr/shrimp/LC_{50}/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 5%, 5 days, (theor.) 0%, 5 days, 64%, 20 days
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: 98+ 85% (15% water); commercial, 99+ %
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open

10. HAZARD ASSESSMENT CHART

(See Hazard Assessment Handbook)

4-PNE

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Corrosive material
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	1
Health	
Vapor (gas)	2
Liquid or Solid (skin)	2
Poison	2
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	1
Aquatic Effect	2
Reactivity	
Other Chemicals	3
Water	2
Self Reactivity	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 61.08
12.3 Boiling Point at 1 atm: 338°F = 170°C = 443°K
12.4 Freezing Point: 50.5°F = 10.3°C = 283.5°K
12.5 Critical Temperature: 648°F = 341°C = 614°K
12.6 Critical Pressure: 847 atm = 44.466 = 4.45 MN/m²
12.7 Specific Gravity: 1.018 at 20°C (Rated)
12.8 Liquid Surface Tension: Not pertinent
12.9 Liquid Water Interfacial Tension: Not pertinent
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: 360 Btu/lb = 200 cal/g = 8.37 X 10⁵ J/kg
12.13 Heat of Combustion: −10,710 Btu/lb = −5960 cal/g = −249.8 X 10⁵ J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Data not available
12.16 Heat of Polymerization: Not pertinent
12.17 Heat of Fusion: Data not available
12.18 Limiting Value: Data not available
12.19 Reid Vapor Pressure: 0.01 psia

6. FIRE HAZARDS (Continued)

6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

Power Generation Chemicals | **Product Bulletin**

B-Elimin-ox

NALCO

NALCO ELIMIN-OX® OXYGEN SCAVENGER

Product Benefits

ELIMIN-OX is an all-volatile oxygen scavenger that does not require special handling and feeding equipment to provide safer chemical application. This easy-to-use liquid product does not add solids to the treated water, which would require increased blowdown or limit use at high pressures. The benefits of corrosion protection and boiler metal passivation include:

- Improved boiler reliability — fewer outages caused by corrosion and resultant tube failures
- Extended equipment life due to reduced oxygen corrosion of feedwater equipment, feedwater heaters, pumps, economizers

Principal Uses

ELIMIN-OX is used in boiler feedwater and condensate systems for scavenging oxygen and maintaining passive metal surfaces.

ELIMIN-OX is recommended for the following applications:

- Boilers using demineralized or high purity makeup
- Once-through boilers
- Waters used for spray attemperation of steam
- Condensate and steam systems where oxygen is present
- Wet lay-up of boilers and superheaters
- May be used in place of hydrazine where the steam contacts catalysts

General Description

ELIMIN-OX is a liquid chemical metal passivator and oxygen scavenger.

Color	Colorless
Odor	Musty
Density (@ 60°F)	8.5 lb/gal
Viscosity (@ 60°F)	3 cp
pH (Neat)	7.3
(1% Solution)	6.7
Freeze Point	28°F
Freeze-Thaw Recovery	Small amount of precipitation
Flash Point (PMCC)	None

Handling

Caution: May cause irritation to skin and eyes. Avoid contact with skin, eyes, and clothing. Do not take internally. In case of contact, wash skin with soap and water; for eyes, immediately flush with large amounts of water for at least 15 minutes, and get medical attention. Remove contaminated clothing and wash before reuse. Keep out of reach of children. Refer to the Material Safety Data Sheet for additional information.

Continued on Reverse Side)

NALCO CHEMICAL COMPANY
ONE NALCO CENTER ○ NAPERVILLE, ILLINOIS 60566-1024

NALCO

Feeding

ELIMIN-OX oxygen scavenger should be fed to the deaerator storage section below the water line using an 18-inch NAL-QUILL® injector. Condensate oxygen protection can be supplemented by feeding to the steam header, condensate extraction pump discharge, and the condensate hotwell.

ELIMIN-OX should be fed neat (undiluted). Product dilution can result in loss of product activity due to the reaction of the scavenger with ambient levels of oxygen in the dilution water.

Product dilution is only acceptable when feed rates are sufficiently low to preclude neat feed. If the product must be diluted, a stainless steel (304 or 316), polyethylene, or fiberglass solution tank is recommended. A floating "doughnut-type" cover is necessary to minimize the reaction with air. Use condensate or softened water between 50 and 100°F with minimal agitation.

NALCO ELIMIN-OX oxygen scavenger cannot be mixed with other chemicals. Chemical additions to the formulation may result in complete loss of oxygen scavenging activity or phase separation of the chemical.

ELIMIN-OX must be fed continuously. Any interruption in feed will result in corrosion in the feedwater system and possible tube failure in the boiler.

Dosage

The dosage of ELIMIN-OX varies depending on oxygen levels. Your Nalco representative can recommend the proper dosage needed to ensure maximum program performance.

Shipping

ELIMIN-OX is shipped from manufacturing locations and regional distribution centers in 55-gallon, nonreturnable steel drums, and in returnable PORTA-FEED® and PORTA-FEED, Jr. containers containing 385 and 175 gallons net respectively. It is also available in bulk quantities.

Storage

The suggested in-plant storage limit is one year.

ELIMIN-OX should be kept from freezing. Store ELIMIN-OX at temperatures below 120°F and above 40°F.

FDA/USDA Status

ELIMIN-OX cannot be used where compliance with FDA or USDA regulations is required.

ELIMIN-OX is not regulated as a hazardous waste or toxic pollutant.

Remarks

If you need assistance or information, please call your nearest Nalco representative, or our Naperville office at (312) 961-9500.

For **Medical and Transportation Emergencies** involving Nalco products call (24-hour response): (312) 920-1510.

NALCO

MATERIAL SAFETY DATA SHEET

PRODUCT

ELIMIN-OX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: ELIMIN-OX OXYGEN SCAVENGER
DESCRIPTION: An aqueous solution of a modified amino compound

NFPA 704M/HMIS RATING: 1/1 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous.

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause skin irritation. Avoid contact with skin and clothing. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes.
SKIN: Flush with water for 15 minutes.
INGESTION: Induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: Non-irritating.
SKIN CONTACT: Can cause mild, short-lasting irritation.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not

SECTION 5 HEALTH EFFECTS INFORMATION (CONTINUED)

identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): LD50 = Greater than 5 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS): LD50 = Greater than 2 g/kg

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):
SKIN IRRITATION INDEX DRAIZE RATING: 0.23/8.0 Minimal irritation

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):
EYE IRRITATION INDEX DRAIZE RATING: 0.33/110.0 Practically non-irritating

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Colorless	FORM: Liquid	
DENSITY:	8.5-8.6 lbs/gal.	
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	1.02-1.03 @ 60 Degrees F	ASTM D-1298
pH (NEAT) =	6 - 10 pH (at 1%) 6.7	ASTM E-70
VISCOSITY:	3 cps @ 60 Degrees F	ASTM D-2983
FREEZE POINT:	28 Degrees F	ASTM D-1177
FLASH POINT:	None (PMCC)	ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NOx under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid mineral acids and nitrites.

SECTION 9 REACTIVITY INFORMATION (CONTINUED)

Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO2, NOx may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles when attaching feeding equipment, doing maintenance or handling product. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton and butyl (compatibility studies have not been performed).

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those

SECTION 11 SPILL AND DISPOSAL INFORMATION (CONTINUED)

responsible for control and recovery should wear the protective equipment specified in Section 10.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be deep-well injected in accordance with local, state and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:

96 hour static acute LC50 to Bluegill Sunfish = 190 ppm

96 hour static acute LC50 to Rainbow Trout = 360 ppm

AQUATIC DATA:

Results below are based on the product.

96 hour static acute LC50 to Fathead Minnow = 400 mg/L

96 hour no observed effect concentration is 100 mg/L based on no mortality or abnormal effects.

TOXICITY RATING: Slight toxic

48 hour static acute LC50 to Daphnia magna = 96 mg/L

48 hour no observed effect concentration is 20 mg/L based on no mortality or abnormal effects.

TOXICITY RATING: Moderately toxic

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, this product is not hazardous.

CERCLA, 40 CFR 117, 302:
Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product does not contain ingredients on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):
The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 (formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):
None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

SECTION 14 REGULATORY INFORMATION (CONTINUED)

CALIFORNIA PROPOSITION 65:
Hydrazine is known to the State of California to cause cancer. This product contains levels of hydrazine as an impurity at less than 0.01%.

MICHIGAN CRITICAL MATERIALS:
This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:
The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Carbohydrazide	497-18-7
Water	7732-18-5

INTERNATIONAL REGULATIONS:

This is not a WHMIS controlled product under The House of Commons of Canada Bill C-70.

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

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PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist
DATE CHANGED: 01/24/92 DATE PRINTED: 09/08/92

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 29-JAN-1997
PRINTED DATE: 20-SEP-1999

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DEPOSITROL BL5301

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road , Trevose , PA 19053
Information phone number: 215 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS- (HEDP) Corrosive (eyes)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause moderate irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard: Corrosive to steel
Emergency Response Guide #153
Odor: Mild; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause gastrointestinal irritation with possible nausea, vomiting, abdominal discomfort and diarrhea.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.
EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.
INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C P-M(CC)
MISCELLANEOUS:
Corrosive to steel
UN3265;Emergency Response Guide #153

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Acidic. Do not mix with alkaline material.
STORAGE:
Keep containers closed when not in use. Use approved containers only. Store in cool, well-vented area. Contact with metals may release flammable hydrogen gas.

CONTINUED

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

CHEMICAL NAME — **EXPOSURE LIMITS**

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:
rubber gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.406	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< -30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -34		
Viscosity(cps 70F,21C)	80	% Solubility (water)	100.0

Odor		Mild
Appearance		Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		< 1.0
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>4,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>4,000 mg/kg
NOTE - Estimated value	
Eye Irritation Score RABBIT:	9.3
NOTE - Maximum score at 48 hr;	completely reversible by day 14

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 48 Hour Static Screen
Toxicity estimated from product with similar formulation at a pH of 6-9.

0% Mortality: 500 mg/L

Daphnia magna 48 Hour Static Screen
Toxicity estimated from product with similar formulation at a pH of 6-9.

0% Mortality: 500 mg/L

BIODEGRADATION

COD (mg/gm):	329 Calculated
TOC (mg/gm):	89 Calculated
BOD-5 (mg/gm):	3 Calculated
BOD-28 (mg/gm):	7 Calculated

CONTINUED

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002=Corrosive(pH, steel).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

DOT HAZARD:	Corrosive to steel
UN / NA NUMBER:	UN3265
DOT EMERGENCY RESPONSE GUIDE #:	153

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
SARA SECTION 312 HAZARD CLASS:
Immediate(acute)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

CONTINUED

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	CORR	DOT corrosive
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	29-JAN-1997		** NEW **

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 28-JAN-1997
PRINTED DATE: 20-SEP-1999

BetzDearborn

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DEPOSITROL BL5400

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road , Trevose , PA 19053
Information phone number: 215 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP) Corrosive (eyes)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

DANGER

May cause moderate irritation to the skin. Corrosive to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard: Corrosive to steel
Emergency Response Guide #153
Odor: Mild; Appearance: Colorless To Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
Corrosive to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause severe irritation or burning of the gastrointestinal tract.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.
EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.
INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F SETA(CC)
MISCELLANEOUS:
Corrosive to steel
UN3265;Emergency Response Guide #153

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Acidic. Corrosive(Eyes). Do not mix with alkaline material.
STORAGE:
Keep containers closed when not in use. Do not freeze. If frozen, thaw and mix completely prior to use.

CONTINUED

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

CHEMICAL NAME	EXPOSURE LIMITS

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.
SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav. (70F)	1.437	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< -30.00	Vapor Density (air=1)	< 1.00
Viscosity (cps 70F)	85	% Solubility (water)	100.0

Odor	Mild
Appearance	Colorless To Yellow
Physical State	Liquid
Flash Point (F)	> 200 SETA(CC)
pH As Is (approx.)	< 1.0
Evaporation Rate (Ether=1)	< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZ INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	2,400 mg/kg
Dermal LD50 RABBIT:	>7,940 mg/kg
NOTE - FHSA	
Skin Irritation Score RABBIT:	0
Eye Irritation Score RABBIT:	CORROSIVE
90 Day Feed Study RAT:	NOEL:10,000 ppm
NOTE - Hemopoeitic effects at 30,000 ppm	
90 Day Feed Study DOG:	.062-1%
NOTE - 2 year-feed study. Reversible anemia developed at 1% in diet.	
90 Day Feed Study DOG:	20-60 mg/kg
NOTE - 30-day study. No pathological effects.	
Ames Assay BACTERIA:	NEGATIVE
NOTE - +/- metabolic activation	
Non-Ames Mutagenicity :	NEGATIVE
NOTE - Mouse Lymphoma Assay +/- metabolic activation	

CONTINUED

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Rainbow Trout 96 Hour Static Acute Bioassay

LC50: 610 mg/L
No Effect Level: 250 mg/L

Daphnia magna 48 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

LC50: 755 mg/L
No Effect Level: 420 mg/L

Bluegill Sunfish 96 Hour Static Acute Bioassay

LC50: 1440 mg/L
No Effect Level: 880 mg/L

Sheepshead Minnow 96 Hour Static Acute Bioassay

LC50: 3630 mg/L
No Effect Level: 170 mg/L

Fathead Minnow 96 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

LC50: 3040 mg/L
No Effect Level: 1370 mg/L

BIODEGRADATION

COD (mg/gm):	390
TOC (mg/gm):	91
BOD-5 (mg/gm):	1
BOD-28 (mg/gm):	1

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002=Corrosive(pH, steel).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

CONTINUED

14) TRANSPORT INFORMATION

DOT HAZARD:	Corrosive to steel
UN / NA NUMBER:	UN3265
DOT EMERGENCY RESPONSE GUIDE #:	153

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
SARA SECTION 312 HAZARD CLASS:
Immediate(acute)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

Health	3	Serious Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	CORR	DOT corrosive
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	28-JAN-1997		** NEW **

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 06-FEB-1998
PRINTED DATE: 20-SEP-1999

BetzDearborn

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DIANODIC DN2300

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road , Trevose , PA 19053
Information phone number: 215 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

Non-hazardous to skin. May cause slight irritation to the eyes.
Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; Non-hazardous to skin.

ACUTE EYE EFFECTS:
May cause slight irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause slight gastrointestinal irritation.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
No treatment required.
EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.
INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C P-M(CC)

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Normal chemical handling.
STORAGE:
Keep containers closed when not in use. Store in cool ventilated location. Store away from oxidizers.

CONTINUED

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.
SKIN PROTECTION:
Use of gloves made of rubber or synthetic material is optional. Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.169	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	25	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-4		
Viscosity(cps 70F,21C)	42	% Solubility (water)	100.0

Odor		Slight
Appearance		Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		5.2
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"A"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>5,000 mg/kg
Dermal LD50 RABBIT:	>2,000 mg/kg
Skin Irritation Score RABBIT:	0.3
NOTE - Value is for testing of a similar material	
Eye Irritation Score RABBIT:	2.0
NOTE - Value is for testing of a similar material; completely reversible by 72 hrs.	

CONTINUED

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 96 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

LC50: 1960 mg/L
No Effect Level: 313 mg/L

Daphnia magna 48 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

LC50: 1767 mg/L
No Effect Level: 1250 mg/L

Mysid Shrimp 48 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

10% Mortality: 16000 mg/L
0% Mortality: 8000 mg/L

Sheepshead Minnow 96 Hour Static Renewal Bioassay
pH of test solutions was adjusted to a level of 6-9.

0% Mortality: 16000 mg/L

BIODEGRADATION

COD (mg/gm): 368 Calculated
TOC (mg/gm): 144 Calculated
BOD-5 (mg/gm): 10 Calculated
BOD-28 (mg/gm): 32 Calculated

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

```
DOT HAZARD:                          Not Applicable
UN / NA NUMBER:                      Not applicable
DOT EMERGENCY RESPONSE GUIDE #: Not applicable
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CONTINUED

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
FOOD AND DRUG ADMINISTRATION:
FDA APPROVED FOR MILL SUPPLY WATER
USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS:
SEC.G5,G7
SARA SECTION 312 HAZARD CLASS:
Product is non-hazardous under Section 311/312
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

CONTINUED

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	0	Minimal Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	29-JAN-1997		** NEW **
	08-MAY-1997	15	29-JAN-1997
	10-SEP-1997	3,8,10,11,16;EDIT:4	08-MAY-1997
	10-NOV-1997	15	10-SEP-1997
	06-FEB-1998	12	10-NOV-1997

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 03-SEP-1997
PRINTED DATE: 29-NOV-1999

BetzDearborn

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DEPOSITROL BL5323

PRODUCT APPLICATION AREA: WATER-BASED CORROSION INHIBITOR/DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road , Trevose , PA 19053
Information phone number: 215 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP) Corrosive (eyes)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause slight gastrointestinal irritation.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin.

 CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.
EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.
INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C P-M(CC)

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Acidic. Do not mix with alkaline material.
STORAGE:
Keep containers closed when not in use. Do not freeze. If frozen, thaw and mix completely prior to use.

CONTINUED

PRODUCT NAME : DEPOSITROL BL5323
EFFECTIVE DATE: 03-SEP-1997

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

CHEMICAL NAME — **EXPOSURE LIMITS**

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.
SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.256	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	25	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-4		
Viscosity(cps 70F,21C)	90	% Solubility (water)	100.0

Odor		Slight
Appearance		Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		2.2
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY
No Data Available.

BIODEGRADATION

COD (mg/gm):	416 Calculated
TOC (mg/gm):	152 Calculated
BOD-5 (mg/gm):	9 Calculated
BOD-28 (mg/gm):	31 Calculated

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

DOT HAZARD:	Not Applicable
UN / NA NUMBER:	Not applicable
DOT EMERGENCY RESPONSE GUIDE #:	Not applicable

CONTINUED

PRODUCT NAME : DEPOSITROL BL5323
EFFECTIVE DATE: 03-SEP-1997

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
SARA SECTION 312 HAZARD CLASS:
Immediate(acute)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	Nc special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	03-SEP-1997		** NEW **

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 26-JUN-1996
PRINTED DATE: 11-DEC-1998

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : POWERLINE 369210

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road, Trevose, Pa. 19053
Information phone number: (215) - 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS- (HEDP) Corrosive (eyes)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

PRODUCT NAME : POWERLINE 369210
EFFECTIVE DATE: 26-JUN-1996

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause moderate irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Colorless To Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical/CO2/foam or water--Slippery condition; use sand/grit.

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause gastrointestinal irritation with possible nausea, vomiting, abdominal discomfort and diarrhea.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

CONTINUED

PRODUCT NAME : POWERLINE 369210
EFFECTIVE DATE: 26-JUN-1996

4) FIRST AID MEASURES

SKIN CONTACT:
Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.
EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.
INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical/CO2/foam or water--Slippery condition; use sand/grit.
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C P-M(CC)

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Alkaline. Do not mix with acidic material.
STORAGE:
Keep containers closed when not in use. Reasonable and safe chemical storage.

CONTINUED

PRODUCT NAME : POWERLINE 369210
EFFECTIVE DATE: 26-JUN-1996

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.
SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.215	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	25	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-4		
Viscosity(cps 70F,21C)	23	% Solubility (water)	100.0

Odor		Slight
Appearance		Colorless To Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		2.4
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

PRODUCT NAME : POWERLINE 369210
EFFECTIVE DATE: 26-JUN-1996

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	
Eye Irritation Score RABBIT:	MODERATE
NOTE - Completely reversible; estimated based on testing of similar material	

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY
No Data Available.

BIODEGRADATION

COD (mg/gm):	175 Calculated
TOC (mg/gm):	55 Calculated
BOD-5 (mg/gm):	1 Calculated
BOD-28 (mg/gm):	3 Calculated

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

DOT HAZARD:	Not Applicable
UN / NA NUMBER:	Not applicable
DOT EMERGENCY RESPONSE GUIDE #:	Not applicable

CONTINUED

PRODUCT NAME : POWERLINE 369210
EFFECTIVE DATE: 26-JUN-1996

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
SARA SECTION 312 HAZARD CLASS:
Immediate(acute)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	08-NOV-1995		** NEW **
	26-JUN-1996	2	08-NOV-1995