WOLF CREEK
NUCLEAR OPERATING CORPORATION

Kevin J. Moles
Manager Regulatory Affairs

JUL 07 2004

RA 04-0084

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

Subject: Docket No. 50-482: Application for Renewal of the Wolf Creek Generating Station National Pollutant Discharge Elimination System Permit

Gentlemen:

This letter provides a copy of Wolf Creek Generating Station's application for renewal of its National Pollutant Discharge Elimination System (NPDES) permit. This submittal is made pursuant to Wolf Creek Generating Station Facility Operating License NPF-42, Appendix B, Section 3.2.

If you have any questions concerning this matter, please contact me at (620) 364-4126, or Ms. Diane Hooper at (620) 364-4041.

Very truly yours,

Robert Hammond
For:

Kevin J. Moles

KJM/rlg

Attachment

cc: J. N. Donohew (NRC), w/a
D. N. Graves (NRC), w/a
B. S. Mallett (NRC), w/a
Senior Resident Inspector (NRC), w/a

IE25

WOLF CREEK
NUCLEAR OPERATING CORPORATION

Donna Jacobs
Vice President Operations and Plant Manager

JUN 25 2004
WO 04-0028

Kansas Department of Health and Environment
Attention: Mr. Om Agrawal
Bureau of Water - Technical Services
1000 SW Jackson, Suite 420
Topeka, KS 66612-1367

Reference: (1) Letter dated 03/04/04, from Edward Dillingham (KDHE) to R. Logsdon (WCNOC), NPDES Permit Renewal
Subject: Renewal of the Wolf Creek Generating Station National Pollutant Discharge Elimination System (NPDES) Permit KS 0079057/I-NE07-PO02

Dear Mr. Agrawal:

Please find enclosed the completed application and additional information necessary to renew NPDES Permit I-NE07-PO02 for Wolf Creek Nuclear Operating Corporation (WCNOC). Table 1.0, Water Treatment Chemicals Used at Wolf Creek, and the Wolf Creek Average Water Use Flow Diagram are enclosed for your use in reviewing the concentrations and discharge flowpaths previously approved for water treatment chemicals used at Wolf Creek Generating Station (WCGS). Material safety data sheets and aquatic toxicity data for these water treatment chemicals products are included in accordance with Edward Dillingham's request (Reference 1).

WCNOC requests that Kansas Department of Health and Environment (KDHE) remove the following Supplemental Conditions and/or attachment from our permit, as they are no longer applicable:

Supplemental Condition No. 20 and Attachment A: Within one year from the effective date of this permit, the permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWP3) in accordance with Attachments A.

Justification – WCNOC sent KDHE the SWP3 on or before the required due date in 2000.

Supplemental Condition No. 21: By December 31, 2001, permittee shall submit plans for approval and construct a continuous overflow structure at the discharge end of the final cell of outfall 007.

Justification – WCNOC sent KDHE the plans for the construction of a continuous overflow structure at the discharge end of the final cell of outfall 007 on or before the required due date. Note: The construction of the continuous overflow structure at outfall 007 was completed by December 31, 2001.

WCNOC also requests that Supplemental Condition 6 be revised to read "Periodic oxidizing or non-oxidizing biocides treatment for Asiatic clam and Zebra mussel control is permitted as described in the Asiatic clam control program and subsequent updates submitted to KDHE".

In addition, WCNOC requests that KDHE remove the following effluent parameters from our NPDES permit.

Remove Oil and Grease (O/G) from outfall 003a, Radiation Waste System Discharge and Steam Generator Blowdown into Circulating Water System Discharge.

Justification: Using the best technology available, Wolf Creek has virtually removed all the oil and grease from wastewater discharges through this outfall. There has not been any detectable O/G in the discharge of outfall 003a since September 2000. This analysis causes the radwaste lab an undue burden because of the NELAC requirements to perform additional quality control samples on every O/G sample that is analyzed. To run this test in the radwaste lab conservatively adds 20 man-hours per month to the Chemistry departmental budget plus the cost of disposing contaminated waste chemicals for an analysis that has been less then 1.0 ppm for the past 3½ years. Note: Total Suspended Solids (TSS) for outfall 003(a) can also be removed for very similar reasons, as it is barely detectable most of the time.

Remove Chloride, Boron and Nitrate as N from outfall 004, Cooling Impoundment Discharge to Wolf Creek.

Justification: Boron is evaluated each year during the testing requirement found in Attachment B for metals. WCNOC also has the other two analyzed along with annual metals analysis for outfall 004. Wolf Creek Cooling Impoundment (WCCI) has not had a discharge over the spillway since March 2000 due to the drought conditions in Kansas. By performing these analyses annually, WCNOC can keep track of their increase or decrease in the lake. See table below.

Outfall 004 Annual Analysis			
Date	Boron mg/l	Chloride mg/l	Nitrate as N mg/l
05/18/2004	0.30	36.0	0.1
05/21/2003	0.20	31.7	<1.0
06/04/2002	0.30	34.5	<1.0
04/23/2001	0.24	30.0	
11/17/2000	0.22	25.6	

WCNOC requests the following change be made to the facility description for outfall 003(a). The suggested change is underlined.

Radioactive wastewater processed through filters and demineralizers to the A & B secondary liquid waste monitoring tanks and/or to the A & B waste monitoring tanks as batch releases to WCCI; continuous steam generator blowdown to WCCI; 0.300 mgd.

WCNOC requests the following change be made to the facility description for outfall 003(b). The suggested change is underlined.

Water treatment plant and wastewater treatment facility discharge including: oily waste and other power block sumps; demineralizer regenerate waste; miscellaneous leaks and draindowns from various system routed to power block sumps; auxiliary boiler and steam generator draindowns; groundwater, circulating, service, essential service and (biocide) treated fire protection water reroutes; and pre-sedimentation sludge and neutralized chemical cleaning back washes from reverse osmosis (RO) and electrodeionization (EDI) units; treatment - oil water interceptor, neutralization, settling; 0.195 mgd.

WCNOC requests the following change be made to the facility description for outfall 005. The suggested change is underlined.

Occasional reroute of wastewater from the wastewater treatment facility and/or water treatment plant; lime sludge pond for settling; intermittent discharge; 5.8 mgd.

WCNOC requests the following change be made to the facility description for outfall 007. The suggested change is underlined.

Two cell domestic waste stabilization pond is discharged on an as need basis into a slough of the Wolf Creek Cooling Impoundment; 1.25 mgd.

If you have any questions about the above WCNOC requests, please contact Mr. Ralph Logsdon at (620) 364-8831, extension 4730.

Sincerely,

Donna Jacobs

DJ/rll

Enclosures

cc: Joe Mester, KDHE

List of Enclosures

Enclosure 1 - Water Pollution Control Permit Application

Enclosure 2 - EPA Form 1

Enclosure 3 - EPA Form 2C

Enclosure 4 – EPA Form 2C Parts V-A, V-B, and V-C

- Form 2C Parts V-A, V-B, and V-C for outfall 002 and 002(a)
- Form 2C Parts V-A, V-B, and V-C for outfall 003
- Form 2C Parts V-A, V-B, and V-C for outfall 003(a)
- Form 2C Parts V-A, V-B, and V-C for outfall 003(b)
- Form 2C Parts V-A, V-B, and V-C for outfall 004
- Form 2C Parts V-A, V-B, and V-C for outfall 005
- Form 2C Parts V-A, V-B, and V-C for outfall 006
- Form 2C Parts V-A, V-B, and V-C for outfall 007

Enclosure 5 - Wolf Creek Site and Topographical Map

Enclosure 6 - Wolf Creek Average Water Use Flow Diagram and the Legal Description for WCGS Outfalls

Enclosure 7 - Table 1.0 "Water Treatment Chemicals Used at Wolf Creek" and Material Safety Data Sheets

Enclosure 1 to WO 04-0028

Water Pollution Control Permit Application

KS0079057 — Federal Permit Number

I-NE07-PO02 — Kansas Permit Application Number

STATE OF KANSAS
DEPARTMENT OF HEALTH AND ENVIRONMENT / DIVISION OF ENVIRONMENT

WATER POLLUTION CONTROL PERMIT APPLICATION
FOR INJECTION OR DISCHARGE TO SURFACE WATERS OF THE STATE

Pursuant to K.S.A. 65-164 and 65-165, the undersigned representing

Wolf Creek Nuclear Operating Corpor.

Name of municipality, institution, company, corporation or person applying

Located at: (Facility Name/Address)	Correspondence Name/Address (Leave blank if same as facility address)	Facility Contact Name/Address
Wolf Creek Generating Station		
P.O. Box 411		
Burlington, KS 66839		
		(Phone)

hereby makes application for a permit to discharge wastewater into:

Wolf Creek Cooling Impoundment (Coffey County Lake)

Name of river, stream, lake, etc.

at Outfall Location:

SW	SW	NW	8	21S	16E	Coffey
SW	SW	NE	7			
Qtr	Qtr	Qtr	Section	Township	Range	County

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

I certify that I am authorized to sign this permit application pursuant to 40 CFR 122.22 as noted below.

Signed: [signature]

Donna Jacobs
Print or Type Signature

Title: Vice President Operations and Plant Manager

Date: 06/25/04

40 CFR 122.22: This application will be signed by the following: (a) in the case of a corporation, by the principal executive officer of at least the level of Vice President; (b) in the case of a partnership, by a general partner, (c) in the case of a sole proprietorship, by the proprietor, and (d) in the case of publicly-owned treatment works, by the official having responsibility for the overall operations of the treatment works.

Enclosure 2 to WO 04-0028

EPA Form 1

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F KS 0079057 (C) D

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

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.? (FORM 2A)		X	
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.? (FORM 2B)		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? (FORM 2C)	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.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		NA
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? (FORM 4)		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? (FORM 4)		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? (FORM 4)		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? (FORM 5)		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? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: Wolf Creek Generating Station

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 Hammond, Robert Supervisor Regulatory Support	620 364 8831

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 P. O. Box 411

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 Burlington	KS	66839

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 1550 Oxen Lane NE

B. COUNTY NAME: Coffey

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 Burlington	KS	66839	

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

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

A. FIRST	B. SECOND
4911 (specify) Production of Electricity	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME

Wolf Creek Nuclear Operating Corporation

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, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify)

P (specify)

D. PHONE (area code & no.)

A 620 364 8831

E. STREET OR P.O. BOX

P. O. Box 411

F. CITY OR TOWN

Burlington

G. STATE

KS

H. ZIP CODE

66839

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): N KS 0079057	**D. PSD** (Air Emissions from Proposed Sources): P Not Applicable
B. UIC (Underground Injection of Fluids): U Not Applicable	**E. OTHER** (specify): 0310021 (specify) Air Emission permit
C. RCRA (Hazardous Wastes): R KSD 000686956	**E. OTHER** (specify): (specify)

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, transmission and distribution of electricity

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
Donna Jacobs Vice President Operations & Plant Manager	Donna Jacobs	06/25/04

COMMENTS FOR OFFICIAL USE ONLY

C

EPA Form 2C

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (copy from Item 1 of Form 1): KS 0079057

Form Approved. OMB No. 2040-0086. Approval expires 8-31-98.

FORM 2C NPDES

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 of its location 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.	
002	38	14	00	95	41	15	Wolf Creek Cooling Impoundment
002a	38	14	00	95	41	15	Wolf Creek Cooling Impoundment
003	38	14	30	95	41	30	Wolf Creek Cooling Impoundment
003a	38	14	30	95	41	30	Wolf Creek Cooling Impoundment
003b	38	14	30	95	41	30	Wolf Creek Cooling Impoundment

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 sources 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	
002	Discharge of Settling Basin	0.326 MGD	Discharge into WCCI		4-A
002a	Oil/Water Separation/Discharge		Gravity Oil Separator	1-H	4-A
	A) Stormwater Runoff		Oil/Water Separation/Discharge	1-H	4-A
	B) Turbine Building Sump Discharges		Oil/Water Separation/Discharge	1-H	4-A
003	Circulating Water (CW) Discharges*	704 MGD	Bromination/Discharge	2-F	4-A
	A) CW Screenhouse Oil Interceptor		Oil/Water Separation/Discharge	1-H	4-A
	B) Service Water (SW) System		Bromination/Discharge	2-F	4-A
	Note: Service Water supplies the "normal" required Essential Service Water (ESW) System flows.				
003a	Radiation Waste System Discharge*	0.300 MGD			4-A
	A) Waste Monitor Tanks A & B	100 GPM	Filter/Demineralization/RO/Discharge	2-A/2-J	4-A
	B) Sec. Waste Monitor Tanks A & B	100 GPM	Filter/Demineralization/RO/Discharge	2-A/2-J	4-A
	C) Blowdown	200 GPM			4-A
003b	Wastewater Treatment Discharge*	0.195 MGD	Oil Separation/Settling/Neutralization	1-H/1-U	4-A
			and Discharge	2-K	
	A) Oily Waste Drainage System				
	B) Oil Interceptor		Oil/Water Separation		
	C) Draindowns & Reroutes*				
	D) Auxilary Boiler/Re-Boiler				
	E) Water Treatment Plant		Pre-Sedimentation Sludge/Backwashes		
	Note: Flows from A & C Systems may be temporily rerouted to outfall 002a during abnormal plant operations				
004	Main Dam Discharge	2.9 MGD			4-A

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): KS 0079057

Form Approved.
OMB No. 2040-0086.
Approval expires 8-31-98.

FORM 2C NPDES

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 of its location 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.	
004	38	11	15	95	41	15	Neosho River via Wolf Creek
005	38	14	45	95	41	15	Wolf Creek Cooling Impoundment
006	38	13	30	95	40	45	Wolf Creek Cooling Impoundment
007	38	14	45	95	41	00	Wolf Creek Cooling Impoundment

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 sources 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	
005	Lime Sludge Pond Discharge*	5.8 MGD	Settling/Discharge (once/year)	1-U	4-A
	Note: Reroute of Wastewater Treatment Facility basins during CW System outages				
006	Essential Service Water Discharge*	26.5 MGD	Bromination/Discharge	2-F	4-A
	Note: Receives water from the SW System during routine operations				
007	Wastewater Stabilization Pond (WSP)	1.25 MGD	Discharge (intermittent)	3-G	4-A
	Note: There has been no wastewater releases from the WSP since November 2001				
	*See Table 1.0 for additional information on these outfalls				

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?

☒ YES *(complete the following table)* ☐ NO *(go to Section III)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK *(specify average)*	b. MONTHS PER YEAR *(specify average)*	a. FLOW RATE *(in mgd)*		b. TOTAL VOLUME *(specify with units)*		c. DURATION *(in days)*
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
003a	Radiation Waste System	2	12	0.0002	0.0003	0.015 MG	0.031 MG	1
003b	Wastewater Treatment	7	12	0.0010	0.0011	0.134 MG	0.192 MG	1
004	Main Dam Discharge	2-3	2	5.36	10.1	5.36 MG	10.1 MG	2-3
005	Lime Sludge Pond	3-7	1	5.80	8.53	5.80 MG	8.53 MG	3-7
007	Wastewater Stabilization Pond	4-7	1	0.9	1.25	0.9 MG	1.25 MG	4-7

III. PRODUCTION

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

☒ YES *(complete Item III-B)* ☐ NO *(to to Section IV)*

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

☐ YES *(complete Item III-C)* ☒ 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 the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

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

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)* ☒ NO *(go to Item IV-B)*

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

B. OPTIONAL: You may 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

CONTINUED FROM PAGE 2

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
None			

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)* ☒ NO *(go to Item VI-B)*

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your 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)* ☐ NO *(go to Section VIII)*

11/20/2000 Outrfall 003 point of discharge - Acute Toxicity - Required by Supplemental Condition 1 of NPDES permit

04/21/2001 Outrfall 003 point of discharge - Acute Toxicity - Required by Supplemental Condition 1 of NPDES permit

06/05/2002 Outrfall 003 point of discharge - Acute Toxicity - Required by Supplemental Condition 1 of NPDES permit

05/20/2003 Outrfall 003 point of discharge - Acute Toxicity - Required by Supplemental Condition 1 of NPDES permit

05/19/2004 Outfall 003 point of discharge - Acute Toxicity - Required by Supplemental Condition 1 of NPDES permit

VIII. CONTRACT ANALYSIS INFORMATION

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

☒ 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)
Continental Analytical Services, Inc.	1804 Glendale Road Salina, Kansas 67401-6675	800-535-7830	VOCs by GC/MS; BOD; COD; TOC; NH3; CN; Toxic Metals; Phenols; Dioxin: O/G; NO2/NO3; TSS; Chloride; FCBs
Pace Analytical Services, Inc.	9608 Loiret Blvd., Lenexa, KS 66219	913-599-5665	Whole Effluent Toxicity; Anions; NH3; NO2/NO3;

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, 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.)
Donna Jacobs, Vice President Operations & Plant Manager	620-364-8831
C. SIGNATURE	**D. DATE SIGNED**
DJacobs	06/25/04

Form 2C Parts V-A, V-B, and V-C for outfall 002 and 002(a)

Form 2C Parts V-A, V-B, and V-C for outfall 003

Form 2C Parts V-A, V-B, and V-C for outfall 003(a)

Form 2C Parts V-A, V-B, and V-C for outfall 003(b)

Form 2C Parts V-A, V-B, and V-C for outfall 004

Form 2C Parts V-A, V-B, and V-C for outfall 005

Form 2C Parts V-A, V-B, and V-C for outfall 006

Form 2C Parts V-A, V-B, and V-C for outfall 007

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 Item 1 of Form 1)*: KS 0079057

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

OUTFALL NO.: 002 (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 ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<5	< 33.7					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	18	121					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	6.1	41.1					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	33.6	226			2.1	5.8	21	mg/l	lbs/day			
e. Ammonia *(as N)*	0.1	0.7					1	mg/l	lbs/day			
f. Flow	VALUE .808		VALUE		VALUE .329		152	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 7.6	MAXIMUM 8.3	MINIMUM	MAXIMUM			21	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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 a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate—Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease	X		2.3	7.0			< 1.1	< 1.4	21	mg/l	kg/day			
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)		X												
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)	X		*See attached Table 1.0 and MSDS for explanation											
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)	X		*See attached Table 1.0 and MSDS for explanation											
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	002 (a)

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 nonrequired 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 or 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 7 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

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		b. 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												

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (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		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

CONTINUED FROM PAGE V-8

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	002 (a)

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

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

OUTFALL NO.: 003

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 (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	< 5	< 34903					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	22	153573					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	7.5	52354					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	8	55845					1	mg/l	lbs/day			
e. Ammonia *(as N)*	< 0.1	< 698					1	mg/l	lbs/day			
f. Flow	VALUE 837		VALUE		VALUE 695		152	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 8.2	MAXIMUM 8.8	MINIMUM	MAXIMUM			152	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(If available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual	X		0.14	81.4			<0.07	< 33.8	151	mg/l	lbs/day			
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate—Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT 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) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease		X												
i. Phosphorus (as P), Total (7723-14-0)	X		Polyphosphate anti-scale agent/See attached Table 1.0 and MSDS for explanation											
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)		X												
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)	X		0.17	1187					1	ppm	lbs/day			
q. Boron, Total (7440-42-8)	X		0.30	2094			0.25	1449	5	ppm	lbs/day			
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	003

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 nonrequired 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 or 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 7 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		b. 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												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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		b. 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												

CONTINUED FROM PAGE V-4

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		b. 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												

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (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		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

CONTINUED FROM PAGE V-8

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	003

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

OUTFALL NO.: 003 (a)

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-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 *(specify if blank)* a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*								mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*								ppm	lbs/day			
c. Total Organic Carbon *(TOC)*								mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	18	2.4			1.7	0.13	12	mg/l	lbs/day			
e. Ammonia *(as N)*								mg/l	lbs/day			
f. Flow	VALUE .0159		VALUE		VALUE .0098		26	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 7.5	MAXIMUM 7.5	MINIMUM	MAXIMUM			1	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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 a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate—Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT 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) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease	X		< 1.0	< 0.1			< 1.0	< 0.1	12	mg/l	kg/day			
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)		X												
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)	X		319	42.3					1	ppm	lbs/day			
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	003 (a)

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 nonrequired 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 or 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 7 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

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		b. 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												

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	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) b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (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		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	003 (a)

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

OUTFALL NO.: 003 (b)

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-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 *(specify if blank)* a. CONCENTRATION	3. UNITS *(specify if blank)* 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)* b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	182	428					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	299	703					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	91	214					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	5.6	13.2			3.3	4.1	19	mg/l	lbs/day			
e. Ammonia *(as N)*	110	259					1	mg/l	lbs/day			
f. Flow	VALUE .282		VALUE		VALUE .150		71	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 7.0	MAXIMUM 8.8	MINIMUM	MAXIMUM			19	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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)* b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate—Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease	X		2.4	2.6			< 1.1	< 0.6	19	mg/l	kg/day			
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)	X		4829	11357			3237	4049	19	ppm	lbs/day			
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)	X		*See attached Table 1.0 and MSDS for explanation											
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)	X		*See attached Table 1.0 and MSDS for explanation											
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	003 (b)

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 nonrequired 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 or 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 7 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (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						d. NO. OF ANALYSES	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)			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

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

OUTFALL NO.: 004

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	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) 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) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	< 5						1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	22						1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	7.4						1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	5						1	mg/l	lbs/day			
e. Ammonia *(as N)*	< 0.1						1	mg/l	lbs/day			
f. Flow	VALUE 0.0		VALUE		VALUE		0	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 8.5	MAXIMUM 8.5	MINIMUM	MAXIMUM			1	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(If available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT 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) b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate—Nitrite *(as N)*	X		0.1						1	ppm	lbs/day			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease		X												
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)	X		132						1	ppm	lbs/day			
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)	X		0.16						1	ppm	lbs/day			
q. Boron, Total (7440-42-8)	X		0.30						1	ppm	lbs/day			
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	004

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 nonrequired 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 or 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 7 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 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		b. 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												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

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		b. 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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo *(ghi)* Perylene (191-24-2)			X												
9B. Benzo *(k)* Fluoranthene (207-08-9)			X												
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)			X												
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)			X												
12B. Bis *(2-Chloroiso-propyl)* Ether (102-80-1)			X												
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo *(a,h)* Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

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		b. 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'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (as Azobenzene) (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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	004

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

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

OUTFALL NO.: 005

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	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) 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) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	8	467					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	57	3328					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	20.7	1208					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	76.5	4466			38.6	901	3	mg/l	lbs/day			
e. Ammonia *(as N)*	0.8	46.7					1	mg/l	lbs/day			
f. Flow	VALUE 7.0		VALUE		VALUE 2.8		3	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 8.3	MAXIMUM 8.8	MINIMUM	MAXIMUM			3	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT 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) b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate–Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease	X		< 1.0	< 26.4			< 1.0	< 10.6	3	mg/l	kg/day			
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)	X		885	51666					1	ppm	lbs/day			
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)	X		*See attached Table 1.0 and MSDS for explanation											
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)	X		*See attached Table 1.0 and MSDS for explanation											
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

CONTINUE ON PAGE V-3

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	005

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 nonrequired 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 or 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 7 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

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		b. 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (as Azobenzene) (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		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	005

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

OUTFALL NO.: 006

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-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	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) 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) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	< 5	< 1743					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	22	7669					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	7.5	2614					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	8	2789					1	mg/l	lbs/day			
e. Ammonia *(as N)*	< 0.1	< 34.9					1	mg/l	lbs/day			
f. Flow	VALUE 41.8		VALUE		VALUE 38.4		42	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 8.3	MAXIMUM 8.6	MINIMUM	MAXIMUM			42	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT 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) b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual	X		0.30	26.1			0.14	11.2	41	mg/l	lbs/day			
c. Color		X												
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)		X												
f. Nitrate-Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease		X												
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X		Regulated by the NRC											
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)		X												
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)		X												
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	006

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 nonrequired 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 or 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 7 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 (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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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		b. 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												

CONTINUED FROM PAGE V-4

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		b. 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		b. 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. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine (as Azobenzene) (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		b. 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)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	006

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

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 Item 1 of Form 1)*: KS 0079057

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

OUTFALL NO.: 007

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 (specify if blank) 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) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	20	46					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	266	612					1	ppm	lbs/day			
c. Total Organic Carbon *(TOC)*	28	64.4					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	86	198					1	mg/l	lbs/day			
e. Ammonia *(as N)*	< 0.1	< 0.2					1	mg/l	lbs/day			
f. Flow	VALUE .276		VALUE		VALUE		1	MGD		VALUE		
g. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM 8.5	MAXIMUM 8.5	MINIMUM	MAXIMUM			1	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 your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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) b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X												
c. Color		X												
d. Fecal Coliform	X		91						1	cells/100	ml			
e. Fluoride (16984-48-8)		X												
f. Nitrate-Nitrite *(as N)*		X												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. 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) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease		X												
i. Phosphorus (as P), Total (7723-14-0)		X												
j. Radioactivity														
(1) Alpha, Total	X													
(2) Beta, Total	X													
(3) Radium, Total	X													
(4) Radium 226, Total	X													
k. Sulfate (as SO_4) (14808-79-8)		X												
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X												
q. Boron, Total (7440-42-8)		X												
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)		X												
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X												
w. Tin, Total (7440-31-5)		X												
x. Titanium, Total (7440-32-6)		X												

Regulated by the NRC

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	007

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 nonrequired 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 or 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 7 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. REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	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	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total, 7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X												
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X												
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X												
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
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' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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												

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
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		b. 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. Acenaphtylene (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-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)			X												
12B. Bis (2-Chloroiso-propyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro-naphthalene (91-58-7)			X												
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro-benzene (95-50-1)			X												
21B. 1,3-Dichloro-benzene (541-73-1)			X												

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X												
23B. 3,3'-Dichlorobenzidine (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-Dinitrotoluene (121-14-2)			X												
28B. 2,6-Dinitrotoluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (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		b. 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)															
2P, α-BHC (319-84-6)															
3P, β-BHC (319-85-7)															
4P, γ-BHC (58-89-9)															
5P, δ-BHC (319-86-8)															
6P, Chlordane (57-74-9)															
7P, 4,4'-DDT (50-29-3)															
8P, 4,4'-DDE (72-55-9)															
9P, 4,4'-DDD (72-54-8)															
10P, Dieldrin (60-57-1)															
11P, α-Endosulfan (115-29-7)															
12P, β-Endosulfan (115-29-7)															
13P, Endosulfan Sulfate (1031-07-8)															
14P, Endrin (72-20-8)															
15P, Endrin Aldehyde (7421-93-4)															
16P, Heptachlor (76-44-8)															

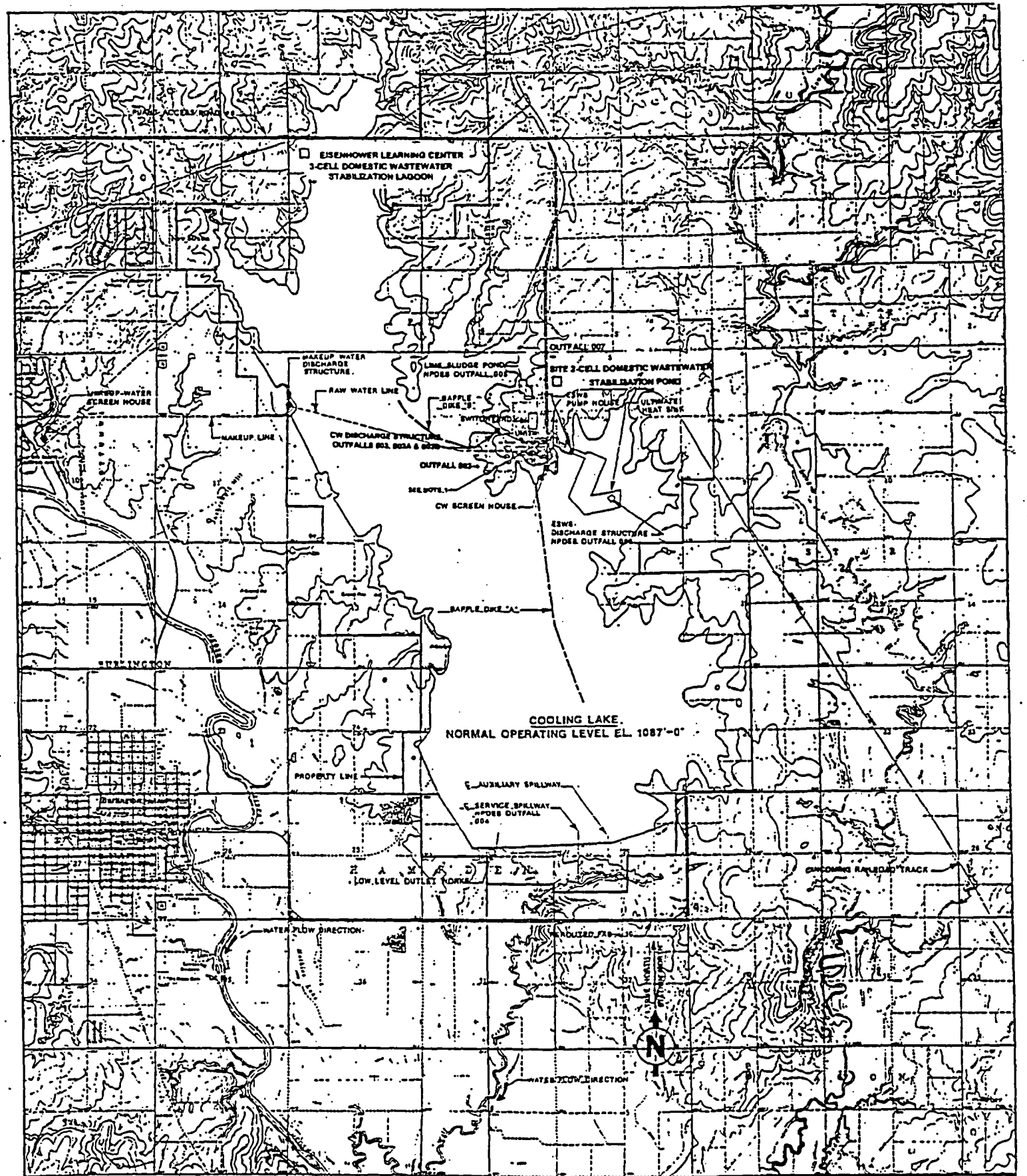
CONTINUED FROM PAGE V-8

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
KS 0079057	007

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		b. 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)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

Enclosure 5 to WO 04-0028

Wolf Creek Site and Topographical Map



NOTES:

1. WOLF CREEK GENERATING STATION SITE IS SHOWN ON "S-100 SITE DRAINAGE" WITH CENTER OF REACTOR, LATITUDE 38°14'55" NORTH, LONGITUDE 95°41'25" WEST
2. LAND USE OF WCGS SITE SHOWN ON "S-100 SITE DRAINAGE" IS FOR COMMERCIAL NUCLEAR POWER PRODUCTION. SURROUNDING LAND USE IS AGRICULTURAL.
3. SEE S-100 SITE DRAINAGE, FOR NPDES OUTFALLS 001, 004 AND 006.
4. SEE "S-100 SITE DRAINAGE" FOR HAZARDOUS WASTE AND MIXED WASTE MANAGEMENT FACILITIES.
5. ALL ELEVATIONS ARE U.S.G.S.

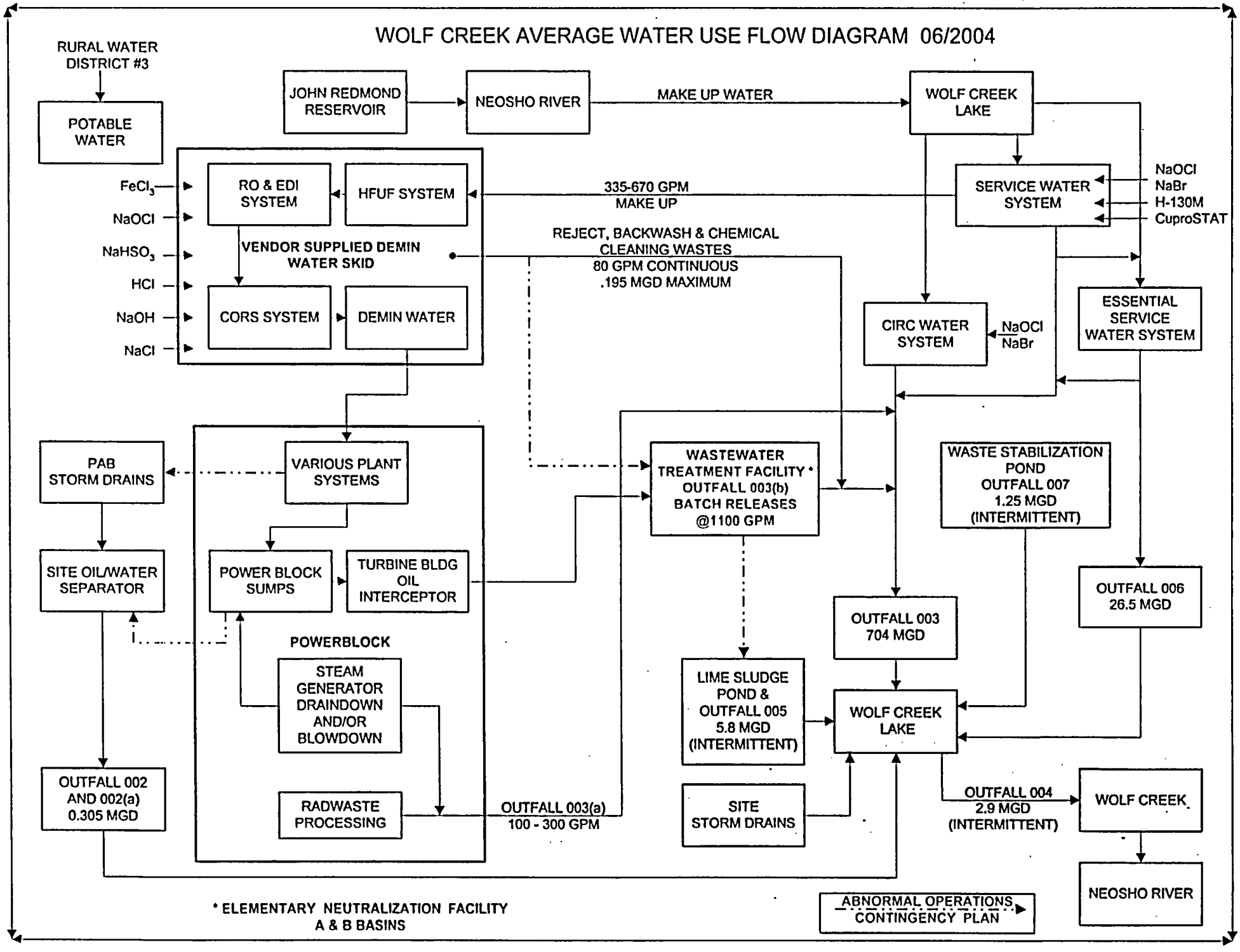
WOLF CREEK

STORMWATER APPLICATION
TOPOGRAPHIC MAP

Enclosure 6 to WO 04-0028

Wolf Creek Average Water Use Flow Diagram

Legal Description for WCGS Outfalls


WOLF CREEK AVERAGE WATER USE FLOW DIAGRAM 06/2004
RURAL WATER DISTRICT #3
POTABLE WATER
JOHN REDMOND RESERVOIR
NEOSHO RIVER
MAKE UP WATER
WOLF CREEK LAKE
FeCl3
NaOCl
NaHSO3
HCl
NaOH
NaCl
RO & EDI SYSTEM
HFUF SYSTEM
335-670 GPM MAKE UP
SERVICE WATER SYSTEM
NaOCl
NaBr
H-130M
CuproSTAT
VENDOR SUPPLIED DEMIN WATER SKID
REJECT, BACKWASH & CHEMICAL CLEANING WASTES
80 GPM CONTINUOUS
.195 MGD MAXIMUM
CORS SYSTEM
DEMIN WATER
CIRC WATER SYSTEM
NaOCl
NaBr
ESSENTIAL SERVICE WATER SYSTEM
PAB STORM DRAINS
VARIOUS PLANT SYSTEMS
WASTEWATER TREATMENT FACILITY * OUTFALL 003(b) BATCH RELEASES @1100 GPM
WASTE STABILIZATION POND OUTFALL 007 1.25 MGD (INTERMITTENT)
SITE OIL/WATER SEPARATOR
POWER BLOCK SUMPS
TURBINE BLDG OIL INTERCEPTOR
OUTFALL 006 26.5 MGD
OUTFALL 003 704 MGD
POWERBLOCK
STEAM GENERATOR DRAINDOWN AND/OR BLOWDOWN
LIME SLUDGE POND & OUTFALL 005 5.8 MGD (INTERMITTENT)
WOLF CREEK LAKE
OUTFALL 002 AND 002(a) 0.305 MGD
RADWASTE PROCESSING
OUTFALL 003(a) 100 - 300 GPM
SITE STORM DRAINS
OUTFALL 004 2.9 MGD (INTERMITTENT)
WOLF CREEK
NEOSHO RIVER
* ELEMENTARY NEUTRALIZATION FACILITY A & B BASINS
ABNORMAL OPERATIONS CONTINGENCY PLAN

LEGAL DESCRIPTION FOR WCGS OUTFALLS

Outfall #	Discharge Location	Design/Actual Flow	Flow Frequency	Duration of Discharge
002/002(a)	¼ NE, Sec 7, T21S, R16E	0.326 MGD	Continuous	
003	¼ NE, Sec 7, T21S, R16E	704 MGD	Continuous	
003(a)	¼ NE, Sec 7, T21S, R16E	0.300 MGD	Intermittent	< 1 day
003(b)	¼ NE, Sec 7, T21S, R16E	0.195 MGD	Intermittent	< 1day
004	¼ NW, Sec 29, T21S, R16E	2.9 MGD	Intermittent	2-3 days when discharging
005	¼ SE, Sec 6, T21S, R16E	5.8 MGD	Intermittent	3-7 days/year
006	¼ SE, Sec 8, T21S, R16E	26.5 MGD	Continuous	
007	¼ SE, Sec 6, T21S, R16E	1.25 MGD	Intermittent	4-7 days/year

Enclosure 7 to WO 04-0028

Table 1.0 "Water Treatment Chemicals Used at Wolf Creek"
And Material Safety Data Sheets

TABLE 1.0

WATER TREATMENT CHEMICALS USED AT WOLF CREEK

Outfall	Source of Wastewater	Chemicals and/or Treatments	Approximate Concentrations in Waste Stream	Frequency of Wastewater Discharges
002(a)	1) Leakage and/or Draindown of Various Systems into the Powerblock Sumps 2) Reroute of Circ, Service and Essential Service Water 3) Auxiliary Boiler 4) Condensate and Feedwater Draindown 5) Water Treatment Plant System Reject 6) Storm Drains 7) Site Oil/Water Separator	1) Sodium Molybdate (MoO4) Sodium Tolytriazole (TTA) Nalco 1355 2) Untreated Lake Water 3) Ammonium Hydroxide (NH4OH) Hydrazine (N2H4) 4) Ammonium Hydroxide Hydrazine Monoethanolamine (ETA) 5) Untreated Lake Water 6) Stormwater Runoff 7) Effluent from the above Systems	MoO4 - 200 to 1000 ppm TTA - 5 to 30 ppm 1355 - 1.5 to 2.0 oz/gal NH3 - 0.5 to 15 ppm N2H4 – 0.10 to 70 ppm ETA - ≤5.0 ppm Note: The above values are system concentrations and will be diluted in the 002(a) outfall flow.	The wastewater discharge of these listed chemicals and their associated concentrations from Outfall 002(a) are infrequent and only occur during abnormal plant conditions or outages. Normal discharge point for these chemicals are Outfall 003(b).
003	1) Circulating Water 2) Service Water 3) Outfall 003(a) 4) Outfall 003(b)	1) & 2) Sodium Hypochlorite (NaOCl) Calgon H-940 (NaBr) Calgon CL-50* Calgon H-130M Calgon Thruguard 404 Calgon CuproSTAT 3) Constituents of Radwaste Processing and S/G Blowdown 4) Constituents of Wastewater Treatment Facility Basins	NaOCl & NaBr - 0.2 TRO CL-50 - ≤0.17 ppm* H-130M -≤ 0.5 ppm Thruguard 404 - 5 ppm CuproSTAT - 6.0 ppm	NaOCl & NaBr are used 2 hours per day for circulating water and upward to 22 hours per day for service water. CL-50 is used to prevent or remove scale between the treatment skid and the injection points H-130M a non-oxidizing biocide is used 3 times per year for 12 to 24 hours depending on the lake temperature. Thruguard 404 an anti-scale and dispersant is used continuously. CuproSTAT a corrosion inhibitor is used monthly for 15 minutes per application in the service water.

TABLE 1.0

WATER TREATMENT CHEMICALS USED AT WOLF CREEK

Outfall	Source of Wastewater	Chemicals and/or Treatment	Approximate Concentration in Waste Streams	Frequency of Wastewater Discharges
003(a)	1) Radwaste Processing (batch) 2) S/G Blowdown (continuous) 3) S/G Draindown (wet lay-up)	1) Boric Acid Demin Water 2) Ammonium Hydroxide Hydrazine *Monoethanolamine* 3) Ammonium Hydroxide Hydrazine/Carbohydrazide	1) Boron - 10 to 1000 ppm 2) NH3 - 3.5 to 4.5 ppm N2H4 - 0.10 to 0.15 ppm ETA – 7.5 to 8.5 ppm 3) NH3 - 0.5 to 3.5 ppm N2H4 - 75 to 250 ppm	Radwaste effluents are batch releases and are infrequent in nature. Steam generator blowdown will be continuous during normal plant operation and draindown will occur during plant outages.
003(b)	1) Leakage and/or Draindown of Various Systems into the Powerblock Sumps 2) Reroute of Circ, Service and Essential Service Water 3) Auxiliary Boiler 4) S/G Draindown (wet lay-up) 5) Condensate and Feedwater Draindown 6) Condensate Polisher 7) Water Treatment Plant	1) Sodium Molybdate Sodium Tolytriazole Nalco 1355 2) Untreated Lake Water 3) Ammonium Hydroxide Hydrazine 4) Ammonium Hydroxide Hydrazine/Carbohydrazide 5) Ammonium Hydroxide Hydrazine *Monoethanolamine* 6) Regenerate Waste (Na2SO4) 7) Pre-sedimentation Sludge and Neutralized Backwashes from the HFUF, RO and EDI Units	MoO4 - 200 to 1000 ppm TTA - 5 to 30 ppm 1355 - 1.5 to 2.0 oz/gal NH3 - 0.5 to 15 ppm N2H4 – 0.10 to 250 ppm ETA – ≤ 5 to 10 ppm SO4 – will vary depending if condensate polishers are being regenerated Note: The above values are system concentration and will be diluted by the WWT basin volume and/or outfall 003 flow.	Wastewater discharges from Outfall 003(b) are batch releases and may occur several times a week. The chemical constituents of the wastewater may contain all or none of the listed chemicals. The frequency of discharges increases during plant outages.
004	1) Lake Water Discharge	N/A	N/A	Discharges are infrequent and only occur whenever there is a strong north wind. No discharge has occurred since March 2000.
005	1) Reroute of Wastewater Treatment Facility Basins	1) Constituents of Wastewater Treatment Facility Basins	Constituents of Outfall 003(b) Typical Discharge Concentrations from 005 NH3 - <0.1 ppm NO2/NO3 - <0.1 ppm ETA - < 5ppm	Discharges are infrequent and will only occur as needed.

TABLE 1.0

WATER TREATMENT CHEMICALS USED AT WOLF CREEK

Outfall	Source of Wastewater	Chemicals and/or Treatments	Approximate Concentration in Waste Stream	Frequency of Wastewater Discharges
006	1) Essential Service Water 2) Service Water	1) & 2) Sodium Hypochlorite (NaOCl) Calgon H-940 (NaBr) Calgon CL-50* Calgon H-130M Calgon Thruguard 404 Calgon CuproSTAT	NaOCl & NaBr -1.0 TRO CL-50 - <0.17 ppm* H-130M -≤ 0.5 ppm** Thruguard 404 - 5 ppm CuproSTAT - 60 ppm	Chemicals used in the service water are partially routed back to Outfall 006.

* Calgon CL-50 is a corrosion and deposit inhibitor and will be used to prevent or remove scale from the NaOCl feed lines between the treatment skid and the injection points. Trace amounts of this product will be in the circulating and service water discharges. A Material Safety Data Sheet is attached for your review .
**A WET test was performed on outfall 006 to determine if the discharge of Calgon H-130M at the point of discharge into Coffey County Lake was toxic. The non-oxidizing biocide concentration was raised in the plant (heat exchangers) to a level consistent with Calgon's treatment specifications of ≤ 5 ppm. WCGS felt that the biocide would not be detectable at outfall 006, due to system demand and the long length of underground piping from the powerblock to the ultimate heat sink; a length of approximately 5400 feet. A sub-surface sampler was used to capture a sample of the discharge from outfall 006. The WET test results were satisfactory and the analytical test results for Calgon H-130M were undetectable. The test results were sent in with the May 2003 Discharge Monitoring Report.

REPORT NUMBER: 703 UNIVAR USA INC. PAGE: 001
MSDS NO: OX622680 MATERIAL SAFETY DATA SHEET
MAINFRAME UPLOAD DATE: 02/25/03 VERSION: 013

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

CCS# 02654
K01-048

ORDER NO: 270492
PROD NO : 660890

WOLF CREEK NUCLEAR OPRTG
***BLEACH DELIVERIES **
CORP % MATERIALS MGMT
1550 OXEN LANE N.E.
BURLINGTON ,KS 66839 ,

UNIVAR USA INC. (425)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

MSDS NUMBER: OX622680

EFFECTIVE DATE: 1/10/1999

SUPERSEDES: NEW

ISSUED BY: 008740

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC.I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

I -PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM HYPOCHLORITE
SYNONYMS: SUNNY SOL 150LIQUID CHLORINE SOLUTION, LIQUID BLEACH, HYPOCHLORITE, BLEACH, HYPO
CHEMICAL FAMILY: HYPOCHLORITE
FORMULA: NAOCL IN WATER
USE DESCRIPTION: SWIMMING POOL CHLORINATOR, MICROBIOCIDE, TEXTILE/LAUNDRY BLEACHING AGENT, HARD SURFACE CLEANER, MILDECIDE, WATER

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

ORDER NO: 270492
PROD NO : 660890

TREATMENT
HAZARD CLASSIFICATION: OXIDIZER, UNSTABLE (REACTIVE), CORROSIVE, LUNG TOXIN

DISTRIBUTED BY:
UNIVAR USA INC.
6100 CARILLON POINT
KIRKLAND, WA 98033
425-889-3400

II -COMPONENT DATA

PRODUCT COMPOSITION
CAS OR CHEMICAL NAME: SODIUM HYPOCHLORITE
CAS NUMBER: 7681-52-9
PERCENTAGE RANGE: 7-15
HAZARDOUS PER 29 CFR 1910.1200: YES
EXPOSURE STANDARDS: NONE ESTABLISHED FOR SODIUM HYPOCHLORITE, SEE HAZARDOUS DECOMPOSITION, SECTION VII.
CAS OR CHEMICAL NAME: WATER
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 70.5-87.5
HAZARDOUS PER 29 CFR 1910.1200: NO
EXPOSURE STANDARDS: NONE ESTABLISHED.

CAS OR CHEMICAL NAME: SODIUM HYDROXIDE
CAS NUMBER: 1310-73-2
PERCENTAGE RANGE: 0.5 - 2.5
HAZARDOUS PER 29 CFR 1910.1200: YES
EXPOSURE STANDARDS:

	OSHA (PEL) *		ACGIH(TLV)	
	PPM	MG/M 3	PPM	MG/M 3
TWA:	N/A	2	N/A	NONE
CEILING:	N/A	NONE	N/A	2
STEL:	N/A	NONE	N/A	NONE

* FEDERAL OSHA PEL. AN AGREEMENT
STATE OSHA PEL MAY BE DIFFERENT.

CAS OR CHEMICAL NAME: SODIUM CHLORIDE
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 5.0 - 12.0
HAZARDOUS PER 29 CFR 1910.1200: YES
EXPOSURE STANDARDS: NONE ESTABLISHED

III -PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN OR EYES, UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. . AVOID BREATHING MIST OR VAPOR.
STORAGE CONDITIONS:
STORE IN A COOL, DRY, WELL-VENTILATED AREA. AVOID HIGH TEMPERATURES AND

EXPOSURE TO AND DIRECT SUNLIGHT.
DO NOT STORE AT TEMPERATURES ABOVE: 15-21 DEG. C (60-70 DEG. F)
OTHER: STORE IN THE DARK AT THE LOWEST POSSIBLE TEMPERATURE, BUT KEEP FROM FREEZING.
PRODUCT STABILITY AND COMPATIBILITY:
SHELF LIFE LIMITATIONS: UP TO 6 MONTHS AT 60 DEG. F. OR LOWER
INCOMPATIBLE MATERIALS FOR PACKAGING: METAL CONTAINERS.
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT:
OXIDIZERS, ACIDS, NITROGEN CONTAINING MATERIALS SUCH AS QUATERNARY AMMONIUM SALTS, METALS SUCH AS COPPER, NICKEL OR COBALT..

IV -PHYSICAL DATA

APPEARANCE: GREENISH-YELLOW LIQUID
FREEZING POINT: -20 O C @ 7% NAOCL
BOILING POINT: DECOMPOSES ON HEATING
DECOMPOSITION TEMPERATURE: DECOMPOSITION RATE INCREASES AS HEATED
SPECIFIC GRAVITY: 1.08 - 1.26
BULK DENSITY: NOT APPLICABLE
PH @2?????C: 12-14
VAPOR PRESSURE @ 2?????C: NO DATA
SOLUBILITY IN WATER: MISCIBLE
VOLATILES, PERCENT BY VOLUME: 87.5-94.5
EVAPORATION RATE: NO DATA
VAPOR DENSITY: NO DATA
MOLECULAR WEIGHT: 74.5 (ACTIVE INGREDIENT-NAOCL)
ODOR: CHLORINE-LIKE
COEFFICIENT OF OIL/WATER DISTRIBUTION: NO DATA

V -PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: ROUTINE: IF VAPORS, MISTS, OR AEROSOLS ARE NOT CONTROLLED WITH VENTILATION TO BELOW THE TLV WEAR A NIOSH APPROVED RESPIRATOR.
LINE BREAKING/HOSE CONNECTIONS/SAMPLES, ETC.: WEAR A NIOSH APPROVED WORKPLACE RESPIRATOR AS AIR CONCENTRATIONS ABOVE THE TLV FOR CHLORINE MAY OCCUR UNEXPECTEDLY.
VENTILATION: ROUTINE: LOCAL EXHAUST VENTILATION IS RECOMMENDED IF VAPORS, MISTS OR AEROSOLS ARE GENERATED. OTHERWISE, USE GENERAL EXHAUST VENTILATION.
LINE BREAKING/HOSE CONNECTIONS/SAMPLES, ETC.: USE LOCAL EXHAUST VENTILATION
SKIN AND EYE PROTECTION: ROUTINE: USE CHEMICAL SAFETY GOGGLES AND IMPERMEABLE GLOVES.
LINE BREAKING/HOSE CONNECTIONS/SAMPLES, ETC.: WEAR

CHEMICAL SAFETY GOGGLES AND FACE SHIELD, IMPERMEABLE GLOVES, BOOTS AND PROTECTIVE SUIT.
OTHER: EMERGENCY EYE WASH AND SAFETY SHOWERS MUST BE PROVIDED IN THE IMMEDIATE WORK AREA..
EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):
RESPIRATOR TYPE: NIOSH APPROVED RESPIRATOR EQUIPPED WITH CHEMICAL CARTRIDGES FOR PROTECTION AGAINST CHLORINE GAS AND DUST MIST PRE-FILTERS.
PROTECTIVE CLOTHING TYPE: (THIS INCLUDES: GLOVES, BOOTS, APRON, PROTECTIVE SUIT.): NEOPRENE

VI -FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
EXPLOSIVE: N/A
FLAMMABLE: NO
COMBUSTIBLE: NO
PYROPHORIC: NO
FLASH POINT: NOT APPLICABLE
AUTOIGNITION TEMPERATURE: NOT APPLICABLE
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR):
LEL - NOT APPLICABLE
UEL - NOT APPLICABLE

NFPA RATINGS:
HEALTH: NOT ESTABLISHED
FLAMMABILITY: NOT ESTABLISHED
REACTIVITY: NOT ESTABLISHED

HMIS RATINGS:
HEALTH: 3
FLAMMABILITY: 0
REACTIVITY: 2

EXTINGUISHING MEDIA: NOT APPLICABLE
FIRE FIGHTING TECHNIQUES AND COMMENTS:
USE WATER TO COOL CONTAINERS EXPOSED TO FIRE. ON SMALL FIRE, USE DRY CHEMICAL, CARBON DIOXIDE OR WATER SPRAY. ON LARGE FIRES, USE WATER IN FLOODING QUANTITIES AS FOG. IN CASE OF FIRE, HAZARDOUS CONCENTRATIONS OF CHLORINE MAY BE FORMED. SEE SECTION XI FOR PERSONAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING..

VII -REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
TEMPERATURES ABOVE: DECOMPOSITION RATE INCREASES AS IT IS HEATED
MECHANICAL SHOCK OR IMPACT: NO

ELECTRICAL (STATIC) DISCHARGE: NO
OTHER: DECOMPOSITION WILL RESULT FORMATION OF OXYGEN FROM CONTACT WITH COPPER, NICKEL, COBALT AND IRON
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
INCOMPATIBLE MATERIALS: IRON, COPPER, NICKEL, COBALT, ACIDS, AMMONIUM OR OTHER NITROGEN CONTAINING COMPOUNDS, ORGANICS, OTHER OXIDIZERS
HAZARDOUS DECOMPOSITION: CHLORINE GAS
OTHER CONDITIONS TO AVOID: HIGH HEAT, SUNLIGHT AND ULTRA-VIOLET LIGHT

SUMMARY OF REACTIVITY:
EXPLOSIVE: N/A
OXIDIZER: YES
PYROPHORIC: NO
ORGANIC PEROXIDE: NO
WATER REACTIVE: NO
CORROSIVE: N/A

VIII - FIRST AID

EYES
IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE UPPER AND LOWER EYELIDS. SEEK MEDICAL ATTENTION AT ONCE.
SKIN
IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION. IF CLOTHING, SHOES AND/OR JEWELRY COME IN CONTACT WITH THE PRODUCT, THEY REMOVED IMMEDIATELY AND LAUNDERED BEFORE RE-USE.
INGESTION
IMMEDIATELY DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION AT ONCE. DO NOT GIVE ANYTHING BY MOUTH IF THE PERSON IS UNCONSCIOUS OR IF HAVING CONVULSIONS.
INHALATION
IF PERSON EXPERIENCES NAUSEA, HEADACHE OR DIZZINESS, PERSON SHOULD STOP WORK IMMEDIATELY AND MOVE TO FRESH AIR UNTIL THESE SYMPTOMS DISAPPEAR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN, KEEP THE PERSON WARM AND AT REST. SEEK MEDICAL ATTENTION. IN THE EVENT THAT AN INDIVIDUAL INHALES ENOUGH VAPOR TO LOSE CONSCIOUSNESS, PERSON SHOULD BE MOVED TO FRESH AIR AT ONCE AND SEEK MEDICAL ATTENTION IMMEDIATELY. IF BREATHING HAS STOPPED, ARTIFICIAL RESPIRATION SHOULD BE GIVEN IMMEDIATELY. IN ALL CASES, ENSURE ADEQUATE VENTILATION AND PROVIDE RESPIRATORY PROTECTION BEFORE HE PERSON RETURNS TO WORK.

IX -TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
INHALATION, SKIN, EYE, INGESTION

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

ORDER NO: 270492
PROD NO : 660890

WARNING STATEMENTS AND WARNING PROPERTIES
CAUSES RESPIRATORY TRACT IRRITATION. . CAUSES EYE AND SKIN BURNS. CAN CAUSE LUNG DAMAGE.

HUMAN THRESHOLD RESPONSE DATA
ODOR THRESHOLD: APPROXIMATELY 0.9 MG/M 3 (0.3 PPM) BASED ON ODOR OF CHLORINE.
IRRITATION THRESHOLD: NO DATA FOR SODIUM HYPOCHLORITE. HOWEVER, DECOMPOSITION PRODUCTS MAY BE IRRITATING.
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: NO DATA. HOWEVER, SODIUM HYPOCHLORITE HAS THE POTENTIAL TO BE IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

SIGNS, SYMPTOMS AND EFFECTS OF EXPOSURE
INHALATION
ACUTE: INHALATION OF THIS MATERIAL IS IRRITATING TO THE NOSE, MOUTH, THROAT AND LUNGS. IT MAY ALSO CAUSE BURNS TO THE RESPIRATORY TRACT WITH THE PRODUCTION OF LUNG EDEMA, WHICH CAN RESULT IN SHORTNESS OF BREATH, WHEEZING, CHOKING, CHEST PAIN, AND IMPAIRMENT OF LUNG FUNCTION. INHALATION OF HIGH CONCENTRATIONS CAN RESULT IN PERMANENT LUNG DAMAGE.
CHRONIC: REPEATED INHALATION EXPOSURE MAY CAUSE IMPAIRMENT OF LUNG FUNCTION AND PERMANENT LUNG DAMAGE.

SKIN
ACUTE: DERMAL EXPOSURE CAN CAUSE SEVERE IRRITATION AND/OR BURNS CHARACTERIZED BY REDNESS, SWELLING AND SCAB FORMATION. PROLONGED SKIN EXPOSURE MAY CAUSE DESTRUCTION OF THE DERMIS WITH IMPAIRMENT OF THE SKIN AT SITE OF CONTACT TO REGENERATE.
CHRONIC: EFFECTS FROM CHRONIC SKIN EXPOSURE WOULD BE SIMILAR TO THOSE FROM SINGLE EXPOSURE EXCEPT FOR EFFECTS SECONDARY TO TISSUE DESTRUCTION.

EYE
SEVERE IRRITATION AND/OR BURNS CAN OCCUR FOLLOWING EYE EXPOSURE. CONTACT MAY CAUSE IMPAIRMENT OF VISION AND CORNEAL DAMAGE..

INGESTION
ACUTE: IRRITATION AND/OR BURNS CAN OCCUR TO THE ENTIRE GASTROINTESTINAL TRACT, INCLUDING THE STOMACH AND INTESTINES, CHARACTERIZED BY NAUSEA, VOMITING, DIARRHEA, ABDOMINAL PAIN, BLEEDING, AND/OR TISSUE ULCERATION.
CHRONIC: THERE ARE NO KNOW OR REPORTED EFFECTS FROM CHRONIC EXPOSURE.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
ASTHMA AND RESPIRATORY AND CARDIOVASCULAR DISEASE

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
NONE KNOWN OR REPORTED

ANIMAL TOXICOLOGY

ACUTE TARGET ORGAN TOXICITY
INHALATION LC50: NO AVAILABLE DATA
ORAL LD50: APPROXIMATELY 3-5 G/KG (RAT)
DERMAL LD50: > 2 G/KG (RABBIT)
CAUSES BURNS TO EYES AND SKIN.
CHRONIC TARGET ORGAN TOXICITY
THERE ARE NO KNOW OR REPORTED EFFECTS FROM REPEATED EXPOSURE.
REPRODUCTIVE AND DEVELOPMENTAL TOXICITY
THERE ARE NO KNOW OR REPORTED EFFECTS ON REPRODUCTIVE FUNCTION OR FETAL DEVELOPMENT.
CARCINOGENICITY
SODIUM HYPOCHLORITE HAS BEEN SHOWN NOT TO BE CARCINOGENIC IN LABORATORY ANIMALS.
IT IS NOT INCLUDED AS A CARCINOGEN BY IARC, OSHA, NTP, OR EPA. IARC HAS CONCLUDED THAT THERE IS INADEQUATE EVIDENCE FOR THE CARCINOGENICITY OF HYPOCHLORITE SALTS IN LABORATORY ANIMALS AND THERE IS NO DATA AVAILABLE FROM STUDIES IN HUMANS.
THEREFORE, IARC CONSIDERS HYPOCHLORITE SALTS TO BE NOT CLASSIFIABLE AS TO THEIR CARCINOGENICITY TO HUMANS.
MUTAGENICITY
SODIUM HYPOCHLORITE HAS BEEN SHOWN TO PRODUCE DAMAGE TO GENETIC MATERIAL WHEN TESTED IN VITRO. STUDIES IN VIVO HAVE SHOWN NO EVIDENCE OF MUTAGENIC POTENTIAL FOR THIS MATERIAL. CHEMICALS WITH POTENT BIOCIDAL ACTIVITY, TYPICAL OF HYPOCHLORITE COMPOUNDS, MAY COMPROMISE THE INTEGRITY OF MANY OF THE TREATED CELLS, WHICH REMAIN VIABLE DURING AN IN VITRO ASSAY. THIS RESULT WOULD LIKELY PRODUCE CELLULAR CHANGES GIVING RISE TO A RESPONSE INDICATIVE OF MUTATION. IT IS JUDGED THAT THE RISK OF GENETIC DAMAGE IS INSIGNIFICANT FOR SODIUM HYPOCHLORITE BECAUSE OF ITS BIOCIDAL ACTIVITY, LACK OF MUTAGENICITY IN VIVO, AND FAILURE TO PRODUCE A CARCINOGENIC RESPONSE.
AQUATIC TOXICITY
AQUATIC LC50 - APPROXIMATELY 0.6 MG/L (BLUEGILL)
APPROXIMATELY 1 MG/L (DAPHNIA, 48 HOURS)

X -TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.
DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:
LAND (U.S. DOT): HYPOCHLORITE SOLUTIONS, 8, UN1791, PG II
WATER (IMO): SAME AS ABOVE
AIR (IATA/ICAO): SAME AS ABOVE
HAZARD LABEL/PLACARD: CORROSIVE
REPORTABLE QUANTITY: 100 LBS. (PER 49 CFR 172.101, APPENDIX)
EMERGENCY GUIDE: 154

XI -SPILL AND LEAKAGE PROCEDURES

FOR ALL TRNASPORTATION ACCIENTS, CALL CHEMTREC AT 800-424-9300
REPORTABLE QUANTITY: 100 LBS. (PER 40 CFR 302.4)

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

ORDER NO: 270492
PROD NO : 660890

SPILL MITIGATION PROCEDURES:
HAZARDOUS CONCENTRATIONS IN AIR MAY BE FOUND IN LOCAL SPILL AREA AND IMMEDIATELY DOWNWIND.
AIR RELEASE: VAPORS MAY BE SUPPRESSED BY THE USE OF A WATER FOG. CAPTURE ALL RUN-OFF WATER FOR TREATMENT AND DISPOSAL.
WATER RELEASE: THIS MATERIAL IS SOLUBLE IN WATER. DIKE OR CONTAIN MATERIAL VIA USE OF COMPATIBLE ABSORBENTS. REMOVE MATERIAL WITH USE OF VACUUM OR PUMP OPERATION AND TREAT BEFORE DISPOSITION. THIS MATERIAL IS HARMFUL TO AQUATIC LIFE.
LAND SPILL: COMPATIBLE ABSORBENTS: SAND, CLAY SOIL, COMMERCIAL ABSORBENTS.
SPILL RESIDUES:
DISPOSE OF PER GUIDELINES UNDER SECTION XII, WASTE DISPOSAL.
THIS MATERIAL MAY BE NEUTRALIZED FOR DISPOSAL; YOU ARE REQUESTED TO CONTACT OCEAN
AT 888-2891-911 BEFORE BEGINNING ANY SUCH OPERATION..
PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIREFIGHTING SITUATIONS:
RESPONSE TO THIS MATERIAL REQUIRES THE USE OF SELF-CONTAINED BREATHING APPARATUS (SCBA).
ADDITIONAL PROTECTIVE CLOTHING MUST BE WORN TO PREVENT PERSONAL CONTACT WITH THIS MATERIAL. THESE ITEMS INCLUDE BY ARE NOT LIMITED TO BOOTS, GLOVES, HARD HAT, IMPERVIOUS CLOTHING, I.E. CHEMICALLY IMPERMEABLE SUIT.
COMPATIBLE MATERIALS FOR RESPONSE TO THIS MATERIAL ARE NEOPRENE, BUTYL RUBBER, VITON AND SARANEX.

XII -WASTE DISPOSAL

IF THIS PRODUCT BECOMES A WASTE, IT MEETS THE CRITERIA OF A HAZARDOUS WASTE AS DEFINED UNDER 40 CFR 261 AND WOULD HAVE THE FOLLOWING EPA HAZARDOUS WASTE NUMBER: D002.
AS A HAZARDOUS LIQUID WASTE, IT MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL STATE AND FEDERAL REGULATIONS IN A PERMITTED HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITY BY TREATMENT.
CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLICANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, SORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII - ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: THIS SUBSTANCE IS LISTED ON THE TOXIC SUBSTANCES CONTROL ACT INVENTORY.
SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III: NONE ESTABLISHED
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH: IMMEDIATE (ACUTE)
DELAYED (CHRONIC)
PHYSICAL:
FIRE

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

ORDER NO: 270492
PROD NO : 660890

REACTIVITY
EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW, PER 40 CFR 355, APP.A:
EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
NONE ESTABLISHED
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372-45: NONE ESTABLISHED.

---------- FOR ADDITIONAL INFORMATION ----------

CONTACT: MSDS COORDINATOR UNIVAR USA INC.
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

03/14/03 06:41 PRODUCT: 660890 CUST NO: 178774 ORDER NO: 270492

---------- NOTICE ----------

******** UNIVAR USA INC("UNIVAR"), EXPRESSLY DISCLAIMS

ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

HEREIN, AND SHALL UNDER NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR

CONSEQUENTIAL DAMGAGES. **

DO NOT USE INGREDIENT INFORMATION AND/OR PERCENTAGES IN THIS MSDS AS A PRODUCT SPECIFICATION. FOR PRODUCT SPECIFICATION INFORMATION REFER TO A PRODUCT SPECIFICATION SHEET AND/OR A CERTIFICATE OF ANALYSIS. THESE CAN BE OBTAINED FROM YOUR LOCAL UNIVAR SALES OFFICE.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, UNIVAR MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND UNIVARS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER

PRODUCT: LIQUICHLOR / SODIUM HYPOCHLORITE 7-15%

ORDER NO: 270492
PROD NO : 660890

PROCESS.

* * * E N D O F M S D S * * *

MATERIAL SAFETY DATA SHEET

PRODUCT

H-940 MICROBIOCIDE

EMERGENCY TELEPHONE NUMBER

(800)462-5378 (24 Hours) (800) I-M-ALERT

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **H-940 MICROBIOCIDE**

APPLICATION : INDUSTRIAL LIQUID MICROBIOCIDE

CHEMICAL DESCRIPTION : Bromide salt(s), Water

COMPANY IDENTIFICATION : Nalco Chemical Company
One Nalco Center
Naperville, Illinois
60563-1198

EMERGENCY TELEPHONE NUMBER : (800)462-5378 (24 Hours) (800) I-M-ALERT

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Bromide	7647-15-6	30.0 - 60.0

3. HAZARDS IDENTIFICATION

****EMERGENCY OVERVIEW****

WARNING
Irritation may develop from eye and skin exposure.
Avoid contact with eyes. Wear gloves and safety goggles. Wash contaminated clothing before reuse.
May evolve hydrogen bromide and bromine under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
Can cause mild to moderate irritation.

SKIN CONTACT :
May cause irritation with prolonged contact.

INGESTION :
Not a likely route of exposure. No adverse effects expected.

INHALATION :
Not a likely route of exposure. Aerosols or product mist may irritate the upper respiratory tract.

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

4. FIRST AID MEASURES

IF SWALLOWED: Drink promptly large quantities of water. DO NOT induce vomiting. Avoid alcohol. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably, mouth-to-mouth. Get medical attention.^

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

5. FIRE FIGHTING MEASURES

FLASH POINT : None

EXTINGUISHING MEDIA :
Not expected to burn. Keep containers cool by spraying with water. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :
May evolve hydrogen bromide and bromine under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :
In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :
Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :
SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :
This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters, unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

7. HANDLING AND STORAGE

HANDLING :
Avoid eye and skin contact. Do not take internally. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labelled. Keep the containers closed when not in use. Use with adequate ventilation.

STORAGE CONDITIONS :
Store the containers tightly closed. Store in suitable labelled containers. Store in a cool well ventilated area away from direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :
This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :
General ventilation is recommended.

RESPIRATORY PROTECTION :
Respiratory protection is not normally needed.

HAND PROTECTION :
Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

SKIN PROTECTION :
Wear standard protective clothing.

EYE PROTECTION :
Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :
If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Keep an eye wash fountain available. Keep a safety shower available.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Colorless
ODOR	None

SPECIFIC GRAVITY	1.43 @ 77 °F / 25 °C
DENSITY	11.9 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	5.5 - 9.0
FREEZING POINT	-10 °F / -23.3 °C
BOILING POINT	218 °F / 103.5 °C
VAPOR PRESSURE	Same as water
VOC CONTENT	0.00 %

10. STABILITY AND REACTIVITY

STABILITY :
Stable under normal conditions.

HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
High temperatures

MATERIALS TO AVOID :
Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS :
Hydrogen bromide, Bromine

11. TOXICOLOGICAL INFORMATION

The following results are for the product and a similar product.

ACUTE ORAL TOXICITY :

Species	LD50	Tested Substance
Rat	> 5,000 mg/kg	Product

Rating : Non-Hazardous

ACUTE DERMAL TOXICITY :

Species	LD50	Tested Substance
Rabbit	> 2,000 mg/kg	Product

Rating : Non-Hazardous

PRIMARY SKIN IRRITATION :

Draize Score	Tested Substance
0.4 / 8.0	Similar Product

Rating : Minimally irritating

PRIMARY EYE IRRITATION :

Draize Score	Tested Substance
10.8 / 110.0	Similar Product

Rating : Slightly irritating

SENSITIZATION :
This product is not expected to be a sensitizer.

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :
Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product. The following results are for the hypobromous acid (as Br2) generated from sodium bromide.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Tested Substance
Bluegill Sunfish	96 hrs	0.52 mg/l	HOBr (Generated from NaBr) (Sodium Bromide)
Rainbow Trout	96 hrs	0.23 mg/l	HOBr (Generated from NaBr)

Rating :

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Tested Substance
Daphnia magna	48 hrs	0.71 mg/l		HOBr (Generated from NaBr) (Sodium Bromide)
American Oyster	96 hrs	0.54 mg/l		HOBr (Generated from NaBr)
Mysid Shrimp (A. bahia)	96 hrs	0.17 mg/l		HOBr (Generated from NaBr)

Rating :

PERSISTENCY AND DEGRADATION :

Biological Oxygen Demand (BOD) : This material is an oxidizing biocide and is not expected to persist in the environment.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by 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.

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

DO NOT REUSE EMPTY CONTAINER. Triple rinse the container (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerate. Burn only if allowed by state and local authorities. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

LAND TRANSPORT :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING

TRANSPORTATION

15. REGULATORY INFORMATION

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :
Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Bromide : Eye irritant

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 substances 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:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
-	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

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

TOXIC SUBSTANCES CONTROL ACT (TSCA) :
This product is exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory List.

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

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
None of the substances are specifically listed in the regulation.

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

MICHIGAN CRITICAL MATERIALS :
None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :
This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :
Pesticide controlled products are not regulated under WHMIS.

16. OTHER INFORMATION

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 insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, Co.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO

Prepared By : Product Safety Department
Date issued : 08/24/2000
Replaces : 01/06/2000

H-130M

CALGON CORPORATION

P.O. Box 1346
Pittsburgh, PA 15230-1346
Phone--(412)494-8000

MATERIAL SAFETY DATA SHEET

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: **H-130M**

CHEMICAL DESCRIPTION: Solution of quaternary alkyl ammonium compound
PRODUCT CLASS: Molluscicide
MSDS CODE: 0B75-02-08-95

Section 2. INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	% by Weight	OSHA PEL	ACGIH TLV
Didecyldimethylammonium chloride	7173-51-5	50	None established	None established
Ethanol	64-17-5	10	TWA 1000 ppm, 1900 mg/m^3	TWA 1000 ppm, 1880 mg/m^3

Section 3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

DANGER!
May cause severe eye and skin damage.
May be harmful if swallowed.
May cause respiratory tract irritation.
Flammable/Combustible liquid and vapor.

****

PRIMARY ROUTES OF ENTRY: Eye and skin contact, inhalation, ingestion

TARGET ORGANS: Eye, skin, mucous membranes, central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No data available.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product may cause severe irritation and damage upon contact with the eye.

SKIN CONTACT: Direct or prolonged contact with this product can cause severe skin irritation and possibly skin burns. Data indicate that this product will not be absorbed through the skin in harmful amounts and will not cause an allergic skin reaction.

INGESTION: If swallowed, this product would be expected to cause immediate burning pain in the mouth, throat, and abdomen, severe swelling of the larynx, skeletal muscle paralysis affecting the ability to breathe, circulatory shock, convulsions.

INHALATION: Solvent vapors or mist of product can cause irritation of mucous membranes if inhaled. Exposure to ethanol concentrations of over 1000 ppm may cause headache, irritation of the eyes, nose and throat, and, if long continued, drowsiness and fatigue, loss of appetite and inability to concentrate.

SUBCHRONIC, CHRONIC:
This product was found to be not teratogenic in rats treated with 10-50 mg/kg on days 6 to 15 gestation, not mutagenic in Ames Salmonella test with or without metabolic activation, and not clastogenic in Chinese hamster ovary cells with or without metabolic activation. There was no evidence of chromosomal damage in the bone marrow of rats treated with 600 mg/kg.

CARCINOGENICITY:
NTP:
No ingredients listed in this section
IARC:
No ingredients listed in this section
OSHA:
No ingredients listed in this section

Section 4. FIRST AID MEASURES

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical aid immediately.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical aid immediately. Wash clothing before reuse.

INGESTION: If swallowed, give large amounts of water to dilute the toxicant. If immediately available, demulcents such as milk, vegetable oil or egg whites can be given. Do NOT induce vomiting as it is likely to cause considerable mucosal damage. If vomiting does occur, give fluids again. Get medical attention immediately.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Measures against circulatory shock, as well as oxygen and measures to support breathing manually or mechanically, may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short-acting barbiturate drug.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: 109°F (Setaflash)
This product is a fire hazard.

LOWER FLAMMABLE LIMIT: Not available UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

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

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.
Use water to keep fire-exposed containers cool.

FIRE & EXPLOSION HAZARDS: Product emits toxic gases under fire conditions. Heated solvent vapors can travel to an ignition source and flash back.

DECOMPOSITION PRODUCTS: Thermal decomposition may produce carbon monoxide, carbon dioxide, organic materials, hydrogen chloride, amines, and nitrogen oxides.

NFPA RATINGS: Health = 3 Flammability = 2 Reactivity = 0 Special Hazard = None

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Ventilate area of spill. Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container. Do not allow to contaminate sewers and waterways. Spilled product may make floor slippery; spills should be cleaned up immediately to prevent falls.

Section 7. HANDLING AND STORAGE

HANDLING: It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Do not get in eyes, on skin or clothing.
Avoid breathing vapor or mist.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: Keep away from heat and flame.
Do not contaminate water, food, or feed by storage.
Maximum storage temperature: 140°F

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles and face shield
SKIN PROTECTION: Chemical resistant gloves and protective clothing
RESPIRATORY PROTECTION: If airborne concentrations exceed published exposure limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

ENGINEERING CONTROLS: Use local and/or general exhaust ventilation to maintain airborne concentrations below exposure limits.

WORK PRACTICES: Eye wash station and safety shower should be accessible in the immediate area of use.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not available

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: Not available

SPECIFIC GRAVITY: 0.93 @ 25°C

VAPOR DENSITY (air=1): Not available

pH: 7.0 - 8.0 (1% solution)

%VOLATILE BY WEIGHT: 50

FREEZING POINT: Not available

APPEARANCE AND ODOR: Colorless to pale yellow, slightly viscous liquid with alcohol odor.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Do not use this product in conjunction with soap or any anionic wetting agent.

INCOMPATIBILITY: Strong oxidizers and reducers

DECOMPOSITION PRODUCTS: Thermal decomposition may produce carbon monoxide, carbon dioxide, organic materials, hydrogen chloride, amines, and nitrogen oxides.

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:

Product Dermal LD_{50} (rabbit): 4300 mg/kg (based on 80% active).

Eye irritation Instillation of 0.1 ml to the eye with or without washing resulted in extreme irritation that did not clear by day 7, post-dose.

Skin irritation Application of 0.5 ml to abraded and non-abraded skin resulted in severe redness and swelling, as well as scabbing and blanching of the skin that did not clear by day 7, post-dose.

Skin sensitization In a dermal sensitization study of didecyldimethylammonium chloride conducted in guinea pigs, there was no evidence of photoallergy or contact sensitization.

Toxicological data on chronic effects For didecyldimethylammonium chloride:

-Dermal subchronic toxicity (90 day - rat): no systemic toxicity observed.

-Reproductive effects (2 generation rat study): treatment at or below the level which produces mild toxic effects shows no reproductive effects.

-Oral chronic toxicity (dog - 1 year): no target organ effects.

-Pharmacokinetics (dog): this material does not accumulate in body tissues.

ON INGREDIENTS:

Chemical Name	Oral LD_{50} (rat)	Dermal LD_{50} (rabbit)	Inhalation LC_{50} (rat)
Didecyldimethylammonium chloride	84 mg/kg	Not available	Not available
Ethanol	7060 mg/kg	LD_{Lo} 20 g/kg	20000 ppm/10H

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

Environmental data:

This product is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

Semi Continuous Activated Sludge Test: 91 - 97%

ON INGREDIENTS:

Chemical Name	Aquatic Toxicity Data
Didecyldimethylammonium chloride	48 hr EC_{50} (Daphnia magna): 0.094 ppm 96 hr LC_{50} (mysid shrimp): 0.069 ppm 96 hr LC_{50} (bluegill sunfish): 0.32-0.59 ppm 96 hr LC_{50} (rainbow trout): 1.1 ppm 96 hr LC_{50} (coho salmon): 1.0 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would be considered a RCRA Hazardous Waste based on the characteristic of ignitability. The EPA Hazardous Waste Number is D001.

DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Class/Division: 8
Proper Shipping Name: Corrosive liquid, flammable, n.o.s. (contains Didecyldimethylammonium chloride and Ethanol)
Label: Corrosive, Flammable liquid
Packing Group: II
ID Number: UN 2920

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous
TSCA: Pesticides are exempted by TSCA (the Toxic Substances Control Act), under Section 3(2)(a)ii, from the provisions of the Act.
CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name	RQ
No ingredients of this product have CERCLA reportable quantities.	

Product RQ: Not applicable (Notify EPA of product spills exceeding this amount.)

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Chemical Name	CAS #	RQ	TPQ
There are no SARA 302 Extremely Hazardous Substances in this product.			

Section 311 and 312 Health and Physical Hazards:

Immediate	Delayed	Fire	Pressure	Reactivity
[yes]	[no]	[yes]	[no]	[no]

Section 313 Toxic Chemicals:

Chemical Name	CAS #	% by Weight
There are no reportable SARA 313 Toxic Chemicals in this product.		

Section 16. OTHER INFORMATION

HMIS RATINGS: Health = 3 Flammability = 2 Reactivity = 0
Personal Protective Equipment = X (to be specified by user depending on use conditions)

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

MSDS REVISION SUMMARY: Supersedes MSDS issued on 2/4/94. The MSDS has changed in Sections 11 and 14.

PREPARED BY: P.J. Maloney

THRUGUARD 404

CALGON CORPORATION

P.O. Box 1346
Pittsburgh, PA 15230-1346
Phone--(412)494-8000

MATERIAL SAFETY DATA SHEET

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: **THRUGUARD 404**

CHEMICAL DESCRIPTION: Aqueous polymer/organic phosphonate solution
PRODUCT CLASS: Water treatment
MSDS CODE: 0B24-08-04-94

Section 2. INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	% by Weight	OSHA PEL	ACGIH TLV
1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)	2809-21-4	40	None established	None established
Phosphorous acid	13598-36-2	2	None established	None established

Section 3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

DANGER!
May cause severe eye damage.
May cause skin and respiratory tract irritation.
May be harmful if swallowed.

****

PRIMARY ROUTES OF ENTRY: Eye and skin contact, inhalation, ingestion

TARGET ORGANS: Eye, skin, blood, bone, mucous membranes

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: May aggravate anemia.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product may cause irreversible eye damage upon contact depending on the length of exposure, solution concentration and first aid measures.

SKIN CONTACT: Exposure to this product may cause moderate to severe irritation of the skin. This product is not expected to be absorbed through the skin in harmful amounts or to produce an allergic skin reaction.

INGESTION: The low pH of the product would indicate that it may produce severe irritation or burns to the mouth, throat, esophagus, and stomach if swallowed.

INHALATION: This product is not expected to present an inhalation hazard unless mists or vapors are generated. Breathing mist of HEDP may be irritating to the mucous membranes of the respiratory tract.

SUBCHRONIC, CHRONIC:
No applicable information was found concerning any potential health effects resulting from subchronic or chronic exposure to the product.

Some blood effects have been produced by HEDP in chronic feeding studies with rats. A product containing 60% HEDP was administered to beagle dogs at dietary concentrations of 1,000, 3,000, or 10,000 ppm for 90 days with no adverse hematologic, biochemical or histopathologic effects.

Numerous publications in the scientific literature discuss the effects of HEDP related to bone resorption in tissue and cell culture, and in animals. The effects of HEDP related to bone mineralization, calcium absorption, and metabolism of calcium and phosphate have also been evaluated.

CARCINOGENICITY:
NTP:
No ingredients listed in this section
IARC:
No ingredients listed in this section
OSHA:
No ingredients listed in this section

Section 4. FIRST AID MEASURES

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical aid immediately.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical aid immediately. Wash clothing before reuse.

INGESTION: If swallowed, do NOT induce vomiting. Give large quantities of water. Seek medical aid immediately. Never give anything by mouth to an unconscious person.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: > 200°F (TCC)
This product is not by definition a "flammable liquid" or a "combustible liquid".

LOWER FLAMMABLE LIMIT: Not available UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use extinguishing media appropriate for the surrounding fire.

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.
Use water to keep fire-exposed containers cool.

FIRE & EXPLOSION HAZARDS: Product emits toxic gases under fire conditions.

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, nitrogen oxides, phosphines, phosphorus oxides, and sulfur oxides.

NFPA RATINGS: Health = 3 Flammability = 1 Reactivity = 0 Special Hazard = None

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container. Spilled product may be neutralized carefully with weak caustic solutions or sodium carbonate. Neutralization releases large amounts of heat.

Section 7. HANDLING AND STORAGE

HANDLING: Do not get in eyes.
Avoid contact with skin and clothing.
Avoid breathing vapor or mist.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: Do not store near incompatible materials.
Store in a cool, dry, well-ventilated location.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles and face shield
SKIN PROTECTION: Chemical resistant gloves and protective clothing
RESPIRATORY PROTECTION: If airborne concentrations become irritating, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

ENGINEERING CONTROLS: Use local exhaust ventilation at elevated temperatures or if mists are generated.

WORK PRACTICES: Avoid using in confined spaces. Eye wash station and safety shower should be accessible in the immediate area of use.

UNSATISFACTORY MATERIALS OF CONSTRUCTION: Product is corrosive to mild steel.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 212 °F (> 100 °C)

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: Similar to water

SPECIFIC GRAVITY: 1.29

VAPOR DENSITY (air=1): Similar to water

pH: < 1.0

%VOLATILE BY WEIGHT: ~ 53 (water)

FREEZING POINT: Not available

APPEARANCE AND ODOR: Clear, colorless to pale yellow liquid.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Temperatures greater than 200°C (392 °F). At this temperature, product can form flammable phosphine gas.

INCOMPATIBILITY: Strong oxidizers and bases

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, nitrogen oxides, phosphines, phosphorus oxides, and sulfur oxides.

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:
No information available on the formulated product.

ON INGREDIENTS:

Chemical Name	Oral LD_{50} (rat)	Dermal LD_{50} (rabbit)	Inhalation LC_{50} (rat)
1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)	2400 mg/kg (60% soln)	>7940 mg/kg (60% soln)	Not available
Phosphorous acid	1895 mg/kg	Not available	Not available

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

Environmental data:
Prolonged exposure of terrestrial or aquatic environments to acidic conditions can be expected to produce adverse effects by releasing toxic cations, e.g., metals.

ON INGREDIENTS:

Chemical Name	Aquatic Toxicity Data
1-Hydroxyethylidene-1,1-diphosphonic acid	48 hr LC_{50} (Daphnia magna): 527 ppm 96 hr LC_{50} (rainbow trout): 368 ppm 96 hr LC_{50} (bluegill sunfish): 868 ppm
Anionic copolymer	48 hr LC_{50} (Daphnia magna): 2,800 ppm 96 hr LC_{50} (bluegill sunfish): > 10,000 ppm 96 hr LC_{50} (rainbow trout): 4,900 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would be considered a RCRA Hazardous Waste based on the characteristic of corrosivity. The EPA Hazardous Waste Number is D002.

DISPOSAL: Dispose of in accordance with local, state and federal regulations.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

Class/Division: 8
Proper Shipping Name: Corrosive liquid, acidic, organic, n.o.s. (contains 1-Hydroxyethylidene-1,1-diphosphonic acid)
Label: Corrosive
Packing Group: III
ID Number: UN 3265

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous

TSCA: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name	RQ
No ingredients of this product have CERCLA reportable quantities.	

Product RQ: Not applicable (Notify EPA of product spills exceeding this amount.)

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Chemical Name	CAS #	RQ	TPQ
There are no SARA 302 Extremely Hazardous Substances in this product.			

Section 311 and 312 Health and Physical Hazards:

Immediate	Delayed	Fire	Pressure	Reactivity
[yes]	[no]	[no]	[no]	[no]

Section 313 Toxic Chemicals:

Chemical Name	CAS #	% by Weight

There are no reportable SARA 313 Toxic Chemicals in this product.

Section 16. OTHER INFORMATION

HMIS RATINGS: Health = 3 Flammability = 1 Reactivity = 0
Personal Protective Equipment = X (to be specified by user depending on use conditions)

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

MSDS REVISION SUMMARY: Supersedes MSDS issued on 6/25/92. The MSDS has been changed in Sections 3, 4, 6, 8, and 14.

PREPARED BY: P.J. Maloney

NALCO

CCS# 03263

Kol-048

MATERIAL SAFETY DATA SHEET

PRODUCT

CUPROSTAT

EMERGENCY TELEPHONE NUMBER

(800)462-5378 (24 Hours) (800) I-M-ALERT

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :	**CUPROSTAT**
APPLICATION :	COPPER CORROSION INHIBITOR
CHEMICAL DESCRIPTION :	Substituted Thiazole(s), Substituted triazole, Water
COMPANY IDENTIFICATION :	Nalco Chemical Company One Nalco Center Naperville, Illinois 60563-1198
EMERGENCY TELEPHONE NUMBER :	(800)462-5378 (24 Hours) (800) I-M-ALERT

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Mercaptobenzothiazole	2492-26-4	10.0 - 30.0
Sodium Tolyltriazole	64665-57-2	10.0 - 30.0

3. HAZARDS IDENTIFICATION

****EMERGENCY OVERVIEW****

DANGER
Corrosive. May cause tissue damage. May cause skin sensitization reaction in certain individuals.
Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.
Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.
Not flammable or combustible. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) and sulfur (SOx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
Corrosive. Will cause eye burns and permanent tissue damage.

SKIN CONTACT :
May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered. Repeated or prolonged contact may cause skin sensitization.

INGESTION :
Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach.

INHALATION :
Not a likely route of exposure. Irritating, in high concentrations, to the eyes, nose, throat and lungs.

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

4. FIRST AID MEASURES

EYE CONTACT :
PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get immediate medical attention.

SKIN CONTACT :
Immediately flush with plenty of water for at least 15 minutes. For a large splash, flood body under a shower. Remove contaminated clothing. Wash off affected area immediately with plenty of water. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

INGESTION :
DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink. Get immediate medical attention.

INHALATION :
Remove to fresh air, treat symptomatically. Get medical attention.

NOTE TO PHYSICIAN :
Probable mucosal damage may contraindicate the use of gastric lavage. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

PRODUCT

CUPROSTAT

EMERGENCY TELEPHONE NUMBER

(800)462-5378 (24 Hours) (800) I-M-ALERT

5. FIRE FIGHTING MEASURES

FLASH POINT : > 200 °F / > 93 °C ( )

EXTINGUISHING MEDIA :
This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :
Not flammable or combustible. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) and sulfur (SOx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :
In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :
Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :
SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :
Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :
Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid generating aerosols and mists. Do not mix with acids. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS :
Store the containers tightly closed. Store separately from acids. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :
This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :
General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :
If significant mists, vapors or aerosols are generated an approved respirator is recommended. A dust, mist, fume cartridge may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :
Neoprene gloves, Nitrile gloves, PVC gloves, Butyl gloves, Rubber gloves

SKIN PROTECTION :
Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :
Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS :
Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Clear Dark Amber
ODOR	None
SPECIFIC GRAVITY	1.23 - 1.24 @ 77 °F / 25 °C
SOLUBILITY IN WATER	Complete
pH (100 %)	12.5 - 13.5

10. STABILITY AND REACTIVITY

STABILITY :
Stable under normal conditions.

HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
Freezing temperatures. Prolonged exposure to air

MATERIALS TO AVOID :
Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS :
Under fire conditions: Oxides of carbon, Oxides of nitrogen, Oxides of sulfur

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :
Mercaptobenzothiazole can cause an allergic reaction in sensitive individuals.

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Tested Substance
Bluegill Sunfish	96 hrs	11.3 mg/l	Product
Rainbow Trout	96 hrs	7.1 mg/l	Product

Rating : Toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Tested Substance
Daphnia magna	48 hrs	46.2 mg/l		Product

Rating : Slightly toxic

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

LAND TRANSPORT :

Proper Shipping Name :	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical Name(s) :	SODIUM-2-MERCAPTOBENZO-THIAZOLE; SODIUM TOLYLTRIAZOLE
UN/ID No :	3267
Hazard Class - Primary :	8
Packing Group :	III
Flash Point :	> 93 °C / > 200 °F

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical Name(s) :	SODIUM-2-MERCAPTOBENZO-THIAZOLE, SODIUM TOLYLTRIAZOLE
UN/ID No :	3267
Hazard Class - Primary :	8
Packing Group :	III
IATA Cargo Packing Instructions :	820
IATA Cargo Aircraft Limit :	60 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

IMDG Page :	8147-1
Proper Shipping Name :	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical Name(s) :	SODIUM-2-MERCAPTOBENZO-THIAZOLE, SODIUM TOLYLTRIAZOLE
UN/ID No :	3267
Hazard Class - Primary :	8
Packing Group :	III

15. REGULATORY INFORMATION

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :
Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

NALCO

PRODUCT

CUPROSTAT

EMERGENCY TELEPHONE NUMBER
(800)462-5378 (24 Hours) (800) I-M-ALERT

Sodium Mercaptobenzothiazole : Corrosive, Sensitizer
Sodium Tolyltriazole : Irritant

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 substances 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:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
-	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

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

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

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

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
None of the substances are specifically listed in the regulation.

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

MICHIGAN CRITICAL MATERIALS :
None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :
None of the substances are specifically listed in the regulation.

NALCO

PRODUCT

CUPROSTAT

EMERGENCY TELEPHONE NUMBER

(800)462-5378 (24 Hours) (800) 1-M-ALERT

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :
E - Corrosive Material

16. OTHER INFORMATION

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 insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, Co.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO

NALCO

MATERIAL SAFETY DATA SHEET

PRODUCT

CUPROSTAT

EMERGENCY TELEPHONE NUMBER

(800)462-5378 (24 Hours) (800) I-M-ALERT

Prepared By : Product Safety Department
Date issued : 09/26/2000
Replaces : 09/24/1999

Bayer

MATERIAL SAFETY DATA SHEET

CCS# 00085
K01-048

BAYER CORPORATION
PRODUCT SAFETY & REGULATORY AFFAIRS
100 Bayer Road
Pittsburgh, PA 15205-9741

TRANSPORTATION EMERGENCY
CALL CHEMTREC: 800-424-9300
INTERNATIONAL: 703-527-3887

NON-TRANSPORTATION
BAYER EMERGENCY PHONE...: (412) 923-1800
BAYER INFORMATION PHONE.: (800) 662-2927

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: Certified Hydrazine 35 % (Nuclear Grade)
PRODUCT CODE.....: V135-N
CHEMICAL FAMILY.....: Diamines
CHEMICAL NAME.....: Hydrazine
SYNONYMS.....: 54.7 % Hydrazine Hydrate; Aqueous Hydrazine Solution; Diamide Hydrate
FORMULA.....: N2H4.H2O

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS		CONCENTRATION (%)
***** HAZARDOUS INGREDIENTS *****			
Hydrazine 302-01-2	OSHA :	1.00 ppm TWA - Skin 1.30 mg/m3 TWA - Skin	Approx. 35 %
	ACGIH:	.01 ppm TWA - Skin .013 mg/m3 TWA - Skin	

3. HAZARDS IDENTIFICATION:

****
* EMERGENCY OVERVIEW *
*
* WARNING! Toxic; Color: Colorless to slightly yellow; *
* Form: Liquid; Odor: Ammonia like (fishy); May cause eye, *
* skin, and respiratory tract irritation; Harmful if inhaled *
* or ingested; May cause allergic skin reaction; May be fatal *

3. HAZARDS IDENTIFICATION (Continued)

****
* if absorbed through skin; May cause liver damage; May cause *
* kidney damage; May affect nervous system; May cause lung *
* damage; May cause blood disorders; May cause cancer based on *
* animal data; Sudden reaction and fire may result when mixed *
* with oxidizing agents; Use cold water spray to cool *
* fire-exposed containers to minimize the risk of rupture; *
* Toxic gases/fumes are given off during burning or thermal *
* decomposition. *
****

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Eye Contact; Skin Contact; Skin Absorption

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE INHALATION.....: In sufficient concentrations, hydrazine vapors will cause irritation to the upper respiratory tract. Symptoms may include coughing, sore throat, dizziness and nausea.

CHRONIC INHALATION.....: Repeated or prolonged inhalation of hydrazine may lead to liver and kidney damage, hemolysis (destruction) of red blood cells, and pneumonia.

ACUTE SKIN CONTACT.....: Direct skin contact with this product may cause local irritation resulting in possible symptoms such as discomfort, itching, reddening and swelling. Hydrazine can be absorbed through the skin. Extensive skin contamination may result in fatal or near fatal consequences due to hepatic (liver) effects, central nervous system effects or other systemic effects.

CHRONIC SKIN CONTACT.....: Prolonged or repeated skin contact may cause dermatitis (inflammation) in the form of erythema (reddening of the skin), blistering or eczema-like (dermatitis) rash. Absorption of hydrazine may lead to liver and kidney damage and hemolysis of red blood cells. Some individuals have exhibited allergic skin reactions which disappear when removed from exposure to hydrazine.

ACUTE EYE CONTACT.....: Direct eye contact with hydrazine causes irritation. Possible symptoms may include discomfort, reddening and tearing. Severe eye exposure to hydrazine vapors has been reported to cause temporary blindness, lasting for as long as twenty-four (24) hours. Eye irritation may be delayed following exposure to hydrazine vapors.

ACUTE INGESTION.....: Hydrazine is irritating to the mucous membranes. Hydrazine is toxic by ingestion. Ingestion can result in fatal to near fatal consequences due to hepatic (liver) damage, central nervous system effects or other systemic effects.

CHRONIC INGESTION.....: Repeated or prolonged absorption of hydrazine into the body may lead to liver and kidney damage and hemolysis of red blood cells.

OTHER EFFECTS OF EXPOSURE.....: While hydrazine is known to be an animal carcinogen, no link has been established to cancer in humans. In an epidemiology study of hydrazine manufacturing workers covering more than thirty (30) years has found no unusual excess of cancer. (1)

3. HAZARDS IDENTIFICATION (Continued)

CARCINOGENICITY

NTP.....: Hydrazine is listed as a Substance Reasonably Anticipated to be Carcinogenic in the National Toxicology Program (NTP) Seventh Annual Report on Carcinogens, 1994.

IARC.....: Hydrazine is listed by the International Agency for Research on Cancer (IARC) as Group 2B, Possible Human Carcinogen; human evidence inadequate, animal evidence sufficient.

OSHA.....: Not regulated.

OTHER.....: Based on the results of animal studies, the ACGIH has listed hydrazine in appendix A3, Confirmed Animal Carcinogen with Unknown Relevance to Humans in the ACGIH Threshold Limit Values for 1998.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: Persons with preexisting eye, skin or respiratory tract, or impaired liver and/or kidney function conditions may be more susceptible to the effects of this chemical.

EXPOSURE LIMITS.....: Refer to Section 2.

1 Br. J. Ind. Med. 41, 31-34.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Flush the eyes with large amounts of running water at room temperature for at least 15 minutes and see a physician, preferably an ophthalmologist, immediately.

FIRST AID FOR SKIN.....: Wash immediately with cool, running water while removing contaminated clothing and shoes. Avoid using hot water and hard rubbing. Consult a physician, particularly if exposure is extensive, prolonged, or irritation persists after washing. Wash contaminated clothing thoroughly before reuse.

FIRST AID FOR INHALATION: Persons acutely overexposed to hydrazine vapors should be removed from the contaminated environment as quickly as possible by properly protected rescue personnel. Trained persons can administer oxygen to ease breathing. Consult a physician immediately.

FIRST AID FOR INGESTION.: Accidental ingestion of hydrazine solutions should be treated by taking large amounts of water. Never give anything by mouth to an unconscious person. Inducing vomiting is indicated in conscious patients, especially when there has been ingestion within the last thirty (30) minutes. A physician should be contacted immediately.

NOTE TO PHYSICIAN.....: There are no definitive antidotes for hydrazine exposure. Physicians should treat exposed persons symptomatically. Overexposed persons should be closely observed for symptoms of central nervous system involvement, respiratory irritation, bronchitis or edema, and treat accordingly. Parenteral pyridoxine administration has been used by some physicians to treat patients suffering acute central nervous system effects. (In one reported case, following pyridoxine administration parenterally, there was a rapid reversal of coma in 4 hours in a patient who had been comatose for over 60 hours.)

5. FIRE FIGHTING MEASURES:

FLASH POINT....................: Greater than 212 F (100 C); DIN 51758 (PMCC).
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL)(%): 83.4 % by volume in air at 1000 mbar
LOWER EXPLOSIVE LIMIT (LEL)(%): 9.3 % by volume in air at 1000 mbar
AUTO-IGNITION TEMPERATURE.......: Greater than 590 F (310 C).
EXTINGUISHING MEDIA.............: Dry Chemical; Foam; Carbon Dioxide; Water spray for large fires.
SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear full protective clothing including self-contained breathing apparatus. Under fire conditions, hazardous vapors and gases may be emitted. Containers exposed to excessive heat may rupture violently. Use a water spray to keep containers cool. Fight fires from a protected area.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES..........: Use appropriate protective equipment. Contain small spills by diking and digging a containment pit sufficiently large to hold at least 10 times the spill volume. Dilute to approximately 10 times the volume with water. Add sufficient dry commercial calcium hypochlorite (dry chlorine, HTHR, dry bleach) to completely oxidize the hydrazine. Use 7-10 lbs per pound of hydrazine (1 lb. of 35 % Hydrazine = 0.35 lbs. N_2H_4). Calcium hypochlorite or other oxidizing agents should never be allowed to mix with undiluted hydrazine solutions. The resulting reaction is very vigorous, releasing large amounts of heat and gas. Contaminated surfaces should be treated with household bleach or calcium hypochlorite solution to oxidize the residual hydrazine. In the event of larger spills, contain product, secure area and notify Bayer at (412-923-1800 during normal working hours of 9 am to 5 pm EST) or CHEMTREC at (800-424-9300).

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE(MIN/MAX): Ambient/122 F (50 C).
SHELF LIFE..................: Unlimited in tightly closed containers.
SPECIAL SENSITIVITY.........: Extreme heat, oxidizing materials or catalytic metals.
HANDLING/STORAGE PRECAUTIONS: When handling hydrazine, utilize protective clothing and equipment. Do not get in eyes or on skin. Do not breathe vapors or mists. Wash thoroughly after handling. Store in a dry place away from heat {below 122 F (50 C)} and away from ignition sources and oxidants, preferably outdoors. Shelter drums stored outdoors from direct

Continued on next page

7. HANDLING AND STORAGE (Continued)

sunlight. For indoor storage areas, continuous ventilation should be provided. This product may become electrostatically charged during filling and transferring. Make sure equipment is properly bonded and grounded. Store away from food and beverages.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Splash goggles or full face shield.
SKIN PROTECTION REQUIREMENTS.....: PVC, neoprene or nitrile splash suits, boots and gloves should be worn when spray or splash protection is required.
VENTILATION REQUIREMENTS.....: Use local exhaust or other means to maintain airborne hydrazine concentration below the current Permissible Exposure Limit.
RESPIRATOR REQUIREMENTS.....: Whenever the hydrazine levels exceed the current Permissible Exposure Limit, a positive pressure supplied air respirator is recommended.
ADDITIONAL PROTECTIVE MEASURES.....: Safety showers and eyewash stations should be readily available. Do not store or transfer hydrazine solutions in open containers. Because hydrazine can be absorbed into the body by all common routes of exposure, protective equipment must be used. Personal protective equipment is not an adequate substitute for safe work practices, proper equipment design and good maintenance practices.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Liquid
COLOR.....: Colorless to slightly yellow
ODOR.....: Ammonia like (fishy)
ODOR THRESHOLD.....: 3 to 5 ppm
MOLECULAR WEIGHT.....: (For hydrazine hydrate) 50.06
pH .....: Greater than 12 @ 350 g/l water @ 68 F (20 C), original soln
BOILING POINT.....: Approx. 228.9 F (109.4 C)
MELTING/FREEZING POINT....: Approx. -85 F (-65 C)
VISCOSITY.....: (Dynamic): Approx. 1.26 mPas @ 68 F (20 C)
SOLUBILITY IN WATER .....: Soluble
SPECIFIC GRAVITY .....: Approx. 1.021 @ 68 F (20 C)
BULK DENSITY.....: Not Established
% VOLATILE BY VOLUME.....: 100 %
VAPOR PRESSURE .....: 15 mbar @ 68 F (20 C)
VAPOR DENSITY .....: Approx. 1 (Air = 1)

10. STABILITY AND REACTIVITY:

STABILITY...................: Stable at normal temperatures and pressures.
HAZARDOUS POLYMERIZATION...: Will not occur.
INCOMPATIBILITIES...........: Brisk or dangerous reactions with strong oxidizers, catalytic metals (Lead, Copper, Zinc, Cadmium, Cobalt, Molybdenum, Gold and Silver) and certain alloys (such as Bronze and Brass).
INSTABILITY CONDITIONS.....: Excessive temperatures. (Also, see INCOMPATIBILITIES)
DECOMPOSITION TEMPERATURE..: Refer to DECOMPOSITION PRODUCTS.
DECOMPOSITION PRODUCTS.....: Under catalytic influence or elevated temperatures, H_2, NH_3 and N_2 and other toxic or flammable nitrogen compounds can be formed. Slow reaction with oxygen from the air is possible at room temperature.

11. TOXICOLOGICAL INFORMATION:

ACUTE TOXICITY
ORAL LD50...........: Hydrazine Hydrate: 129 mg/kg (Rat). Anhydrous Hydrazine: 60 mg/kg (Rat)
DERMAL LD50........: For 35 % hydrazine solution: greater than 200 mg/kg (Rabbit; DOT method); For hydrazine: 91 mg/kg (Rabbit).
INHALATION LC50....: For anhydrous hydrazine, LC50 = 570 ppm (Rat, 4 hours); For aerosols generated from a 64 % hydrazine solution, LC50 = 6.5 mg/L (5000 ppm) - the LC50 (1 hour) estimated in terms of hydrazine equivalents, LC50 = 4.2 mg/L (3200 ppm). (1)
EYE EFFECTS........: Irritating.
SKIN EFFECTS.......: Not Corrosive (Rabbit; DOT protocol).
SENSITIZATION......: Some individuals (humans) have exhibited allergic skin reactions.
CHRONIC TOXICITY......: Several studies show increased tumor indidence in mice and rats following long term oral or intraperitoneal administration of hydrazine or its salts. The U.S. Air Force conducted a study concerning the chronic inhalation toxicity of hydrazine. The study concluded that hydrazine is a relatively weak tumorigen able to induce respiratory tumors in a dose related incidence at 1.0 and 5.0 ppm.
OTHER TOXICITY DATA...: (Mutagenic, Teratogenic, Reproductive Tests): Hydrazine has demonstrated mutagenic potential in several test systems such as bacteria, phage, higher plants, drosophila, and the host-mediated assay. It was negative in the dominant lethal assay in mice. Dermal contact with hydrazine at a dose causing skin damage and systemic effects has produced embryolethality in rats.

1 Huntingdon Research Centre, July 1993 (sponsored by the Chemical Manufacturer's Association, CMA).

Continued on next page

12. ECOLOGICAL INFORMATION:

AQUATIC TOXICITY.....: Gold orfe (Leuciscus idus), LC50 (48 hrs.): 0.75 mg/l. Do not allow to escape into waters, wastewater or soil.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Oxidize or incinerate in accordance with federal, state and local environmental control regulations.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: Hydrazine solution 35 %
FREIGHT CLASS BULK.....: Item 50093 Compounds, Boiler Cleaning, Preserving
FREIGHT CLASS PACKAGE.....: Item 50093 Compounds, Boiler Cleaning, Preserving
PRODUCT LABEL.....: Certified Hydrazine 35 % (Nuclear Grade)

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Hydrazine, Aqueous Solution
HAZARD CLASS OR DIVISION .....: 6.1
UN/NA NUMBER.....: UN3293
PACKING GROUP .....: III
DOT PRODUCT RQ lbs (kgs).....: 2.8 lbs (1.3 kgs)
HAZARD LABEL(s).....: Toxic
HAZARD PLACARD(s).....: Toxic

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Hydrazine, Aqueous Solution
HAZARD CLASS DIVISION NUMBER...: 6.1
UN NUMBER.....: UN3293
PACKAGING GROUP.....: III
HAZARD LABEL(s).....: Toxic
HAZARD PLACARD(s).....: Toxic

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Hydrazine, Aqueous Solution
HAZARD CLASS DIVISION NUMBER...: 6.1
UN NUMBER.....: UN3293

14. TRANSPORTATION INFORMATION (Continued)

ICAO / IATA (continued)

SUBSIDIARY RISK.....: None
PACKING GROUP.....: III
HAZARD LABEL(s).....: Toxic
RADIOACTIVE?.....: Non-Radioactive
PASSENGER AIR - MAX. QTY. .....: 60 L
PASSENGER PACKING INSTRUCTION..: 611
CARGO AIR - MAX. QTY. .....: 220 L
CARGO AIR PACKING INSTRUCTION..: 618

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
TSCA STATUS.....: On TSCA Inventory
CERCLA REPORTABLE QUANTITY..: Hydrazine: 1 lb. (0.454 kg).
SARA TITLE III:
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES..: Hydrazine, CAS# 302-01-2, Approx. 35 %.
SECTION 311/312 HAZARD CATEGORIES.....: Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard
SECTION 313 TOXIC CHEMICALS.....: Hydrazine, CAS# 302-01-2, Approx. 35 %.
RCRA STATUS.....: When discarded in its purchased form, this product is a listed RCRA hazardous waste and should be managed as a hazardous waste. (40 CFR 261.20-24) Hydrazine has been assigned the hazardous waste number U133. Any contaminated soil, water or debris resulting from the cleanup of a hydrazine spill is considered to be a hazardous waste.

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Hydrazine 302-01-2	Approx. 35 %	PA2, CA , MA, NJ2, NJ3
Water 7732-18-5	Approx. 65 %	PA3, NJ4

CA = California Proposition 65

15. REGULATORY INFORMATION (Continued)

MA = Massachusetts Hazardous Substance List
NJ2 = New Jersey Environmental Hazardous Substance List
NJ3 = New Jersey Special Health Hazardous Substance List
NJ4 = New Jersey Other - included in 5 predominant ingredients > 1%
PA2 = Pennsylvania Special Substances List
PA3 = Pennsylvania Non-hazardous present at 3% or greater.

16. OTHER INFORMATION:

HMIS RATINGS:	Health	Flammability	Reactivity
	2*	1	1

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe
*=Chronic Health Hazard

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Revise Section 8
PREPARED BY.....: P. E. Malichky
APPROVED BY.....: S. Van Volkenburg
APPROVAL DATE.....: 11/06/2002
SUPERSEDES DATE.....: 05/21/2001
MSDS NUMBER.....: 02353

K01-048

SIGMA-ALDRICH

CCS# 02055

ATTN: SAFETY DIRECTOR
WOLF CREEK
ATTN BENJAMIN CAMPBELL
FAX 316 364 4130

EMERGENCY PHONE 1-414-273-3850
PO BOX 355 MILWAUKEE, WI 52301
DATE 01/13/99
CUST#: 943551
PO#:

MATERIAL SAFETY DATA SHEET

SECTION 1. - - - - - - - - - - CHEMICAL IDENTIFICATION- - - - - - - - - -

CATALOG #: 33163-5
NAME: TETRAMETHYLAMMONIUM HYDROXIDE, 25 WT. % SOLUTION IN WATER

SECTION 2. - - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - - -

CAS #: 75-59-2
MF: C4H13NO
EC NO: 200-882-9

SYNONYMS
AMMONIUM, TETRAMETHYL-, HYDROXIDE * HYDROXYDE DE TETRAMETHYLAMMONIUM (FRENCH) * NMD 3 * NMW-W * TMAH *

SECTION 3. - - - - - - - - - - HAZARDS IDENTIFICATION - - - - - - - - - -

LABEL PRECAUTIONARY STATEMENTS
FLAMMABLE
HIGHLY TOXIC (USA)
VERY TOXIC (EU)
VERY TOXIC IN CONTACT WITH SKIN.
CAUSES BURNS.
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING.
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
ABSORBS CO2 FROM AIR.
STORE UNDER NITROGEN.

SECTION 4. - - - - - - - - - - FIRST-AID MEASURES- - - - - - - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.
ASSURE ADEQUATE FLUSHING OF THE EYES BY SEPARATING THE EYELIDS WITH FINGERS.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.

CONTINUED ON NEXT PAGE

SIGMA-ALDRICH

CUST#: 943551

MATERIAL SAFETY DATA SHEET PAGE 2

CATALOG #: 33163-5
NAME: TETRAMETHYLAMMONIUM HYDROXIDE, 25 WT. % SOLUTION IN WATER

CALL A PHYSICIAN IMMEDIATELY.
WASH CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD CONTAMINATED SHOES.

SECTION 5. - - - - - - - - - - FIRE FIGHTING MEASURES - - - - - - - - - - -

EXTINGUISHING MEDIA
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.
FLAMMABLE LIQUID.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.
VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASH BACK.
CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.

SECTION 6. - - - - - - - - - ACCIDENTAL RELEASE MEASURES - - - - - - - - - -

EVACUATE AREA.
SHUT OFF ALL SOURCES OF IGNITION.
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.
COVER WITH DRY-LIME, SAND, OR SODA ASH. PLACE IN COVERED CONTAINERS USING NON-SPARKING TOOLS AND TRANSPORT OUTDOORS.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - - - - - - - HANDLING AND STORAGE - - - - - - - - - - -

REFER TO SECTION 8.

SECTION 8. - - - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION - - - - - -

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.
SAFETY SHOWER AND EYE BATH.
USE ONLY IN A CHEMICAL FUME HOOD.
USE NONSPARKING TOOLS.
FACESHIELD (8-INCH MINIMUM).
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
WASH THOROUGHLY AFTER HANDLING.
KEEP TIGHTLY CLOSED.

CONTINUED ON NEXT PAGE

SIGMA-ALDRICH

CUST#: 943551

MATERIAL SAFETY DATA SHEET PAGE 3

CATALOG #: 33163-5
NAME: TETRAMETHYLAMMONIUM HYDROXIDE, 25 WT. % SOLUTION IN WATER

KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - - - - -

APPEARANCE AND ODOR
COLORLESS LIQUID

PHYSICAL PROPERTIES
FLASHPOINT 99 F
37C
VAPOR PRESSURE: 17.5MM 20 C
SPECIFIC GRAVITY: 1.016

SECTION 10. - - - - - - - - - -STABILITY AND REACTIVITY - - - - - - - - -

STABILITY
STABLE.

CONDITIONS TO AVOID
KEEP AT TEMPERATURE NOT EXCEEDING:
90 DEGREES C

INCOMPATIBILITIES
STRONG OXIDIZING AGENTS
STRONG ACIDS
ABSORBS CO2 FROM AIR.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
TOXIC FUMES OF:
CARBON MONOXIDE, CARBON DIOXIDE
NITROGEN OXIDES
METHANOL
TRIMETHYLAMINE

HAZARDOUS POLYMERIZATION
WILL NOT OCCUR.

SECTION 11. - - - - - - - - - - TOXICOLOGICAL INFORMATION - - - - - - - -

ACUTE EFFECTS
MAY BE FATAL IF ABSORBED THROUGH SKIN.
HARMFUL IF INHALED OR SWALLOWED.
MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND SKIN.
INHALATION MAY RESULT IN SPASM, INFLAMMATION AND EDEMA OF THE LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY EDEMA.

CONTINUED ON NEXT PAGE

SIGMA-ALDRICH

CUST#: 943551

M A T E R I A L S A F E T Y D A T A S H E E T PAGE 4

CATALOG #: 33163-5
NAME: TETRAMETHYLAMMONIUM HYDROXIDE, 25 WT. % SOLUTION IN WATER

SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.
EXPOSURE CAN CAUSE:
DERMATITIS
TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

RTECS #: PA0875000
METHANAMINIUM, N,N,N-TRIMETHYL-, HYDROXIDE

TOXICITY DATA
SKN-GPG LD50:25 MG/KG NTIS** OTS0570994

TARGET ORGAN DATA
VASCULAR (BP ELEVATION NOT CHARACTERIZED IN AUTONOMIC SECTION)
SKIN AND APPENDAGES (AFTER SYSTEMIC EXPOSURE: DERMATITIS, OTHER)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

SECTION 12. - - - - - - - - - - ECOLOGICAL INFORMATION - - - - - - - - - -

DATA NOT YET AVAILABLE.

SECTION 13. - - - - - - - - - - DISPOSAL CONSIDERATIONS - - - - - - - - - -

BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE.
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - - - - - - TRANSPORT INFORMATION - - - - - - - - - -

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - - - - - - REGULATORY INFORMATION - - - - - - - - - -

EUROPEAN INFORMATION
FLAMMABLE
VERY TOXIC
R 27
VERY TOXIC IN CONTACT WITH SKIN.
R 34
CAUSES BURNS.
FLAMMABLE
S 16

CONTINUED ON NEXT PAGE

SIGMA-ALDRICH

CUST#: 943551

MATERIAL SAFETY DATA SHEET PAGE 5

CATALOG #: 33163-5
NAME: TETRAMETHYLAMMONIUM HYDROXIDE, 25 WT. % SOLUTION IN WATER

KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
S 26
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
S 27
TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING.
S 36/37/39
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
S 45
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
NOHS 1974: HZD A1009; NIS 1; TNF 48; NOS 1; TNE 48
NOES 1983: HZD A1009; NIS 6; TNF 105; NOS 16; TNE 6413; TFE 1446
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JUNE 1998

SECTION 16. - - - - - - - - - - OTHER INFORMATION- - - - - - - - - - -

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. ALDRICH SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE.

Pre-Tect 7080 HP

K01-048

CALGON CORPORATION CCS#03190

P.O. Box 1346
Pittsburgh, PA 15230-1346
Phone–(412)494-8000

MATERIAL SAFETY DATA SHEET

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: Pre-Tect 7080 HP

CHEMICAL DESCRIPTION: Monoethanolamine in water
PRODUCT CLASS: Water treatment
MSDS CODE: 0F71-02-01-95

Section 2. INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	% by Weight	OSHA PEL	ACGIH TLV
Monoethanolamine (MEA)	141-43-5	80	TWA 3 ppm, 8 mg/m^3; STEL 6 ppm, 15 mg/m^3	TWA 3 ppm, 7.5 mg/m^3; STEL 6 ppm, 15 mg/m^3

(Synonyms: Ethanolamine and 2-Aminoethanol.)

Section 3. HAZARDS IDENTIFICATION

*********************** EMERGENCY OVERVIEW ***********************

DANGER!
May cause severe eye and skin damage.
May be harmful if absorbed through skin or if swallowed.
Aspiration may cause lung damage.
May cause respiratory tract irritation.
Repeated exposure may cause kidney and liver damage.

****

PRIMARY ROUTES OF ENTRY: Eye and skin contact, skin absorption, inhalation, ingestion

TARGET ORGANS: Eye, skin, lung, liver, kidney, central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease. Because of its irritating properties, this material may aggravate an existing dermatitis.

Continued on Page 2

Pre-Tect 7080 HP

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product may cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Vapors may irritate eyes.

SKIN CONTACT: This product may cause irritation upon contact with the skin. If not removed promptly, burns may result. By OSHA definition, pure monoethanolamine is toxic by skin absorption. Prolonged or widespread skin contact may result in the absorption of harmful amounts of material. There is no evidence that the ethanolamines can cause allergic contact dermatitis.

INGESTION: Swallowing monoethanolamine may cause chemical burns of the mouth, throat, esophagus, and stomach. Signs and symptoms will include pain or discomfort in the mouth, chest, and abdomen, nausea, vomiting, diarrhea, dizziness, drowsiness, faintness, weakness, collapse, and coma. Aspiration may occur during swallowing or vomiting, resulting in lung injury.

INHALATION: Breathing product mist or vapor may cause irritation with coughing and discomfort in the nose, throat and chest. Prolonged exposure to moderately high vapor concentrations may cause local injury to the respiratory tract. However, the sensory irritant properties of monoethanolamine vapors should give adequate warning of a potential acute inhalation overexposure situation. In animal experiments, subacute high level exposures to monoethanolamine vapor and mist produced pulmonary damage, lethargy, and some non-specific degenerative changes in the liver and kidneys. Lab tests have found monoethanolamine to be a central nervous system (CNS) stimulant at low doses, and a CNS depressant at lethal doses.

SUBCHRONIC, CHRONIC:
Prolonged or repeated exposure to monoethanolamine may cause liver and kidney damage. Long-term inhalation of monoethanolamine vapors has caused nerve damage in laboratory animals. Oral intake of monoethanolamine during pregnancy has caused embryotoxicity and maternal toxicity in rats. Exposures having no effect on the mother should have no effect on the fetus.

There is evidence that no embryofetotoxicity or teratogenicity was produced in rats or rabbits when MEA was administered by skin contact. In spite of the widespread use of monoethanolamine in industry, no reports of injury to workers have been found.

CARCINOGENICITY:
NTP:
"No ingredients listed in this section"
IARC:
"No ingredients listed in this section"
OSHA:
"No ingredients listed in this section"

Section 4. FIRST AID MEASURES

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical aid immediately.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical aid immediately. Wash clothing before reuse.

INGESTION: If swallowed, do NOT induce vomiting. Give large quantities of water. Seek medical aid immediately. Never give anything by mouth to an unconscious person.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: > 200°F (TCC)
This product is not by definition a "flammable liquid" or a "combustible liquid".

LOWER FLAMMABLE LIMIT: 3.0% @ 140 °C for MEA UPPER FLAMMABLE LIMIT: 23.5% @ 140 °C for MEA

AUTO-IGNITION TEMPERATURE: 770 °F (410 °C)

EXTINGUISHING MEDIA: Use alcohol-type or all-purpose-type foam, applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.
Do not direct a solid stream of water or foam into hot, burning pools; this may cause splattering and increase fire intensity.

FIRE & EXPLOSION HAZARDS: Product emits toxic gases under fire conditions. For any liquid organic product that has a flash point, it should be noted that ignition may occur at temperatures below those published in the literature as autoignition or ignition temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes. Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

NFPA RATINGS: Health = 3 Flammability = 1 Reactivity = 0 Special Hazard = None

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Wearing appropriate personal protective equipment, contain spill, collect onto non-combustible absorbent like sand or earth and place into suitable container. Do not use sawdust, wood chips or other cellulosic materials to absorb the spill.

Continued on Page 4

Pre-Tect 7080 HP

Section 7. HANDLING AND STORAGE

HANDLING: Do not get in eyes, on skin or clothing.
Avoid breathing vapor or mist.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: Store in well-ventilated area free of sources of ignition. Separate from oxidizing materials.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles and face shield
SKIN PROTECTION: Chemical resistant gloves and protective clothing
RESPIRATORY PROTECTION: If airborne concentrations exceed published exposure limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

ENGINEERING CONTROLS: Use local and/or general exhaust ventilation to maintain airborne concentrations below exposure limits.

WORK PRACTICES: Eye wash station and safety shower should be accessible in the immediate area of use.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 338°F for MEA

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: 0.28 - 0.35 mmHg @ 20°C for MEA

SPECIFIC GRAVITY: 0.96 - 0.98 @ 25°C

VAPOR DENSITY (air=1): 2.1 for MEA

pH: 12.5 - 13.5 @ 25 °C

%VOLATILE BY WEIGHT: 20 (water)

FREEZING POINT: < -4 °F

APPEARANCE AND ODOR: Clear, colorless, low viscosity liquid with mild ammoniacal odor.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

Pre-Tect 7080 HP

CONDITIONS TO AVOID: Keep away from heat and flame. This product may undergo a self-sustaining thermal decomposition when heated to temperatures above 250°C (482°F). This product should not be heated above 140 °F in the presence of aluminum due to excessive corrosion and potential chemical reaction releasing flammable hydrogen gas.

INCOMPATIBILITY: Strong oxidizers and acids, aluminum, copper, aldehydes, ketones, acrylates, organic anhydrides, and organic halides.

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:
See the following information on ingredients.

ON INGREDIENTS:

Chemical Name	Oral LD_{50} (rat)	Dermal LD_{60} (rabbit)	Inhalation LC_{50} (rat)
Monoethanolamine (MEA)	1720 mg/kg	1000 mg/kg	Not available

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:
See the following information on ingredients.

ON INGREDIENTS:

Chemical Name	Aquatic Toxicity Data
Monoethanolamine	96 hr LC_{50} (fathead minnow): 125 ppm 24 hr LC_{50} (Daphnia magna): 140 ppm 96 hr LC_{50} (bluegill sunfish): 75 ppm 96 hr LC_{50} (rainbow trout): 150 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would be considered a RCRA Hazardous Waste based on the characteristic of corrosivity. The EPA Hazardous Waste Number is D002.

DISPOSAL: Dispose of in accordance with local, state and federal regulations.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Class/Division: 8
Proper Shipping Name: Ethanolamine solution
Label: Corrosive

Pre-Tect 7080 HP

Packing Group: III
ID Number: UN 2491

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous
TSCA: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.
CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name	RQ

No ingredients of this product have CERCLA reportable quantities.

Product RQ: Not applicable (Notify EPA of product spills exceeding this amount.)

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Chemical Name	CAS #	RQ	TPQ

There are no SARA 302 Extremely Hazardous Substances in this product.

Section 311 and 312 Health and Physical Hazards:

Immediate	Delayed	Fire	Pressure	Reactivity
[yes]	[yes]	[no]	[no]	[no]

Section 313 Toxic Chemicals:

Chemical Name	CAS #	% by Weight

There are no reportable SARA 313 Toxic Chemicals in this product.

Section 16. OTHER INFORMATION

HMIS RATINGS: Health = 3* Flammability = 1 Reactivity = 0
Personal Protective Equipment = X (to be specified by user depending on use conditions)

*There are potential chronic health effects to consider.

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

MSDS REVISION SUMMARY: Supersedes MSDS issued on 5/31/95. The MSDS has been changed in Sections 5, 6, and 10.

PREPARED BY: P.J. Maloney

new

SIGMA-ALDRICH

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

K01-048

ATTN: SAFETY DIRECTOR

EMERGENCY PHONE 1-414-273-3850

WOLF CREEK
NUCLEAR OPERATING CORP
ACCOUNTING/INVOICE SECTION
P O BOX 411
BURLINGTON KS 66839-0411

DATE 06/20/97
CUST#: 943551
PO#: 572924

CCS#03090

M A T E R I A L S A F E T Y D A T A S H E E T

SECTION 1. - - - - - - - - - - CHEMICAL IDENTIFICATION- - - - - - - - - -

CATALOG #: C1100-6
NAME: CARBOHYDRAZIDE, 98%

SECTION 2. - - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - - -

CAS #: 497-18-7
MF: CH6N4O
EC NO: 207-837-2

SYNONYMS
CARBAZIC ACID, HYDRAZIDE * CARBAZIDE (DOT) * CARBODIHYDRAZIDE * CARBONIC ACID, DIHYDRAZIDE * CARBONIC DIHYDRAZIDE (9CI) * CARBONOHYDRAZIDE * 1,3-DIAMINOMOCOVINA (CZECH) * 1,3-DIAMINOUREA * HYDRAZINE, CARBONYLDI- * KARBAZID (CZECH) * SEMICARBAZIDE, 4-AMINO- * UREA, 1,3-DIAMINO- *

SECTION 3. - - - - - - - - - - HAZARDS IDENTIFICATION - - - - - - - - - -

LABEL PRECAUTIONARY STATEMENTS
HARMFUL
HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
HEATING MAY CAUSE AN EXPLOSION.
AVOID CONTACT WITH ACID.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
WEAR SUITABLE PROTECTIVE CLOTHING.

SECTION 4. - - - - - - - - - - - FIRST-AID MEASURES- - - - - - - - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES.
IN CASE OF CONTACT, IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS AMOUNTS OF WATER.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
CALL A PHYSICIAN.
WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. - - - - - - - - - - FIRE FIGHTING MEASURES - - - - - - - - - -

EXTINGUISHING MEDIA
WATER SPRAY.
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO

CONTINUED ON NEXT PAGE

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

CUST#: 943551
PO#: 572924

CATALOG #: C1100-6
NAME: CARBOHYDRAZIDE, 98%

PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.
MAY EXPLODE WHEN HEATED.
FORMS EXPLOSIVE MIXTURES WITH:
ACIDS

SECTION 6. - - - - - - - - ACCIDENTAL RELEASE MEASURES - - - - - - - - -

WEAR RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES.
SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
AVOID RAISING DUST.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - - - - - - HANDLING AND STORAGE - - - - - - - - - -

REFER TO SECTION 8.

SECTION 8. - - - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION - - - - - -

CHEMICAL SAFETY GOGGLES.
COMPATIBLE CHEMICAL-RESISTANT GLOVES.
NIOSH/MSHA-APPROVED RESPIRATOR.
SAFETY SHOWER AND EYE BATH.
MECHANICAL EXHAUST REQUIRED.
AVOID INHALATION.
AVOID CONTACT WITH EYES, SKIN AND CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
WASH THOROUGHLY AFTER HANDLING.
HARMFUL SOLID.
IRRITANT.
MAY EXPLODE WHEN HEATED.
AVOID CONTACT WITH ACID.
KEEP TIGHTLY CLOSED.
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - - - -

APPEARANCE AND ODOR
WHITE POWDER

PHYSICAL PROPERTIES
MELTING POINT: 157 C TO 158 C

SECTION 10. - - - - - - - - - -STABILITY AND REACTIVITY - - - - - - - - -

CONDITIONS TO AVOID
AVOID CONTACT WITH ACID.
HEAT

INCOMPATIBILITIES

CONTINUED ON NEXT PAGE

SIGMA-ALDRICH

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

CUST#: 943551
PO#: 572924

MATERIAL SAFETY DATA SHEET

CATALOG #: C1100-6
NAME: CARBOHYDRAZIDE, 98%

STRONG OXIDIZING AGENTS
STRONG ACIDS

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
TOXIC FUMES OF:
CARBON MONOXIDE, CARBON DIOXIDE
NITROGEN OXIDES

SECTION 11. - - - - - - - - - - TOXICOLOGICAL INFORMATION - - - - - - - - -

ACUTE EFFECTS
HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.
CAUSES EYE AND SKIN IRRITATION.
MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

RTECS #: FF2625000
CARBOHYDRAZIDE

TOXICITY DATA

IPR-MUS LD50:167 MG/KG	JMPCAS 4,259,61
SCU-MUS LD50:131 MG/KG	ABMGAJ 21,635,68
IVN-MUS LD50:120 MG/KG	JPETAB 122,110,58

TARGET ORGAN DATA
BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)
BIOCHEMICAL EFFECTS (MONOAMINE OXIDASE)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

SECTION 12. - - - - - - - - - - ECOLOGICAL INFORMATION - - - - - - - - - - -

DATA NOT YET AVAILABLE.

SECTION 13. - - - - - - - - - - DISPOSAL CONSIDERATIONS - - - - - - - - - -

CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL.
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - - - - - - - TRANSPORT INFORMATION - - - - - - - - - -

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - - - - - - REGULATORY INFORMATION - - - - - - - - - - -

EUROPEAN INFORMATION
HARMFUL
R 20/21/22

CONTINUED ON NEXT PAGE

6708

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

CUST#: 943551
PO#: 572924

CATALOG #: C1100-6
NAME: CARBOHYDRAZIDE, 98%

HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
R 36/37/38
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
R 5
HEATING MAY CAUSE AN EXPLOSION.
S 26
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
S 36
WEAR SUITABLE PROTECTIVE CLOTHING.

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
NOHS 1974: HZD 82784; NIS 1; TNF 14; NOS 1; TNE 42
NOES 1983: HZD 82784; NIS 1; TNF 7; NOS 1; TNE 1822; TFE 272
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY

SECTION 16. - - - - - - - - - - OTHER INFORMATION - - - - - - - - - - - -

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. ALDRICH SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE.

ONDEO Nalco

MATERIAL SAFETY DATA SHEET

PRODUCT

SURE-COOL® 1355

EMERGENCY TELEPHONE NUMBER
(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :	SURE-COOL® 1355	**CCS# 00672 K01-048**
APPLICATION :	CLOSED SYSTEM INHIBITOR	
COMPANY IDENTIFICATION :	ONDEO Nalco Company ONDEO Nalco Center Naperville, Illinois 60563-1198	
EMERGENCY TELEPHONE NUMBER :	(800) 424-9300 (24 Hours) CHEMTREC	

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Metasilicate	6834-92-0	1.0 - 5.0
Sodium Tetraborate	1330-43-4	1.0 - 5.0
Sodium Nitrite	7632-00-0	1.0 - 5.0
Sodium Nitrate	7631-99-4	1.0 - 5.0

3. HAZARDS IDENTIFICATION

****EMERGENCY OVERVIEW****

WARNING
Contains sodium nitrite. May be harmful or fatal if swallowed. Substances in the product can lead to the formation of methemoglobin. Unborn children are particularly sensitive to methemoglobinemia. May cause skin and eye irritation. May cause sensitization by skin contact.
Do not get in eyes, on skin, on clothing. Do not take internally. Keep container tightly closed. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. If swallowed, seek medical advice immediately and show this container or label. Protect product from freezing.
Wear suitable protective clothing, gloves and eye/face protection.
May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. If product is allowed to dry, the sodium nitrite is an oxidizing agent and can initiate the combustion of other materials.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
Can cause mild to moderate irritation.

SKIN CONTACT :
Can cause mild irritation.

INGESTION :
Not a likely route of exposure. Large exposures may be fatal. Ingestion of sodium nitrite can cause methemoglobinemia which can lead to cyanosis and possible death. Pregnant women and their fetuses are particularly sensitive to the effects of methemoglobinemia.

INHALATION :
Not a likely route of exposure. Aerosols or product mist may irritate the upper respiratory tract.

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

AGGRAVATION OF EXISTING CONDITIONS :
Sodium Nitrite. Pregnant women are particularly sensitive to methemoglobinemia.

HUMAN HEALTH HAZARDS - CHRONIC :
Repeated ingestion of small amounts of sodium nitrite causes drops in blood pressure, rapid pulse, headaches and visual disturbances. It may also react with organic amines in the body to form carcinogenic nitrosamines.

4. FIRST AID MEASURES

EYE CONTACT :
Immediately flush eye with water for at least 15 minutes while holding eyelids open. If irritation persists, repeat flushing. Get immediate medical attention.

SKIN CONTACT :
Immediately flush with plenty of water for at least 15 minutes. If symptoms persist, call a physician.

INGESTION :
Induce vomiting if the patient is fully conscious. If conscious, washout mouth and give water to drink. Get immediate medical attention.

INHALATION :
Remove to fresh air, treat symptomatically. Get medical attention.

NOTE TO PHYSICIAN :
Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition. Measures against circulatory shock, respiratory depression and convulsions may be needed.

5. FIRE FIGHTING MEASURES

FLASH POINT : None

EXTINGUISHING MEDIA :
Not expected to burn. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :
May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. If product is allowed to dry, the sodium nitrite is an oxidizing agent and can initiate the combustion of other materials.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :
In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :
Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :
SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :
Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :
Avoid eye and skin contact. Do not take internally. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labelled. Keep the containers closed when not in use. Use with adequate ventilation.

STORAGE CONDITIONS :
Store the containers tightly closed. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :
Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

ACGIH/TLV :
Substance(s)
Borates, Tetra, Sodium TWA: 1 mg/m3
Salts -- Anhydrous
OSHA/PEL :
Substance(s)
Borates, Tetra, Sodium TWA: 10 mg/m3
Salts -- Anhydrous

ENGINEERING MEASURES :
General ventilation is recommended.

RESPIRATORY PROTECTION :
Respiratory protection is not normally needed.

HAND PROTECTION :
Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

SKIN PROTECTION :
Wear standard protective clothing.

EYE PROTECTION :
Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :
If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Keep an eye wash fountain available. Keep a safety shower available.

HUMAN EXPOSURE CHARACTERIZATION :
Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Red
ODOR	None
SPECIFIC GRAVITY	1.13 @ 77 °F / 25 °C

DENSITY	9.4 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	11.1 - 11.8
FREEZING POINT	-20 °F / -29 °C
BOILING POINT	212 °F / 100 °C

10. STABILITY AND REACTIVITY

STABILITY :
Stable under normal conditions.

HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
Freezing temperatures.

MATERIALS TO AVOID :
Contact with reducing agents (e.g. hydrazine, sulfites, sulfide, aluminum or magnesium dust) may generate heat, fires, explosions and toxic vapors. Do not mix with amines. Sodium nitrite can react with certain amines to produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :
Under fire conditions: Oxides of carbon, Oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE ORAL TOXICITY :

Species	LD50	Tested Substance
Rat	> 2,000 mg/kg	Product

Rating : Non-Hazardous

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :
Based on our hazard characterization, the potential human hazard is: Moderate

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Tested Substance
Rainbow Trout	96 hrs	57 mg/l	Product

Rating : Slightly toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Tested Substance
Daphnia magna	48 hrs	670 mg/l		Product

Rating : Essentially non-toxic

PERSISTENCY AND DEGRADATION :

Total Organic Carbon (TOC) : 37,000 mg/l

Chemical Oxygen Demand (COD) : 23,300 mg/l

Biological Oxygen Demand (BOD) :

Incubation Period	Value	Tested Substance
	703 mg/l	

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low
Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by 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.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

LAND TRANSPORT :

Proper Shipping Name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name(s) : SODIUM NITRITE

UN/ID No :	UN 3082
Hazard Class - Primary :	9
Packing Group :	III
Flash Point :	None
DOT Reportable Quantity (per package) :	2,000 lbs
DOT RQ Component :	SODIUM NITRITE

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name(s) :	SODIUM NITRITE
UN/ID No :	UN 3082
Hazard Class - Primary :	9
Packing Group :	III
IATA Cargo Packing Instructions :	914
IATA Cargo Aircraft Limit :	NO LIMIT (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15. REGULATORY INFORMATION

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :
Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Metasilicate : Corrosive
Sodium Tetraborate : Irritant
Sodium Nitrite : Target Organ Effect - Kidney, Target Organ Effect - Nervous system, Target Organ Effect - Blood
Sodium Nitrate : Oxidizer

CERCLA/SUPERFUND, 40 CFR 117, 302 :
This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

RQ Substance	RQ
Sodium Nitrite	2,000 lbs

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 substances 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:

X	Immediate (Acute) Health Hazard
X	Delayed (Chronic) Health Hazard
-	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :
This product contains the following substance(s), (with CAS # and % range) which appear(s) on the List of Toxic Chemicals

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Nitrite	7632-00-0	1.0 - 5.0
Sodium Nitrate	7631-99-4	1.0 - 5.0

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

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR / formerly Sec. 311 :
This product contains the following substances listed in the regulation:

Substance(s)	Citations
Sodium Nitrite :	Sec. 311

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
None of the substances are specifically listed in the regulation.

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

MICHIGAN CRITICAL MATERIALS :
None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :
The following substances are disclosed for compliance with State Right to Know Laws:

Sodium Nitrate	7631-99-4
Sodium Nitrite	7632-00-0
Sodium Tetraborate	1330-43-4

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :
D2A - Materials Causing Other Toxic Effects - Very Toxic Material, D2B - Materials Causing Other Toxic Effects - Toxic Material

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :
All substances in this product are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Moderate

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

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 insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, Co.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO

Prepared By : Product Safety Department
Date issued : 08/07/2001
Replaces : 04/18/2000

MATERIAL SAFETY DATA SHEET

MATERIAL CODES

MATCODE	PRIME LOC
60010011	A3010303A

VENDOR INFORMATION

VENDOR: CLIMAX MOLYBDENUM COMPANY
STREET ADDRESS: 1626 COLE BLVD.
CITY: GOLDEN, COLORADO STATE: CL ZIP CODE: 80401-3292
BUSINESS PHONE NUMBER: 303-231-0320
EMERGENCY PHONE NUMBER: 800-424-9300
SAFETY DATA SHEET REVIEW: 910612

SUBSTANCE IDENTIFICATION

SUBSTANCE: SODIUM MOLYBDATE
TRADE NAMES/SYNONYMS:
MOLYDBATE, SODIUM,CRYSTALINE;
DEHYDRATE FORM

CHEMICAL FAMILY: N/A
MOLECULAR FORMULA: NA2M004.2H2O RESPONSE NUMBER:
NFPA RATINGS (0-MINIMAL, 1-SLIGHT, 2-MODERATE, 3-SERIOUS, 4-SEVERE)
HEALTH: 1 FLAMMABILITY: 0
CHEMICAL REACTIVITY: 1 SPECIAL HAZARD: ALK
WCGS CHEMICAL CATAGORY (I THRU VI PER ADM 01-118): III
NON-HAZARDOUS WASTE

COMPONENTS AND CONTAMINANTS

COMPONENT NAME	PERCENT	CAS NUMBER	PERMISSABLE EXPOSURE
SODIUM MOLYBDATE	100	010102-40-6	5 MG/M3

PHYSICAL DATA

DESCRIPTION:
WHITE ODORLESS POWDER

BOILING PNT: 687 C MELTING PNT: N/A
SP. GRAVITY: 2.56 VAPOR PRESSURE: N/A
PH: N/A SOL. IN WATER: 56GRAMS CC
ODOR THRHD: N/A VAPOR DENSITY: N/A

HEALTH EFFECTS AND FIRST AID

REPORTS OF MOLYBDENUM TOXIC EFFECTS IN THE INDUSTRIAL STTING IS RARE. HAS A RELATIVE LOW ORDER OF TOXICITY. INHALATION OF DUST/FUMES (MO03) IS IRRITATING TO EYES, NOSE AND MUCOUS MEMBRANES. RUSSIAN LITERATURE INDICATES POSSIBLE PULMONARY DISORDER RESEMBLING PNEUMOCONIOSIS. ALSO JOINT DISORDERS (GOUT-LIKE) WITH INCREASED URIC ACID LEVELS NOTED. AN ESSENTIAL METABOLIC FACTOR IN MAN. A CONSTITUTENT ENZYME IN XANTHINE OXIDASE WHICH OXIDIZES XANTHINE OR HYPOXANTHINE TO URIC ACID. METABOLISM OF MO IS CLOSELY ASSOCIATED WITH COPPER IN THE BODY. EXCESSIVE INTAKE OF MOLYBDENUM MAY PRODUCE COPPER DEFICIENCY SYMPTOMS. HAS A HIGH RATE OF EXCRETION FROM THE BODY, ONE-THIRD WITHIN A 24-HR PERIOD.

FIRST AID:

EYE CONTACT - FLUSH IMMEDIATELY WITH RUNNING WATER FOR 15 MINUTES, INCLUDING UNDER EYELIDS.

SKIN CONTACT - FLUSH CONTACT AREA WITH WATER, WASH WITH SOAP & WATER.

INHALATION - REMOVE TO FRESH AIR. RESTORE AND/OR SUPPORT BREATHING, AS REQUIRED.

INGESTION - INDUCE VOMITING, CONTACT SITE MEDICAL DEPARTMENT

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:

WEAK FIRE & EXPLOSION HAZARD WHEN POWDER IS EXPOSED TO HEAT/IGNITION

FLASH POINT: N/A

FIREFIGHTING MEDIA:

N/A

FIREFIGHTING INSTRUCTIONS:

FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APAPRATUS.

TOXICITY

THIS PRODUCT, AS WITH ANY CHEMICAL, MAY ENHANCE ALLERGIC CONDITIONS ON CERTAIN PEOPLE.

ACUTE TOXICITY OF SODIUM MOLYBDATE

ANIMAL	TL50 MG/L	NO EFFECT MG/L
BLUEGILL	10,000-24H; 6790-96H	2400
RAINBOW TROUT	10,000-24H; 7340-96H	3200
CHANNEL CATFISH	10,000-24H; 10,000-96H	7500
FATHEAD MINNOW	10,000-24H; 7630-96H	5600
WATER FLEA	3370-24H ; 3220-48H	1800
SCUD	4800-24H ; 3940-48H	

COMPARATIVE ACUTE TOXICITY

CHEMICAL	SPECIES	TESH H	TOXICITY,TL50 MG/L
MOLYBDATE	RAINBOW TROUT	96	7340
CHROMATE	RAINBOW TROUT	96	285
MOLYBDATE	DAPHNIA	48	3220
CHROMATE	DAPHNIA	48	3

ORL - RAT TDLO: 2810MG/KG (35W PRE)

ORL - MUS TDLO: 448MG/KG (MGN)

1PR - RAT LDLO: 114MG/KG

1TR - RBT LDLO: 70MG/KG

USSR STUDIES IN 1961 AND 1966 FOUND SIGNS OF GOUT IN FACTORY WORKERS AND AMONG INHABITANTS OF MOLYBDEUM RICH AREAS OF ARMENIA. HOWEVER, A 1979 U.S. STUDY FOUND NO EVIDENCE OF GOUT IN FACTORY INDUCED WORKERS.

REACTIVITY

REACTIVITY:

FAIRLY STABLE AT ORDINARY TEMPERATURES.

INCOMPATABILITIES:

COMBUSTIBLE IN POWDERY OR PARTICULATE STATE. OXIDIZED TO TRIOXIDE ABOVE 400C, SLOWLY OXIDIZED BY STEAM. REACTS WITH HALOGENS TO YIELD INCANDESCENCE. INSOLUBLE IN HCl, HF, NAOH, DILUTE H_2SO_4, AND AQUA AMMONIA. WHEN HEATED, MAY FORM A HYXACARBONYL HYDROXIDE, OR TRIOXIDE WHICH ARE HAZARDOUS. TRIOXIDE IS IRRITATING TO EYES, NOSE & THROAT. SEE COMMENTS:

DECOMPOSITION:

N/A

POLYMERIZATION:

N/A

CONDITIONS TO AVOID:

N/A

SPILL AND LEAK PROCEDURES

FOR SIGNIFICANT CHEMICAL SPILLS, REFER TO AP 31B-002 "CHEMICAL RELEASE AND RESPONSE". FOR ADDITIONAL RESPONSE INFORMATION REFER TO THE MSDS OVERVIEW.
NOTIFY SAFETY PERSONNEL OF POWDER SPILLS. REMOVE SOURCES OF HEAT OR IGNITION.
SMALL SPILLS CAN BE REMOVED BY VACUUMING OR WET SWEEPING IN ORDER TO KEEP AIRBORNE DUST AT A MINIMUM. CLEAN UP PERSONNEL SHOULD WEAR RESPIRATORS AND PROTECTIVE CLOTHING.
DISPOSAL - RECLAIM SCRAP METAL FOR SALVAGE OR REUSE. FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS.
CONTACT ENVIRONMENTAL GROUP TO ARRANGE FOR DISPOSAL.

PROTECTIVE EQUIPMENT

USE GENERAL AND LOCAL EXHAUST VENTILATION TO KEEP DUST/FUME CONCENTRATIONS BELOW THE TLV.
SUITABLE PRECAUTIONS IN THE FORM OF A RESPIRATOR TO BE TAKEN AGAINST INHALATION OF SOLUBLE MO COMPOUNDS OR THE OXIDE. WORKERS SHOULD BE PROVIDED WITH CHEMICAL SAFETY GOGGLES, THICK GLOVES, AND COVERALLS WHEN WORKING WITH THIS MATERIAL.
SAFETY EYEWASH STATIONS SHOULD BE PROVIDED IN AREAS OF USE & HANDLING.
DAILY CHANGE OF CLOTHES ADVISABLE WITH SHOWERING BEFORE CHANGING TO STREET CLOTHES.
PREEMPLOYMENT AND PERIODIC PHYSICAL EXAMINATIONS TO INCLUDE IRRITANT EFFECTS TO EYES OR RESPIRATORY TRACT AND THE GENERAL HEALTH OF THE WORKER.

HANDLING STORAGE AND TRANSPORTATION INFORMATION

DEPARTMENT STORED IN:

WAREHOUSE RECEIVING, WAREHOUSE, WATER TREATMENT PLANT.

TYPE OF CONTAINERS: NOT DETERMINED
QUANTITIES: NOT DETERMINED

STORAGE PRECAUTIONS:

STORE IN COOL, DRY, WELL-VENTILATED AREA, AWAY FROM SOURCES OF HEAT AND IGNITION AND AWAY FROM INCOMPATIBLE MATERIALS. PROTECT CONTAINERS FROM PHYSICAL DAMAGE.
USE GOOD HOUSEKEEPING PRACTICES TO KEEP AIRBORNEPARTICULATE AT A MINIMUM.

ENVIRONMENTAL CONCERNS

CONTACT ENVIRONMENTAL GROUP TO ARRANGE FOR DISPOSAL.

COMMENTS

USE GOOD HOUSEKEEPING PRACTICES TO KEEP AIRBORNE PARTICULATE AT A MINIMUM.
ALTHOUGH MOLYBDENUM COMPOUNDS ARE OF A LOW ORDER OF TOXICITY, ANIMAL STUDIES INDICATE TAKING PROTECTIVE MEASURES AGAINST THE MORE SOLUBLE COMPOUNDS AND MOLYBDENUM TRIOXIDE DUST AND FUME.
MINIMIZE SKIN CONTACT BY WEARING APPROPRIATE PROTECTIVE CLOTHING AND PRACTICE GOOD PERSONAL HYGIENE. AVOID BREATHING DUST OR FUME.
INCOMPATIBILITES: SOLUBLE COMPOUNDS-ALKALI METALS, SODIUM, POTASSIUM, MOLTON MAGNESIUM. INSOLUBLE COMPOUNDS - STRONG OXIDIZERS.

MATERIAL SAFETY DATA SHEET

MATERIAL CODES
NO MATCODE ATTACHED TO THIS PRODUCT

VENDOR INFORMATION
VENDOR: SHERWIN WILLIAMS CHEMICALS
STREET ADDRESS: 501 MURRAY ROAD
CITY: CINCINNATI STATE: OH ZIP CODE: 45217
BUSINESS PHONE NUMBER: SHERWIN WILLIAMS CHEMICALS
EMERGENCY PHONE NUMBER: 800-424-9300
SAFETY DATA SHEET REVIEW: 910225

SUBSTANCE IDENTIFICATION
SUBSTANCE: SODIUM TOLYTRIAZOLE
TRADE NAMES/SYNONYMS:
GRANULAR FORM
COBRATEC,TT-50S

CHEMICAL FAMILY: TRIAZOLE
MOLECULAR FORMULA: C7H6N3NA RESPONSE NUMBER:
NFPA RATINGS (0-MINIMAL, 1-SLIGHT, 2-MODERATE, 3-SERIOUS, 4-SEVERE)
HEALTH: 1 FLAMMABILITY: 0
CHEMICAL REACTIVITY: 1 SPECIAL HAZARD: OXY
WCGS CHEMICAL CATAGORY (I THRU VI PER ADM 01-118): III
HAZARDOUS WASTE

COMPONENTS AND CONTAMINANTS

COMPONENT NAME	PERCENT	CAS NUMBER	PERMISSABLE EXPOSURE
SODIUM HYDROXIDE		001310-73-2	C2MG/M3
TOLYLTRIAZOLE		00000000000	

PHYSICAL DATA
DESCRIPTION:
CLEAR, RED-BROWN, ESSENTIALLY ODORLESS SOLUTION

BOILING PNT: ~212 F MELTING PNT: N/A
SP. GRAVITY: 1.19 @ 25 C VAPOR PRESSURE: N/A
PH: 13.5 SOL. IN WATER: 100%
ODOR THRHD: N/A VAPOR DENSITY: N/A

HEALTH EFFECTS AND FIRST AID
CAUSTIC - MAY CAUSE BURNS TO SKIN AND EYES
EMERGENCY PROCEDURE - FLUSH THOROUGHLY WITH WATER IN CASE OF ACCIDENTAL EXCESSIVE EXPOSURE. CONTACT SITE MEDICAL DEPARTMENT IF EYES ARE INVOLVED. FLUSH EYES WITH RUNNING WATER FOR 10 MINUTES.

FIRE AND EXPLOSION DATA
FIRE AND EXPLOSION HAZARD:
NONE

FLASH POINT: NONE
FIREFIGHTING MEDIA:
N/A

FIREFIGHTING INSTRUCTIONS:
N/A

TOXICITY

THIS PRODUCT, AS WITH ANY CHEMICAL, MAY ENHANCE ALLERGIC CONDITIONS ON CERTAIN PEOPLE.
ORAL LD50 (RATS): 675 MG/KG
PRIMARY SKIN IRRITATION (RABBITS): NOT A PRIMARY SKIN IRRITANT
DERMAL LD50 (RABBITS): 2 GRAMS/KILOGRAM
EYE IRRITATION (RABBITS): CAUSED EYE IRRITATION
INHALATION 1 HOUR LC50: 1.73 MG/L
*ACTUAL CONCENTRATION MEASURED IN BREATHING ZONE.

REACTIVITY

REACTIVITY:
STABLE

INCOMPATABILITIES:
MIXTURE WITH ACIDS WILL PRODUCE HIGH HEATS OF REACTION

DECOMPOSITION:
MAY INCLUDE CARBON DIOXIDE, CARBON MONOXIDE, NITROGEN OXIDES AND HYDROGEN CYANIDE

POLYMERIZATION:
WILL NOT OCCUR

CONDITIONS TO AVOID:
N/A

SPILL AND LEAK PROCEDURES

FOR SIGNIFICANT CHEMICAL SPILLS, REFER TO AP 31B-002 "CHEMICAL RELEASE AND RESPONSE". FOR ADDITIONAL RESPONSE INFORMATION REFER TO THE MSDS OVERVIEW.
IN CASE OF SPILL: USE SUITABLE ABSORBENT MATERIAL AND FLUSH SPILL OR LEAK WITH WATER.
WASTE DISPOSAL METHOD: SANITARY LANDFILL OR INCINERATION IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
CONTACT ENMVIRONMENTAL GROUP TO ARRANGE FOR DISPOSAL.

PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: ADEQUATE VENTILATION OR OTHER ENGINEERING CONTROLS SHOULD BE USED TO REDUCE EMPLOYEE EXPOSURE BELOW OSHA PERMISSIBLE LIMITS. IF CONTROLS ARE NOT ADEQUATE OR AVAILABLE, USE A RESPIRATOR APPROVED BY NIOSH/MESA UNDER SCHEDULE TC-23C FOR PROTECTION AGAINST NOT MORE THAN 1000 PPM ORGANIC VAPORS, DUSTS, FUMES AND MISTS WITH A PERMISSIBLE EXPOSURE LIMIT OF NOT LESS THAN 0.05 MG/M3 OR 2 MMPCF BASED ON AN EIGHT HOUR TIME-WEIGHTED AVERAGE.
PROTECTIVE GLOVES: USE APPROVED HAND PROTECTION.
EYE PROTECITON: USE APPROVED EYE PROTECTION.
OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHES SHOULD BE CHANGED IMMEDIATELY AFTER SPILL.
LOCAL EXHAUST IS RECOMMENDED.

HANDLING STORAGE AND TRANSPORTATION INFORMATION

DEPARTMENT STORED IN:
WAREHOUSE RECEIVING, WAREHOUSE, WATER TREATMENT PLANT.

TYPE OF CONTAINERS: NOT DETERMINED
QUANTITIES: NOT DETERMINED

STORAGE PRECAUTIONS:
CORROSIVE SOLUTION. STORE ONLY IN CONTAINERS RESISTANT TO CAUSTIC SOLUTIONS. AVOID CONTACT WITH SKIN AND EYES.

ENVIRONMENTAL CONCERNS
CONTACT ENVIRONMENTAL GROUP TO ARRANGE FOR DISPOSAL.

COMMENTS
N/A

CCS # 00066

Società Chimica Larderello s.p.a.

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV =ISO 9001/2000=

K01-048

Safety Data Sheet SCL n° 1 *BORIC ACID*

Management and Commercial Offices:
Via Fara, 28
20137 MILANO (ITALIA)
Tel: 02-6771681
Fax: 02-67716820
67716830
67716850

SAFETY DATA SHEET FOR THE PRODUCT:

BORIC ACID

N.ro 001
REV n.:4 (July 2001)

All the information on this SAFETY DATA SHEET is to the best of our knowledge correct, but should not be considered exhaustive.
It is the user's responsibility to adopt and apply this data as appropriate.
Societa' Chimica Larderello assumes no responsibility for damages to persons or goods resulting from the incorrect handling of this product.

1) IDENTIFICATION OF THE PREPARATION AND OF PRODUCTION COMPANY

1.1- PRODUCT IDENTIFICATION

1.1.1- COMMERCIAL NAME: Boric Acid Technical, NS, EP, EC, MG, Powder, Flakes
1.1.2- CHEMICAL NAME: Boric Acid
1.1.3- OTHER NAMES(synonyms): Ortoboric Acid
1.1.4- CHEMICAL FORMULA: H_3BO_3
1.1.5- MOLECULAR WEIGHT: 61.843
1.1.6- C.A.S. No: 10043-35-3
1.1.7- E.I.N.E.C.S. No: 2331392
1.1.8- EEC No:

1.2- PRODUCTION COMPANY IDENTIFICATION

SOCIETA' CHIMICA LARDERELLO
Legal Headquarters : P.zza LEOPOLDA, 2
56044 Larderello (PI), ITALY

1.3- EMERGENCY CALLS (only for emergencies in cases of leakage, fire, exposure to material and various accidents):

SOCIETA' CHIMICA LARDERELLO
tel.: Int. cod.+ 0588 + 68811 (Exchange of Società Chimica Larderello- Larderello Plant)
68839 (D.A.S .Manager Mr. Salvatore CAPPELLO)
68801 (D.A.S. Inspector Mr. Giancarlo PISTOLESI)
fax: Int. cod.+ 0588 + 68860

2) COMPOSITION/INFORMATION ON INGREDIENTS

2.1- COMPONENTS: BORIC ACID (H_3BO_3) pure substance

2.2- HAZARD CLASSIFICATION: none

2.3- DANGER SYMBOL: none

2.4- RISK PHRASES:

---

3) HAZARD IDENTIFICATION

3.1- HEALTH RISKS

-Does not cause irritation to unbroken skin
-Is not absorbed via unbroken skin
-Is moderately irritating to the eyes in its dry powdered state
-May cause slight coughing and sneezing
-Product presents modest acute toxicity: small quantities accidentally ingested (1-2 gr) do not cause any side effects; larger doses cause gastrointestinal upsets

3.2- MEANS OF EXPOSURE: Ingestion, inhalation, direct contact (via broken skin)

3.3- DANGEROUS SYMPTOMS AND EFFECTS: Ingestion can cause nausea, vomiting, diarrhea and delayed effects of skin reddening.

---

4) FIRST AID MEASURES

4.1- INHALATION: No specific treatment is necessary. The product does not present risks by inhalation.

4.2- INGESTION : Induce vomiting; drink large amounts of water or milk.

4.3- CONTACT WITH SKIN: The product is not an irritant - wash the affected area with water.

4.4- CONTACT WITH EYES: Wash immediately with abundant water.

4.5- If symptoms persist, call a doctor

4.6- **INFORMATION FOR THE DOCTOR:** None in particular
IN CASES OF POISONING CALL:
CENTRO ANTIVELENI OSPEDALE -NIGUARDA- MILANO Tel. 2 66101029

5) FIRE-FIGHTING MEASURES

5.1- **FIRE:** (Not applicable). The product is not combustible, flammable or explosive (it is used as a flame retardant)

5.2- **APPROPRIATE EXTINGUISHING MEANS AND PROCEDURES:** To avoid damaging the product and polluting the environment wherever possible, do not use water directly on material.

5.3- **EXTINGUISHING MEANS THAT MUST NOT BE USED:** When the product is involved in a fire, all means, without exception, can be used to extinguish

5.4- **FIRE DERIVED RISK:**
5.4.1- TO THE PRODUCT ITSELF: Not applicable
5.4.2- PRODUCTS OF COMBUSTION: Not applicable
5.4.3- FROM FUMES: Not applicable

5.5- **FIRE FIGHTING EQUIPMENT:** Not applicable

6) MEASURES TO BE TAKEN IN CASE OF ACCIDENTAL SPILLAGE

6.1- **PERSONAL PRECAUTIONS:** Wear anti-dust mask and goggles when exposure to dust is prolonged and there is a high concentration present in the air.

6.2- **ENVIRONMENTAL PRECAUTIONS:** Confine the spillage to avoid contamination of water courses and the water table.

6.3- **METHODS OF DECONTAMINATION:** Vacuum and collect dust into a suitable receptacle and dispose of as in point 13.1; wash the area with water, taking the appropriate precautions against pollution

7) HANDLING AND STORAGE

7.1- **HANDLING:** Use the product in accordance with good working practice, avoiding dispersal into the atmosphere. Handle the product in a well-ventilated and well-aerated location; if necessary, use mechanical means of aspiration/ventilation to

. maintain a powder concentration with the correct limits of exposure in air (see 8.2).

7.2- **STORAGE**: Keep away from strong reducing agents. Other specific precautions not necessary.
To retard the caking of product, observe the following.

7.2.1- PACKAGING: The product is normally packed in paper or polyethylene or PVC bags or cardboard drums; other materials suitable are vitreous based, enameled and stainless steel.

7.2.2- STORAGE CONDITIONS: Keep containers hermetically sealed. Store in dry, well-ventilated environment.

7.3- **SANITARY MEASURES**: Wash hands scrupulously after handling material, before eating, drinking and smoking.

8) EXPOSURE CONTROL/PERSONAL PROTECTION

8.1- **TECHNICAL PROTECTIVE MEASURES:** Avoid the formation of dust. Keep the floors clean to prevent slipping and to keep the concentration of dust in air within exposure limits. (see 8.2)

8.2- **LIMITS OF EXPOSURE:**
TLV-TWA :10 mg/m3

8.3- **CHECKING PROCEDURES:** Measurement of dust in air.

8.4- **PERSONAL PROTECTION:**

8.4.1- RESPIRATORY PROTECTION: Wear anti-dust mask when exposure to dust is high and prolonged

8.4.2- PROTECTION OF HANDS: No particular means of protection is necessary. Wash hands after contact with material.

8.4.3- PROTECTION OF EYES: Wear safety goggles when exposure to dust is high and prolonged

8.4.4- PROTECTION OF SKIN: Wear ordinary working clothes.

9) CHEMICAL/PHYSICAL PROPERTIES

9.1- **APPEARANCE:** White powder

9.2- **ODOUR:** Odorless

9.3- **pH a 20 deg C.:** (Concentration 1 g/l) = 6.1
(Concentration 10 g/l) = 5.1
(Concentration 45.5g/l) = 3.7 (saturated solution)

9.4- **BOILING POINT:** Not applicable

9.5- **MELTING POINT:** (Anhydrous salt): 171 deg C

9.6- **FLAMMABILITY POINT:** Not applicable

9.7- **FLAMMABILITY:**

not flammable	(X)
not combustible	(X)
combustible	( )
flammable	( )
highly flammable	( )
extremely flammable	( )

9.8- **AUTOCOMBUSTION:** Not applicable

9.9- **EXPLOSIVE PROPERTIES:** Not applicable

9.10- **COMBURENT PROPERTIES:** Not applicable

9.11- **VAPOUR PRESSURE:** Not applicable

9.12- **SPECIFIC GRAVITY (water=1):** 1,51

9.13- **SOLUBILITY:**

9.13.1- SOLUBILITY IN WATER: 20 deg C = 48.8 g/l H2O
100 deg C. = 379.9 g/l H20

9.13.2- OTHER PARAMETERS: Soluble in ethylene glycol, glycerin, alcohol (slight solubility)

10) STABILITY AND REACTIVITY

10.1- **STABILITY:** The product is stable under normal conditions. It gradually loses its own water of crystallization when heated.

10.2 **CONDITIONS TO AVOID:** None

10.3- **MATERIALS TO AVOID:** Reacts with strong reducing agents (metallic hydrides, alkaline metals, acetic anhydride) developing hydrogen, which could provoke an explosion).

10.4- DANGEROUS PRODUCTS OF DECOMPOSITION: None

11) TOXICOLOGICAL INFORMATION

11.1- MEANS OF EXPOSURE: Ingestion, inhalation, contact (via broken skin)

11.2- CORROSIVENESS/IRRITANT PROPERTIES: Moderately irritant effects to eyes and the primary respiratory tract.

11.3- ACUTE TOXICITY:
DL50 (oral):>> 2000 mg(product)/kg (rat)

11.4- CHRONIC TOXICITY: in very rare cases chronic poisoning can cause digestive disorders and skin lesions.

11.5- SENSITISING PROPERTIES: No evidence of such effects

11.6- CARCINOGENESES: No evidence of such effects

11.7- MUTAGENESIS: No evidence of such effects

11.8- REPRODUCTIVE STUDIES INCLUDING TERATOGENISIS: Studies carried out on animals indicated that large doses administrated by ingestion can cause atrophy in the male reproductive organs.

12) ECOLOGICAL INFORMATION

12.1 LEGISLATION: Obey local law.

In Italy respect the following regulations:

12.1.1- D.LGS. 152/99 Regulations for the protection of waters from the effects of pollution and enactment of EEC directives n.91/27, n.91/676 and successive modifications and insertions.

-limits for the final disposal of waste water: Boron (expressed as **B**) = 2 mg/l
Arsenic (expressed as **As**) = 0,5 mg/l
-limits for disposal at sea: Boron (expressed as **B**) = 10 mg/l.

12.1.2- D.P.R. 203/88. Enactment of EEC directives n. 80/779, n.82/884, n.84/360, n.85/203
12.1.3- D.LGS.22/97 Enactment of EEC directives n. 91/156, n.91/689, n.94/62

12.2- TOXICOLOGICAL STUDIES:

12.2.1- FITOTOXICITY Boron is an important microelement for the plants growth but it is dangerous at higt concentration. Avoid polluting the environmental (see points 6.2 and 6.3)

12.2.2- AQUATIC TOXICITY

LC50: 27 mg B/lt/4 days in fresh water (TROUT)
LC50: 54 mg B/lt/4 days in hard water (TROUT)
LC50: 155 mg B/lt/4 days in fresh water (CATFISH)
LC50: 71 mg B/lt/4 days in hard water (CATFISH)
LC50: 65 mg B/lt/4 days in fresh water (GOLDFISH)
LC50: 59 mg B/lt/4 days in hard water (GOLDFISH)

Note: Boron (B) is the element of reference to characterize product ecological effects

12.3- REACTION WHEN IN CONTACT WITH THE SOIL: The product is soluble in water and is easily absorbed by the soil

13) CONSIDERATIONS ON DISPOSAL

13.1- DISPOSAL OF MATERIAL: Make prevision as far as possible for the recovery of material use; otherwise, observing legal requirements dispose of by authorized methods

13.2- DISPOSAL OF PACKAGING: Special Waste to be taken to authorized disposal (as for point 13.1)

14) TRANSPORT INFORMATION

14.1- LABELLING FOR TRANSPORT: None

14.2- HAZARD CLASS MARKINGS:

14.3- ROAD/ RAIL TRANSPORT:
RID/ADR: Class: CT/Fb: cl.: ONU n.

14.4- MARITIME TRANSPORT:
IMDG CODE: Class: ONU n°

14.5- AIR TRANSPORT
ICAO/IATA REGULATIONS. Class: ONU n°

15) INFORMATION ON REGULATIONS

15.1 LABELLING IN CONFORMANCE WITH EEC DIRECTIVE 67/548 AND SUCCESSIVE ADJUSTMENTS
Classification:

15.2 SPECIFIC MEASURES TO BE TAKEN: *None*

16) OTHER INFORMATION

16.1- TRAINING INDICATIONS: None specifically

16.2- RECOMMENDATIONS FOR USE AND RESTRICTIONS: None specifically

16.3- SANITATION CONTROLS: Clinical checks and examinations are always advisable, in accordance with risk

16.4- OBLIGATORY INSURANCE: Obey local law

16.5- BIBLIOGRAPHY

A.D.R:. *European agreement relative to international transport of goods by road, Geneva 30.9.1957*

THE MERCK INDEX: *Merck & Co. Inc.*

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS : *N. Irving Sax - Eight Edition*

C.E.E. *Packing and labeling of dangerous substances (EEC/67/548 and successive adjustments)*

CATALOGUE OF PRODUCTS SOCIETA'CHIMICA LARDERELLO S.p.A.

OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS: NIOSH/OSHA

TOXIC AND HAZARDOUS INDUSTRIAL CHEMICAL SAFETY MANUAL FOR HANDLING AND DISPOSAL WITH TOXICITY AND HAZARD DATA: It - The International technical information institute Tokyo

SILVER PLATTER - CHEM BANK: Databank of potentially hazardous chemicals

CL-50 Corrosion and Deposit Inhibitor

03181
K01-048

CALGON CORPORATION

P.O. Box 1346
Pittsburgh, PA 15230-1346
Phone--(412)494-8000

MATERIAL SAFETY DATA SHEET

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: **CL-50 Corrosion and Deposit Inhibitor**

CHEMICAL DESCRIPTION: Aqueous phosphate solution
PRODUCT CLASS: Corrosion and deposit inhibitor
MSDS CODE: 0569-04-30-92

Section 2. INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	% by Weight	OSHA PEL	ACGIH TLV

No ingredients listed in this section

This product is not considered to be hazardous according to the criteria of the U.S. Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and is not a controlled product under WHMIS in Canada.

Section 3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

This product poses little or no immediate hazard.

****

PRIMARY ROUTES OF ENTRY: None

TARGET ORGANS: None

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product would be classified as practically non-irritating to the eye.

SKIN CONTACT: The product is not expected to cause skin irritation upon contact. No data is available to suggest that this product may produce an allergic skin reaction or be absorbed through the skin in harmful amounts.

INGESTION: This product would be considered practically non-toxic by ingestion. If ingested in large amounts, nausea, vomiting, and diarrhea are probable. Since phosphates are slowly and incompletely absorbed, systemic reactions are unlikely when these salts are swallowed. Polyphosphates are thought to be hydrolyzed to orthophosphates before absorption, which may induce a metabolic acidosis. If appreciable amounts of the intact polymer are absorbed from the alimentary tract, hypocalcemic tetany (muscular contractions, pains, tingling, etc. caused by a deficiency of calcium salts) may be a danger due to the binding of ionized calcium.

INHALATION: This product is not expected to present an inhalation hazard.

SUBCHRONIC, CHRONIC:
No applicable information was found concerning any potential health effects resulting from subchronic or chronic exposure to the product.

CARCINOGENICITY:
NTP:
No ingredients listed in this section
IARC:
No ingredients listed in this section
OSHA:
No ingredients listed in this section

Section 4. FIRST AID MEASURES

EYE CONTACT: Not expected to require first aid measures. However, follow good industrial hygiene practices and, in case of contact, flush eyes with plenty of water.

SKIN CONTACT: Not expected to require first aid measures. However, follow good industrial hygiene practices and, in case of contact, wash affected skin areas thoroughly with soap and water.

INGESTION: Not an expected route of overexposure. If swallowed, do not induce vomiting. Call a physician. This product would be expected to be practically non-toxic by ingestion.

INHALATION: Not an expected route of overexposure. However, if exposure by inhalation is suspected, move individual to fresh air. Aid in breathing if necessary and seek medical aid if symptoms occur.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: None

LOWER FLAMMABLE LIMIT: Not available UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use extinguishing media appropriate for the surrounding fire.

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.

FIRE & EXPLOSION HAZARDS: No unusual hazards.

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce disodium oxide and phosphorus oxides.

NFPA RATINGS: Health = 0 Flammability = 0 Reactivity = 0 Special Hazard = None

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container.

Section 7. HANDLING AND STORAGE

HANDLING: As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the product and ensure prompt removal from eyes, skin and clothing. Wash thoroughly after handling. Keep container closed when not in use.

STORAGE: Product must be maintained at 38°F or higher. Protect from low temperatures.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles recommended as a good industrial hygiene practice.
SKIN PROTECTION: No special requirement.
RESPIRATORY PROTECTION: None required.

ENGINEERING CONTROLS: No specific recommendations.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 212°F

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: Similar to water

SPECIFIC GRAVITY: 1.37 - 1.42 @ 25°C

VAPOR DENSITY (air=1): Similar to water

pH: 6.0 - 7.0 @ 25 °C

%VOLATILE BY WEIGHT: ~ 62 (water)

FREEZING POINT: Not available

APPEARANCE AND ODOR: Clear, slightly viscous liquid.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: *No specific information.*

INCOMPATIBILITY: Carbon steel

DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may produce disodium oxide and phosphorus oxides.

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:

Product Oral LD_{50} (rat): > 5 g/kg

Eye Irritation Instillation of 0.1 ml of the product in rabbit eyes produced slight conjunctival irritation but showed no iritis or corneal opacity. All eyes cleared by day 2. The eye scores on day 1 ranged from 0 - 4/110.

Skin irritation The primary skin irritation index (rabbits) is 0.21/8.

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

Aquatic toxicity data:

96 hr LC_{50} (fathead minnow): 1,162 ppm

Environmental data:

Although the principal problem of phosphates in the environment is not directly related to human health, there is considerable concern about the effects of phosphorus from various sources on water quality. Phosphate is a major cause of the eutrophication process in lakes and ponds.

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would not be considered a RCRA Hazardous Waste.

DISPOSAL: Dispose of in accordance with local, state and federal regulations. Keep from entering streams or lakes.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

Class/Division: Not restricted unless shipped in a quantity > 13,251 lb, then: 9

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (contains Sodium phosphate, tribasic), RQ

Label: CLASS 9

Packing Group: III

ID Number: UN 3082

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Nonhazardous

TSCA: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name	RQ
Sodium polyphosphate	5000 lb
Sodium tripolyphosphate	5000 lb

Product RQ: 13,251 lb (Notify EPA of product spills exceeding this amount.)

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Chemical Name	CAS #	RQ	TPQ

There are no SARA 302 Extremely Hazardous Substances in this product.

Section 311 and 312 Health and Physical Hazards:

Immediate	Delayed	Fire	Pressure	Reactivity
[no]	[no]	[no]	[no]	[no]

Section 313 Toxic Chemicals:

Chemical Name	CAS #	% by Weight

There are no reportable SARA 313 Toxic Chemicals in this product.

FDA: This product is FDA approved under 21 CFR Section(s):
173.310 (Boiler water additives)
176.170 (Components of paper and paperboard in contact with aqueous and fatty foods)
176.180 (Components of paper and paperboard in contact with dry food)
Consult your sales representative for any use limitations.

Section 16. OTHER INFORMATION

HMIS RATINGS: Health = 0 Flammability = 0 Reactivity = 0
Personal Protective Equipment = A

Hazard rating scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

MSDS REVISION SUMMARY: Supersedes MSDS issued on 1/11/96.

PREPARED BY: Health & Environmental Affairs Department