Britt T. McKinney Vice President-Nuclear Site Operations PPL Susquehanna, LLC 769 Salem Boulevard Berwick, PA 18603 Tel. 570.542.3149 Fax 570.542.1504 btmckinney@pplweb.com blshriver@pplweb.com



JAN 2 8 2005

U. S. Nuclear Regulatory Commission Attn.: Document Control Center Mail Station OP1-17 Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
NRC NOTIFICATION OF NPDES PERMIT
RENEWAL APPLICATIONDocket Nos. 50-387
and 50-388

The purpose of this letter is to submit the Susquehanna Steam Electric Station NPDES permit renewal application to the NRC in accordance with Section 3.2 of the Environmental Protection Plan.

Please contact Mr. Curtis H. Saxton at (570) 542-1879, if there are any questions concerning the renewal application.

B. T. McKinney

Attachment

Copy: Regional Administrator - Region I Mr. A. J. Blamey, NRC Sr. Resident Inspector Mr. R. V. Guzman, NRC Project Manager Mr. R. Janati, DEP/BRP



SUSQUEHANNA STEAM ELECTRIC STATION



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM



RENEWAL PERMIT APPLICATION PERMIT NO. PA 0047325

ppl.

Susquehanna, LLC

nuary 6, 2005

Berwick, PA

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January 6, 2005			· · · · · ·
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Mr. Dino Agustini Chief Permits Section			•
Water Management Program	· · · ·		• • •
Pennsylvania Department of Environmer	ntal Protection		
2 Public Square Wilkes-Barre, PA 18711-0790	Ű.		· · · · · ·
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SUSQUEHANNA STEAM ELECTRIC S APPLICATION-NPDES RENEWAL PER			
CCN 741326	10 - 50 - 70 € - 63 - 70	1	
PLE-0023763		÷.	••••
Dear Mr. Agustini:	Set and a set of the s	· · · ·	
		· · · · · · · · · · · · · · · · · · ·	
PPL Susquehanna, LLC is submitting a N Susquehanna Steam Electric Station (SE	IPDES permit rene S). Salem Townsh	wal application to	or the the the the test of
The present NPDES permit no: PA-00473			
Included for Pennsylvania Department of	Environmental Pro	tection review ar	o: 1) three
copies of the application (one notarized),			
the Commonwealth of Pennsylvania, 3) co	opies of letters with	certified mail rec	ceiots

notifying Salem Township and Luzerne County of this renewal permit application and 4) two copies of the Susquehanna SES, Pollution Prevention and Contingency (PPC) Plan.

If you have any questions please call Curt Saxton at (570) 542-1879.

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Sincerely, ry

Bruce E. Rhoads Manager – Plant Chemistry

Enclosure

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Attachment A – Requested Permit Changes Attachment B – Table of Contents – Permit Application and Supplemental Information

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bcc:

 T. D. Belles M. B. Detamore R. L. Doty N. A. Evans J. P. Felock J. S. Fields B. H. Herre L. J. Humpf T. V. Jacobsen A. Khanwalkar J. L. McCormick B. T. McKinney D. J. Morgan W. E. Morrissey R. W. Osborne L. A. Ramos P. Renshaw B. E. Rhoads R. A. Saccone C. H. Saxton J. P. Schmidt R. L. Takacs J. R. Wolfer 	NUCSA3 GENPL5 GENPL5 GENTW17 NUCSB2 GENPL5 SFC NUCPT NUCE3 GENTW3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3 NUCSA3	w/a wo/a w/a w/a w/a w/a w/a wo/a w/a wo/a w/a wo/a w/a wo/a wo	· · · ·	
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Attachment A

Requested Permit Changes

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Request elimination of Internal Outfall 571 Circ Water Pumphouse Sump, since it merely returns cooling water pump seal water (domestic/well water mixed with circulating water) to the Circulating water system and is not impacted by SSES operation. It is included within the limits of Outfall 071 cooling tower blowdown.

Request revised monitoring frequency for Outfall 072, Service & Administration (S&A) Sump, to be consistent with Outfalls 073 and 074, currently sampled quarterly. This sump similarly consistently shows minimal level of oil & grease and total suspended solids. Frequency of this discharge is related to storm events and not station operation. The S&A Sump collects stormwater around the Emergency transformers on the east side of the site, the diesel generator oil unloading area and equipment and S&A oil storage area berm. Controls, treatment and visual inspection prior to discharge are a place to ensure no contamination of this miscellaneous wastewater. Consistent increased long-term monitoring has indicated no challenges to the monitored parameters.

Request eliminating condition or specific edition reference to Standards Methods of Analysis for CBOD5 in permit part C, Special Condition #11. If this special condition needs to remain recommend simply referring to compliance with 40CFR136 accepted methods. In the past this detail of this special condition has caused confusion when the Standard Method editions have changed or been updated from time to time. (Concurrence to eliminate this specific reference discussed with Dino Agustini, May 12, 2004.)

In Permit Part C, Special Condition 12, the last paragraph requires that accurate records of chemical usage (name of additive, quantity added, date added, and blowdown discharge volumes) be maintained, and kept on site by the permittee. We agree and comply with this condition, however, request elimination of the wording on the *"Chemical Additive Report Form"* as we have specific procedures, controls and records for chemical additions and system operation which collect and record this information and using the PaDEP example form is duplicative and unnecessary effort. Request clarification of the special condition to eliminate that specific wording on the *"Chemical Additive Report Form"*.

Attachment B

4

Table of Contents

NPDES Permit Application and Supplemental Information

- Municipal and County Act 14 Notification / Documentation
- II General Information Form
- III Completed Permit Application Modules
- IV Supplemental Information Provided:
 - Module 1 Topographic Map and Water Balance Schematic
 - Module 1 Item 7 Water Treatment Chemical notes and MSDSs
 - Module 3 Additional Outfall Descriptions
 - Module 12 Stormwater: Drainage Areas and Flowpaths
- V Appendix A EPA 316(b) Rule (Phase II Supporting Documentation provided to illustrate PPL Susquehanna, LLC operation is currently in compliance per Compliance Alternative (1)(I).
- IV Appendix B Pollution Prevention and Contingency (PPC) Plan (includes Spill
 Prevention Control and Countermeasure (SPCC) Plan) (11/19/04)

December 10, 2004



Ms. Patricia Owens Secretary, Salem Township Salem Township Municipal Building 400 Luzerne Avenue Berwick, PA 18603

SUSQUEHANNA STEAM ELECTRIC STATION NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT RENEWAL: PA 0047325 PLE-0023750

Dear Ms. Owens:

In accordance with Act Number 14, P.L. 834, this letter is to notify you that PPL Susquehanna, LLC intends to submit a National Pollutant Discharge Elimination System Permit renewal application in January 2005 to the Pennsylvania Department of Environmental Protection for the Susquehanna Steam Electric Station (SES) located in Salem Township, Luzerne County, Pennsylvania.

If you have any questions concerning this permit renewal application, please call Curt Saxton (570) 542-1879.

Sincerely,

Bruce E. Rhoads Manager – Plant Chemistry

Certified Mail Number: 7001 1940 0000 2651 8118

Copy to:

Ms. N. Green, EPA Region III Mr. Dino Augustini, PaDEP

.

December 10, 2004



Mr. Samuel Guesto, Chief Clerk Luzerne County Courthouse 200 North River Street Wilkes-Barre, PA 18711

SUSQUEHANNA STEAM ELECTRIC STATION NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT RENEWAL: PA 0047325 CCN 741326-100 PLE-0023751

Dear Mr. Guesto,

In accordance with Act Number 14, P.L. 834, this letter is to notify you that PPL Susquehanna, LLC intends to submit a National Pollutant Discharge Elimination System Permit renewal application in January 2005 to the Pennsylvania Department of Environmental Protection for the Susquehanna Steam Electric Station (SES) located in Salem Township, Luzerne County, Pennsylvania.

If you have any questions concerning this permit renewal application, please call Curt Saxton (570) 542-1879.

Sincerely,

Bruce E. Rhoads Manager – Plant Chemistry

Certified Mail Number: 7001 1940 0000 2651 8125

Copy to:

Ms. N. Green, EPA Region III Mr. Dino Augustini, PaDEP



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
 Complete Items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailplece, or on the front if space permits. 	B. Received by Printed Name) C. Date of Delivery May Bould VAN 12-1809
1. Article Addressed to:	D. Is delivery address different from item 1?
Ms. Autricia Owens Secretary, Salem Township Salem Township Municipal Building	,
400 L'UZERNE Avenue Berwick, PA 18603	3. Service Type Certified Mail Express Mail ScRegistered Return Receipt for Merchandise Insured Mail C.O.D.
· · · ·	4. Restricted Delivery? (Extra Fee)
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PS Form 3811, August 2001 Domestic Ret	um Receipt 102595-01-M-2500

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SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
 Complete items 1, 2, and 3. Also complete item 4 fif-Restricted Delivery is desired. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	A. Signature A. Signature B. Received by (Prinled Name) C. Date of Delivery C. Date of Delivery
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Mr. Samuel Questy Chief Clark	
Luzerne County Courthouse	· · · ·
200 North River Street	
Wilkes-Barne, PA 187/1	3. Service Type
	CRegistered ScReturn Receipt for Merchandise
	Insured Mail C.O.D.
	4. Restricted Delivery? (Extra Fee) Yes
Article Number (Transfer from service label) 7001 1940 0	000 2651 8125

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3800-PM-WSWM0008c 1/2004 Checklist



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

APPLICATION FOR NPDES PERMIT FOR INDUSTRIAL DISCHARGERS

APPLICANT'S - CHECKLIST

Please check the following list to make sure that you have included all the required information. Place a checkmark in the column provided for all items completed and/or provided.

Failure to provide all of the requested information will delay the processing of the application and may result in the application being placed <u>on hold</u> with <u>no action</u>, or will be considered withdrawn and the application file closed.

T	Item -	Check If Included	DEP Use Only
_ <u>1.</u>	General Information Form (8000-PM-IT0001)	\square	
2.	Three (3) copies of application package submitted		
3.	Additional copy for Erie and Allegheny counties (if required)	√ N/A	
4.	Additional copy for the river basin commission (if required)	- ⁻ N/A	
5.	Application Fee - \$500	\square	
T ⁻ 6.	Proper evidence of Act 14 municipality and county notification		
7.	Proof of local newspaper public notice (for new and substantially changed discharges only)	. N/A	
8.	Topographic Map	\boxtimes	
9.	Industrial Wastewater - Module 1		
- 10.	Wastewater Treatment Technologies - Module 2	\square	
11.	Sources Of Wastewater sheet(s) - Module 3	\boxtimes	
_ 12.	Analysis Results Table(s) - Modules 4-9	\mathbf{X}	1 g - 1
13.	Hazardous Substance Table - Module 10	\boxtimes	
14.	Toxic Chemicals (Optional) - Module 11		• • • • • •
15.	Stormwater (if required) - Module 12	×	
16.	Stormwater Sampling Data Table (if required) - Module 13	\boxtimes	
- 17.	No Exposure Certification (if required) - Module 14	N/A	
18.	Other: Additional Outfall description, 316B Supporting Info, Requested Permit Changes.		
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FORM



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

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Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the Department.

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Client Contact Title				hone		Ext	
VP-Nuclear Site Operations				70-542-3	149		<u> </u>
Email Address				AX			
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Tin	ne Schedules	Project Milestone (Optional)				
			-			
	;					
		· · · · · · · · · · · · · · · · · · ·				
1.	Is this applicatio	n for an authorization type on the list of authorizations		Yes	Ø	No
		ou must complete the following Land Use Information section, unless	exempte	ed by Qu	estions	2 or 3
	below.		-	-		
		p Questions 2 & 3 below as well as the following Land Use Information	on sectio	n		
		nced list, see Appendix A attached to the GIF Instructions.				
2.		am authorization only. All other authorizations continue		Yes		No
		below. Will the permit authorize the construction of				
		an existing permitted area?				
		ou must complete the following Land Use Information section unless		d by Que	stion 3	below.
		p Question 3 below as well as the following Land Use Information sec	ction.			
3.		ed or submitted municipal and county 'Early Opt Out'		Yes		No
	approval letters f					
		Question 3, skip the following Land Use Information section. This sh				
		s choosing the early opt-out option. Required approval letters describ s should be attached.	bea in in	a Gir Ch	eckiista	ana .
		uestion 3, continue with the following Land Use Information section.				
100			5 40 pro 10 10 14			-FYCIFWAR
		LANDUSEINFORMATION				
Note	: Applicants are en	couraged to submit copies of local land use approvals or other	r eviden	ce of co	mplian	Ce
Note vith	: Applicants are en local comprehensive	Couraged to submit copies of local land use approvals or other plans and zoning ordinances.	r eviden	•	mplian	Ce
vith	: Applicants are en local comprehensive Is there a munici	Couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)?		Yes	mplian	ce No
vith 2.	: Applicants are en local comprehensive Is there a municip Is there a county	LANDUSEINFORMATION couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)?		Yes Yes	mplian	<u> </u>
vith 1. 2. 3.	e: Applicants are en local comprehensive Is there a municip Is there a county Is there a multi-m	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? punicipal or multi-county comprehensive plan?		Yes	mplian	No
vith •	e: Applicants are en local comprehensive Is there a municip Is there a county Is there a multi-m	LANDUSEINFORMATION couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)?		Yes Yes	mplian	No No
vith	e: Applicants are en local comprehensive Is there a municip Is there a county Is there a multi-m	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? punicipal or multi-county comprehensive plan?		Yes Yes Yes Yes		No No No
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vith	e: Applicants are enclocal comprehensive Is there a municip Is there a municip Is there a municip Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? nunicipal or multi-county comprehensive plan? oroject consistent with these plans? If no plan(s) exists, pal zoning ordinance(s)? unicipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? If zoning approval eccived, attach documentation. rdinances that are applicable to this project currently the		Yes Yes Yes Yes Yes Yes Yes		No No No No No No
vith	e: Applicants are enclocal comprehensive Is there a municip Is there a municip Is there a multi- Is the proposed p answer "Yes". Is there a municip Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ	LANDIUSE INFORMATION couraged to submit copies of local land use approvals or other a plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? aunicipal or multi-county comprehensive plan? broject consistent with these plans? anicipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? if zoning approval eceived, attach documentation.		Yes Yes Yes Yes Yes Yes Yes		No No No No No No
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vith	e: Applicants are en local comprehensive Is there a municip Is there a county Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? project consistent with these plans? If no plan(s) exists, pal zoning ordinance(s)? unicipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? If zoning approval eccived, attach documentation. rdinances that are applicable to this project currently the pe of legal proceeding?		Yes Yes Yes Yes Yes Yes Yes		No No No No No No
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vith	e: Applicants are en local comprehensive Is there a municip Is there a county Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land Will the project re mining or as part	couraged to submit copies of local land use approvals or other e plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? oroject consistent with these plans? If no plan(s) exists, oroject consistent with these plans? If no plan(s) exists, coal zoning ordinance(s)? unicipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? If zoning approval eccived, attach documentation. rdinances that are applicable to this project currently the be of legal proceeding? a located on a site that has been or is being remediated t Recycling Program? sult in reclamation of abandoned mine lands through re- of DEP's Reclaim PA Program?		Yes Yes Yes Yes Yes Yes Yes Yes		No No No No No No No
vith 2. 3. 5.	e: Applicants are en- local comprehensive Is there a municip Is there a municip Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land Will the project re mining or as part Will the project be	L'ANDIUSE INFORMATION couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? nunicipal or multi-county comprehensive plan? project consistent with these plans? If no plan(s) exists, pal zoning ordinance(s)? Incipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? If zoning approval eceived, attach documentation. rdinances that are applicable to this project currently the pe of legal proceeding? a located on a site that has been or is being remediated t Recycling Program? sult in reclamation of abandoned mine lands through re- of DEP's Reclaim PA Program? a located in an agricultural security area or an area		Yes Yes Yes Yes Yes Yes Yes		No No No No No No No
vith 	e: Applicants are en- local comprehensive Is there a municip Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land Will the project re mining or as part Will the project be protected under a	L'ANDIUSE INFORMATION couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan(s)? comprehensive plan(s)? nunicipal or multi-county comprehensive plan? project consistent with these plans? If no plan(s) exists, pal zoning ordinance(s)? Inicipal zoning ordinance(s)? I project require a zoning approval (e.g., special ional approval, re-zoning, variance)? If zoning approval eceived, attach documentation. redinances that are applicable to this project currently the pe of legal proceeding? a located on a site that has been or is being remediated I Recycling Program? sult in reclamation of abandoned mine lands through re- of DEP's Reclaim PA Program? a located in an agricultural security area or an area n agricultural conservation easement?		Yes Yes Yes Yes Yes Yes Yes Yes Yes		No No No No No No No No
vith 	e: Applicants are enclocal comprehensive Is there a municip Is there a municip Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land Will the project re mining or as part Will the project be protected under a Will the project be	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan		Yes Yes Yes Yes Yes Yes Yes Yes		No No No No No No No
vith	e: Applicants are enclocal comprehensive Is there a municip Is there a municip Is there a county Is there a multi-m Is the proposed p answer "Yes". Is there a municip Is there a municip Is there a joint mu Will the proposed exception, condit has already been r Are any zoning or subject of any typ Will the project be under DEP's Land Will the project be protected under a Will the project be protected under a Will the project be protected under a	couraged to submit copies of local land use approvals or other plans and zoning ordinances. pal comprehensive plan(s)? comprehensive plan		Yes Yes Yes Yes Yes Yes Yes Yes Yes		No No No No No No No No

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COORDINATION/INFORMATION

<u>Note:</u> The PA Historical and Museum Commission must be notified of proposed projects in accordance with DEP Technical Guidance Document 012-0700-001 and the accompanying Cultural Resource Notice Form.

If the activity will be a mining project (i.e., mining of coal or industrial minerals, coal refuse disposal and/or the operation of a coal or industrial minerals preparation/processing facility), respond to questions 1.0 through 2.5 below.

If the activity will not be a mining project, skip questions 1.0 through 2.5 and begin with question 3.0.

					_		
1.0	Is this a coal mining project? If "Yes", respond to 1.1-1.6. If "No", skip to Question 2.0. (DEP Use/48y1)	Ē] Y	es		No	
1.1	Will this coal mining project involve coal preparation/ processing] Y	es	· 🗌	· No	
	activities in which the total amount of coal prepared/processed will be	·			٠	÷,	
1.2	equal to or greater than 200 tons/day? (DEP Use/4x70) Will this coal mining project involve coal preparation/ processing			es ·		No	
1.2	activities in which the total amount of coal prepared/processed will be	· L	י נ	es		, INO	
	greater than 50,000 tons/year? (DEP_Use/4x70)	· ·	;				ن
1.3	Will this coal mining project involve coal preparation/ processing], Y	es 🦯		No	÷
	activities in which thermal coal dryers or pneumatic coal cleaners will be	•,	. ".	•	: 1		
	used? (DEP Use/4x70)					<u></u>	_
1.4	For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?	L_	Г Т(BS	ירי	No	
	(DEP Use/4x62)	- 1	• • • ₂	,		, , ,	
1.5	Will this coal mining project involve the construction of a permanent		Y	es		s ; No	-
•	impoundment meeting one or more of the following criteria: (1) a	· •		··· ·			: :
•	contributory drainage area exceeding 100 acres; (2) a depth of water	· .		••	×		
	measured by the upstream toe of the dam at maximum storage elevation	• •	**;	1.5		÷:	
·	exceeding 15 feet; (3) an impounding capacity at maximum storage	: ز. ·	:: '	۱. ·	•••	•	
1.6	elevation exceeding 50 acre-feet? (DEP Use/3140) Will this coal mining project involve underground coal mining to be	<u> </u>	 Ye	20	- -	No	<u> </u>
1.0	conducted within 500 feet of an oil or gas well? (DEP Use/4z41)				لیا		
2.0	Is this a non-coal (industrial minerals) mining project? If "Yes", respond to		Ye	s		No	
	2.1-2.6. If "No", skip to Question 3.0. (DEP Use/48y1)		<u>.</u>				
2.1	Will this non-coal (industrial minerals) mining project involve the	· 🖸	∵∵ Ye	s		No	
	crushing and screening of non-coal minerals other than sand and		. • `	•	. • •		
	gravel? (DEP Use/4x70)						_
2.2	Will this non-coal (industrial minerals) mining project involve the crushing and/or screening of sand and gravel with the exception of wet		Ye	5	Ļ	No s	
	sand and gravel operations (screening only) and dry sand and gravel				· · .		
	operations with a capacity of less than 150 tons/hour of unconsolidated	•		· · ·	• • •	. 1	
	materials? (DEP Use/4x70)	_			• -	5,	
2.3	Will this non-coal (industrial minerals) mining project involve the		Ye	S		No	-
	construction, operation and/or modification of a portable non-metallic	•	11 11 I.	· ·			
	(i.e., non-coal) minerals processing plant under the authority of the		`v + *	÷.	•	•	
	General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)? (DEP Use/4x70)	•	•				
2.4	For this non-coal (industrial minerals) mining project, will sewage		Ye		<u> </u>	No	-
2.4	treatment facilities be constructed and treated waste water discharged to	ц. ,	10	.		NO	
	surface waters? (DEP Use/4x62)	•			•	•	
2.5	Will this non-coal (industrial minerals) mining project involve the		Yes	<u>s</u>		No	
	construction of a permanent impoundment meeting one or more of the		<i>,</i> ·		•		
	following criteria: (1) a contributory drainage area exceeding 100 acres;		·.		;		
	(2) a depth of water measured by the upstream toe of the dam at						
	maximum storage elevation exceeding 15 feet; (3) an impounding	ʻ ;		:			
	capacity at maximum storage elevation exceeding 50 acre-feet? (DEP		•	•••	-		
	Use/3140)		. ⁷ сн				

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3.0	Will your project, activity, or authorization have anything to do with a well related to oil or gas production, site development for such activity, or the waste from such a well? If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0. (DEP Use/4z41)		Yes		No
3.1	Does the oil- or gas-related project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)? (DEP Use/4z41)		Yes		No
3.2	Will the oil- or gas-related project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or storm water system? If "Yes", discuss in <i>Project Description</i> . (DEP Use/4z41)		Yes	0	No
3.3	Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities? (DEP Use/4z41)		Yes		No
4.0	Will the project involve a construction activity that results in earthdisturbance? If "Yes", specify the total disturbed acreage. (DEP Use/4x66)4.0.1Total Disturbed Acreage		Yes		No
5.0	Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)? (DEP Use/4x66)		Yes	Ø	No
6.0	Will the project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system? If "Yes", discuss in <i>Project</i> <i>Description</i> . (DEP Use/4x62)		Yes		No
7.0	Will the project involve the construction and operation of industrial waste treatment facilities? (DEP Use/4x62)		Yes.		- No
8.0	Will the project involve construction of sewage treatment facilities, sanitary sewers, or sewage pumping stations? If "Yes", indicate estimated proposed flow (gal/day). Also, discuss the sanitary sewer pipe sizes and the number of pumping stations/treatment facilities/name of downstream sewage facilities in the <i>Project Description</i> , where applicable. (DEP Use/4x62) 8.0.1 Estimated Proposed Flow (gal/day)	:-	Yes	×	. No
9.0	Was sewage planning submitted and approved? If "Yes", attach theAct 537 approval letter unless the submitted application is actually requestingAct 537 approval (Approval required prior to 105/NPDES approval). (DEPUse/4x61)9.0.1Is Act 537 Approval Letter attached?		Yes		No
10.0	Is this project for the beneficial use of biosolids for land application within Pennsylvania? If "Yes" indicate how much (i.e. gallons or dry tons per year). (DEP Use/4X62) 10.0.1 Gallons Per Year (residential septage) 10.0.2 Dry Tons Per Year (biosolids)	<u> </u>	Yes		No
11.0	Does the project involve construction, modification or removal of a dam? If "Yes", identify the dam. (DEP Use/3140) 11.0.1 Dam Name		Yes	Ø	No
2.0	Will the project interfere with the flow from, or otherwise impact, a dam? If "Yes", identify the dam. (DEP Use/3140) 12.0.1 Dam Name		Yes		No
3.0	 Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)? If "Yes", identify each type of emission followed by the amount of that emission. (DEP Use/4x70) 13.0.1 Enter all types & amounts of emissions; separate each set with semicolons. 		Yes		No

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14.0	Is an on-site drinking water supply (well), other than individual house		Yes	Ø	No	
1 1.0	wells, proposed for your project? If "Yes", indicate total number of people	· · <u> </u>				
	served and/or the total number of connections served, if applicable. Also,	•			· • · · ·	
	check all proposed sub-facilities. (DEP Use/4x81)			• •		
	14.0.1 Number of Persons Served				,	
				•		
	14.0.2 Number of Employee/Guests	·				
	14.0.3 Number of Connections	<u> </u>		·		
	14.0.4 Sub-Fac: Distribution System		Yes		No	· .
· ·	14.0.5 Sub-Fac: Water Treatment Plant		' Yes		No	•
	14.0.6 Sub-Fac: Source Manager to Martine and M		Yes		No	-
	14.0.7 Sub-Fac: Pump Station	ं 🗖 े	-Yes		No	•
	14.0.8 Sub-Fac: Entry Point		Yes		No 🐭	-,.
	14.0.9 Sub-Fac: Transmission Main		Yes		• No • :	
	14.0.10 Sub-Fac: Storage Facility	Ē	Yes		No	
15.0	Will your project involve purchasing water in bulk, excluding during the	<u> </u>	Yes	<u> </u>	No	
13.0	construction period? If "Yes, name the provider. Also, indicate the daily	/ LJ				• ••
					•	· .
	number of employees or guests served. (DEP Use/4x81)					
	15.0.1 Provider's Name					
	15.0.2 Number of Employees/Guests					-
16.0	Is your project to be served by public water supply? If "Yes", indicate		Yes	\boxtimes	No	
	name of supplier and attach letter from supplier stating that it will serve the					
	project. (DEP Use/4x81)					
	16.0.1 Supplier's Name					
	16.0.2 Letter of Approval from Supplier is Attached	Π	Yes		No	
17.0	Will this project involve a new or increased drinking water withdrawal	-7-	Yes	Ř	No	
17.0	from a stream or other water body? If "Yes", provide name of stream.			K-3		
	(DEP Use/4x81)	•				
	17.0.1 Stream Name					
				- 63-		
18.0	Will the construction or operation of this project involve treatment,		Yes	\boxtimes	No	
	storage, reuse, or disposal of waste? If "Yes", indicate what type (i.e.,					•
	hazardous, municipal (including infectious & chemotherapeutic), residual) and			·		
	the amount to be treated, stored, re-used or disposed. (DEP/Use4x32)					
	18.0.1 Type & Amount	`				
19.0	Will your project involve the removal of coal, minerals, etc. as part of any		Yes	Ø	No	
	earth disturbance activities? (DEP Use/48y1)					
20.0	Does your project involve installation of a field constructed underground		Yes	\boxtimes	No	
-0.0	storage tank? If "Yes", list each Substance & its Capacity. Note: Applicant					
	may need a Storage Tank Site Specific Installation Permit. (DEP Use/2570)					
	20.0.1 Enter all substances &					
	capacity of each; separate		_			
	each set with semicolons.				<u> </u>	
21.0	Does your project involve installation of an aboveground storage tank		Yes	\boxtimes	No	
	greater than 21,000 gallons capacity at an existing facility? If "Yes", list					
	each Substance & its Capacity. <u>Note</u> : Applicant may need a Storage Tank					
	Site Specific Installation Permit. (DEP Use/2570)					
	21.0.1 Enter all substances &					
	capacity of each; separate					
	each set with semicolons.					
20	Does your project involve installation of a tank greater than 1,100 gallons		Yes	Ø	No	
2.0			162	Ы	110	
	which will contain a highly hazardous substance as defined in DEP's					
	Regulated Substances List, 2570-BK-DEP2724? If "Yes", list each					
	Substance & its Capacity. Note: Applicant may need a Storage Tank Site					
	Specific Installation Permit. (DEP Use/2570)					
	22.0.1 Enter all substances &	•				
	capacity of each; separate					

•

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8000-PM-I	T0001 Rev 0	6/07/2002						
23.0 Does your project involve installation of a storage tank at a new facility Yes with a total AST capacity greater than 21,000 gallons? If "Yes", list each Substance & its Capacity. <u>Note</u> : Applicant may need a Storage Tank Site Specific Installation Permit. (DEP Use/2570)								
2:	0.01.	Enter all subs capacity of ea each set with	ch; separate semicolons.					
				HURIOAVION.				
I certify th that the in informatic	formation	he authority to provided in th	o submit this his application	application on behaif of the appli n is true and correct to the best o	cant nam f my knor	ed here wledge a	in and and	đ
Type or P	rint Name	Britt T. Mch	Kinney	·····				
R	HT.	Mil	-	VP - Nuclear Site Operations		1-3	3-05	5_
Signature]	Title		Dat	e	

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Applicant Name: PPL Susquehanna, LLC



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) APPLICATION FOR PERMIT TO DISCHARGE INDUSTRIAL WASTEWATER

Before completing this form, read the step-by-step instructions provided in this application package.

		Related ID#s (If Known)		DEPUSEONLY
•	Client ID#	APS ID#	، ، ، ــــــــــــــــــــــــــــــــ	Date Received & General Notes
	Site ID#	Auth ID#	· · · · · · · · · · · ·	
	Facility ID#			and the second
	· · · · · · · · · · · · · · · · · · ·			1. A set of the state of the set of the state of the set of the

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_	Applicant/OperatorName2		 د اور بيد المحموم ا		
	Is this an application for a:	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	 ••••••		

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🔲 New permit

Complete the General Information Form (GIF) 8000-PM-IT0001 and attach to the front of the application.

- Permit Renewal
- List the current NPDES Permit number PA-0047325
- Complete the Client and Site Sections of the GIF and attach to the front of the application.
- Permit Amendment or Permit Renewal with Amendment
- List the current NPDES Permit number PA
- List the current WQM Permit number
- Complete the GIF and attach to the front of the application.

GENERAL INFORMATION IN SUCCESSION AND A SUCCESSION AND A

1.	SIC Code	 NAICS Code	Corresponding SIC/NAICS Description	çıstrati
	4911	221113	Electric Utility Power Generation	

- 2. Is the facility required to obtain a stormwater NPDES permit for any listed SIC code?
 - YES (Answer question 3 below.)
- 3. Is the facility applying for permit exemption under the No Exposure rule? (See Instructions)
- 4. General Description and Nature of Business.
- Two Unit Nuclear Generating Station
- 5. List all NPDES and WQM Permits issued by DEP for this facility.

Permit Type	Permit Number	Date Issued
NPDES Permit	PA 0047325	July 7, 2000
Water Quality Permit - STP	4085411	October 7, 1985
Water Quality Permit - IND.	4076203	May 25, 1977

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6. ATTACH TOPOGRAPHIC MAP (See Instructions)

7. NUMBER OF OUTFALLS

а	. Industrial Wastewater Only	2	Complete Module 1 and associated Modules.
b	Combined Industrial Wastewater and Stormwater	3	Complete Module 1, associated Modules and Module 12 or Module 14 (if required).
c	Stormwater Only	3	Complete Module 12 or Module 14.

8. OUTFALL LOCATION: Using the same Locational Data supplied on the General Information Form under Facility Information, list the latitude and longitude of the location to the nearest ten-thousandth of a second and the name of the receiving water of each outfall. Where available, the receiving stream width and depth should also be provided using actual measurements or topographic map and navigational charts.

OUTFALL		LATIT			LONG	ITUDE		LOW FLOW STREAM		
NUMBER (list)	Deg	Min	Sec	Deg	Min	Sec	RECEIVING WATER (Name)	Width (ft)	Depth (ft)	
070	41	5	18.4	-76	8	34.1	Lake Took-a-While	160	3	
071	41	5	12.4	-76	7	53.2	Susquehanna River	800	13	
072	41	5	34.2	-76	8	42.8	Lake Took-a-While	160	3	
073	41	5	33.3	-76	8	49.6	Lake Took-a-While	160	3	
074	41	5	28.9	-76	8	49.3	Lake Took-a-While	160	3	
075	41	5	40.2	-76	8	17.5	Lake Took-a-While	160	3	
079	41	5	13.8	-76	7	53.4	Susquehanna River	800	10	
080	41	5	33.4	-76	8	18.8	Lake Took-a-While	160	3	

9. WHOLE EFFLUENT TOXICITY (WET) TEST RESULTS

Is there known or reason to believe that WET testing was conducted in the last 3 years on any of the facility's discharges, or on a receiving water in relation to a discharge?

2 YES

If "YES," attach any information available on the purpose and nature of such testing, and the test results.

If "NO," all dischargers are still encouraged to perform WET testing. The DEP regional office may be contacted for appropriate protocols.

10. CONTRACTED ANALYTICAL ASSISTANCE

Did a contract laboratory or consulting firm perform any of the analysis required by this application?

Name Analytical Laboratory Services Types of Analysis Performed: 34 Dogwood Lane All Physical Chemical BOD, COD, TSS, O&C, TOC, pH, Metals, Volatiles, Organic Compounds, Acid Compounds, Address Middletown, PA 17057 Base Compounds, Nitrates, Ammonia, Priority Pollutants, and PCB's. (717) 944-5541 Phone **Teledyne Brown Engineering** Types of Analysis Performed: Name 2508 Quality Lane Radiological Analysis Gross Alpha, Gross Beta Address Knoxville, TN 37931 (865) 690-6819. Phone 1

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Application	

-: <u>:</u>

Applicant Name: PPL Susquehanna, LLC

YES NO

11. ADDITIONAL INFORMATION: (OPTIONAL)

Additional information may be attached to expand upon any response to any questions or call attention to any other information felt should be considered in establishing permit limitations for the proposed or existing facility. Check if additional sheets are attached.

COMPLIANCE HISTORY REVIEW

Is the facility owner or operator in violation of any DEP regulation, permit, order or schedule of compliance at this or any other facility?

If "YES," list each permit, order and schedule of compliance and provide compliance status. Use additional sheets to provide information on all permits.

Permit Program Permit No.

Brief Description of Noncompliance

Steps Taken to Achieve Compliance Date(s) Compliance Achieved

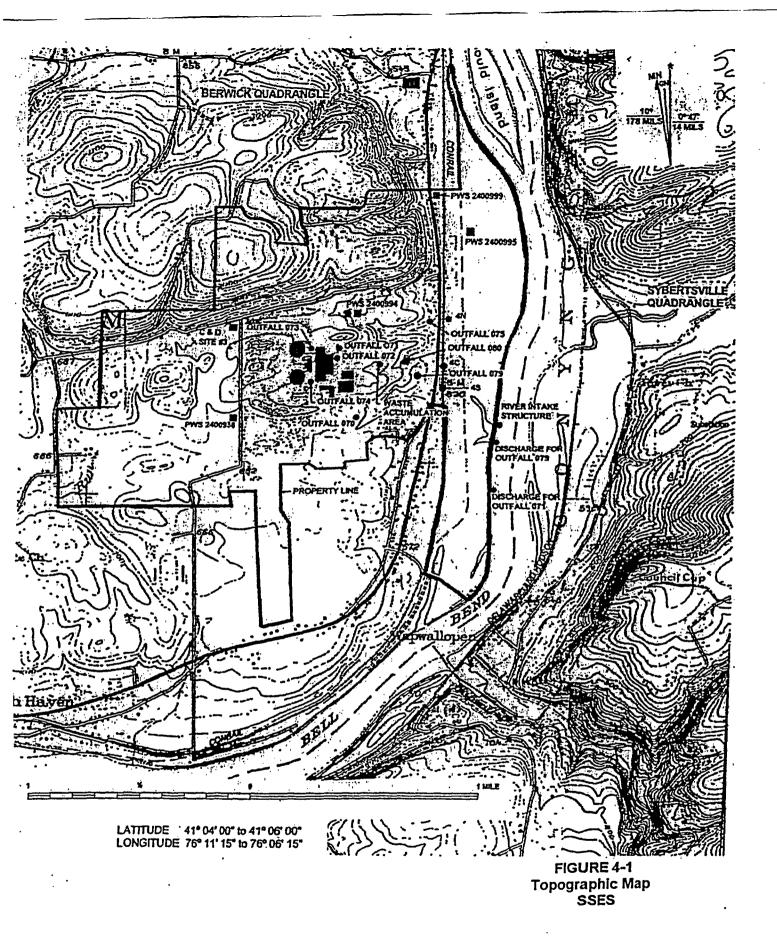
Current Compliance Status In Compliance

In Noncompliance

CERTIFICATION CERTIFICATION

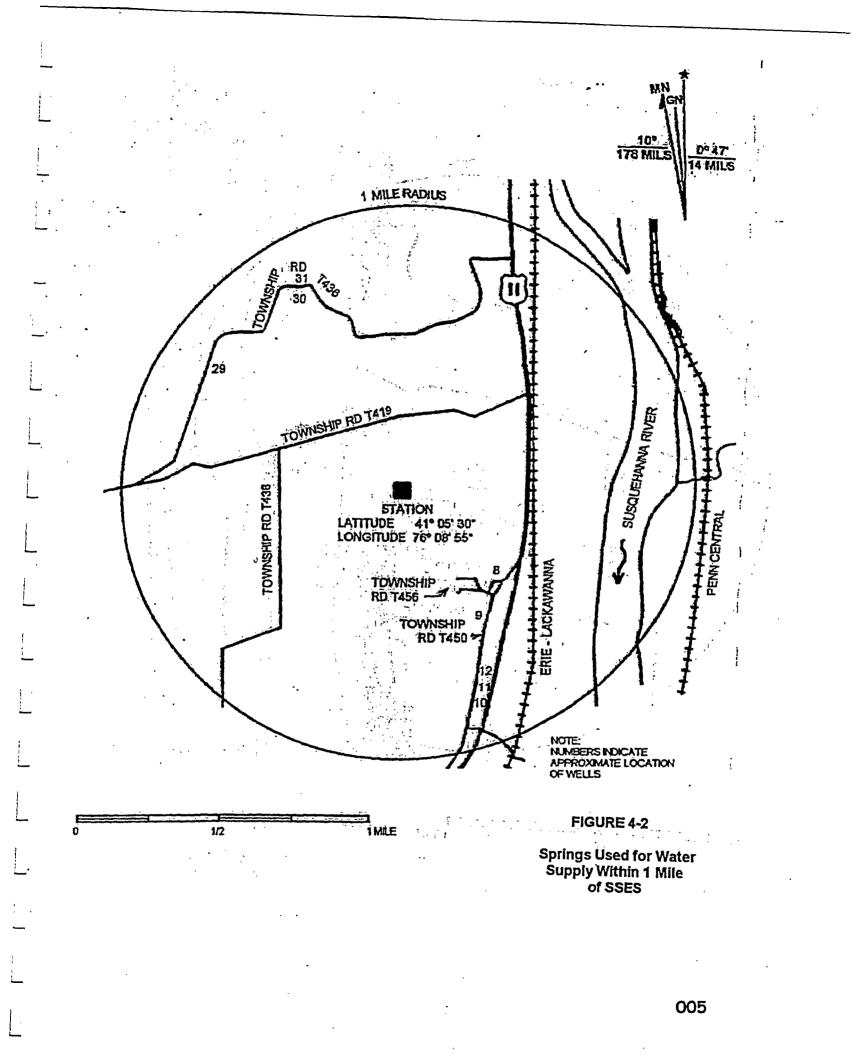
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage 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.

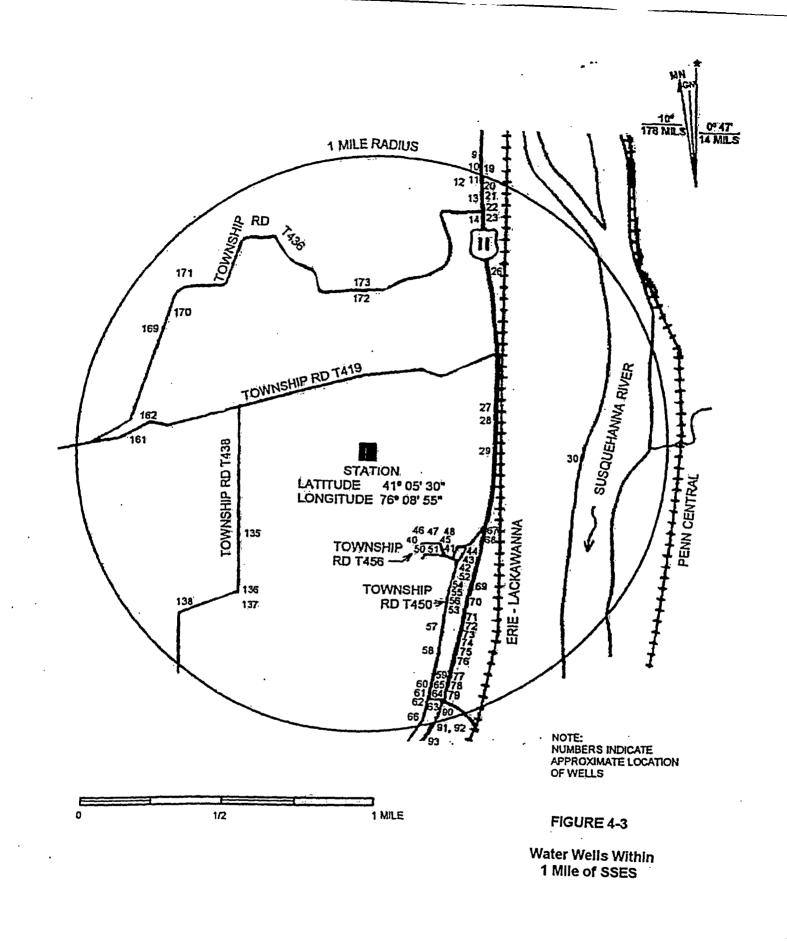
Britt T. McKinney	V.P. – Nuclear Site Operations
Name (type or print legibly)	Official Title
Frith T Xwing	1-3-05
Signature	Date
(Use corporate or professional seal as appropriate.)	
Taken, sworn, and subscribed before me, this3rd	day of January 20 05
Notary Seal	
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	Notarial Seal Laurie Minto, Notary Public Salem Twp., Luzerne County My Commission Expires July 24, 2006



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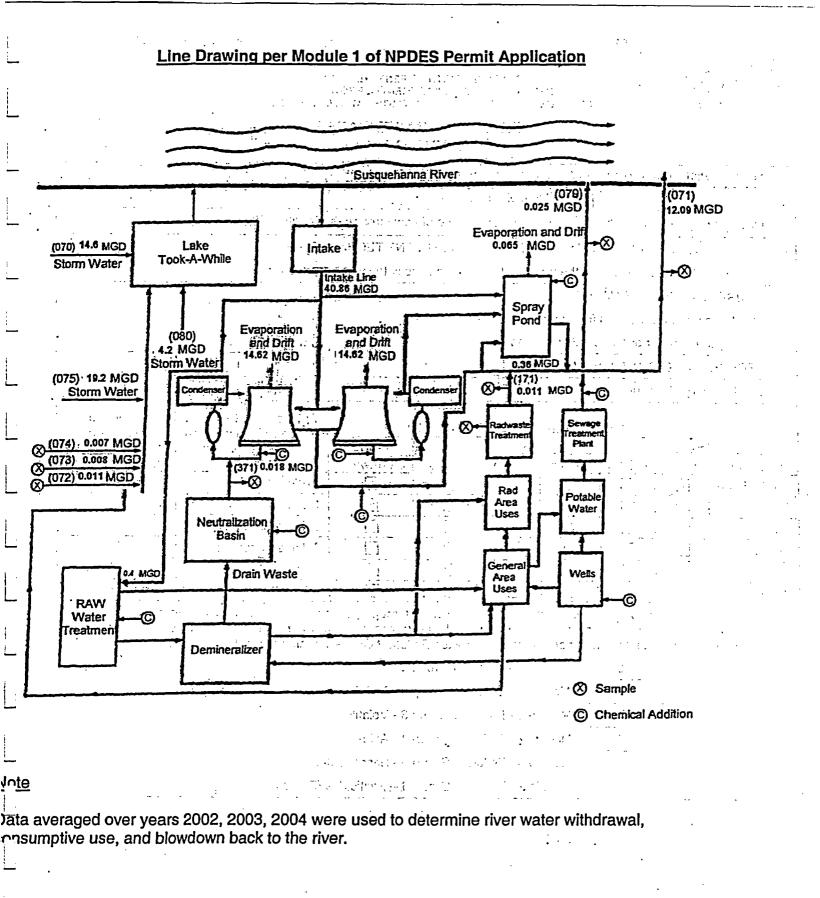




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Applicant Name: PPL Susquehanna, LLC

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

INDUSTRIAL WASTEWATER MODULE 1

Before completing this form, read the step-by-step instructions provided in Appendix 1.

APPLICANT/NAME PPL Susquehanna, LLC

1. Line Drawing. Attach a line drawing and water balance of flow through the facility. (See instructions)

2. OUTFALLS AND ASSOCIATED WASTEWATER TREATMENT TECHNOLOGIES

Complete Module 2 identifying the treatment processes associated with each outfall.

3. SOURCES OF WASTEWATER

Attach a separate Module 3 for every outfall.

Indicate the number of Module 3s attached.

4. REQUIRED AND OPTIONAL ANALYSIS

a. Summary of Required Analysis

		Discl	harge Con	tains (see	Pollutants or Pollutant Groups which must be	Required Number of		
Outfall Number	Process Waste		Sanitary Waste	Misc. Waste	GW Cleanup	Stormwater	sampled for and analyzed	Sample Events (see instructions)
070 075 080						\boxtimes	Module 13.	1
071	\boxtimes						1,2,3,4,5, & PCBs	3
072				\boxtimes			Selected Group 1	1
073, 074				\boxtimes			Selected Group 1	1
079			\boxtimes				Group 1	1
River Intake							1,2,3,4,5, & PCBs	3 (Optional)

b. Complete the modules for the Pollutant(s) or Pollutant Group(s) identified above. A separate module must be submitted for each process wastewater and combined (process wastewater and stormwater) outfall identified in the application. List the number of modules for each Pollutant Group submitted with this application.

5	Module 4 - Pollutant Group 1
2	Module 5 - Pollutant Group 2 - Metals
2	Module 6 - Pollutant Group 3 - Volatile
2	Module 7 - Pollutant Group 4 - Acids
2	Module 8 - Pollutant Group 5 - Base/Neutral
 2	

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Module 1	

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c. Optional Site-Specific Data	
Additional modules may be attached to provide any of the o Appendix 2. (The modules should be used to report intake water o quality, and parameter-specific coefficient of effluent variability. S provide description of sampling points used.)	quality, upstream background or ambient water
Optional data is attached to application.	🛛 YES 🔲 NO
5. PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN	NING.
Does the facility have a PPC plan?	
	🖾 YES 🔲 NO
Does the facility have any other related plans, such as a Pollution Incide	ent Prevention (PIP) Plan, Spill Prevention
Control and Counter Measure (SPCC) Plan or BMP Plan?	
If "YES," identify and indicate date(s) implemented.	
Type of Plan	Date Implemented
PPC Plan Note: Two (2) copies provided w/Application	11/19/2004 (Updated)
SPCC Plan Note: Two (2) copies provided w/Application	11/19/2004 (Updated)
DEP may require the plan(s) be submitted with this application.	wibing any additional onvicemental pathetics
 OTHER INFORMATION (OPTIONAL): Attach additional sheets desc control programs which may affect the discharges which are underway 	or which are planned. Indicate whether each
program is now underway or planned, and indicate the actual or planned	
MARK "X" IF DESCRIPTION OF ADDITIONAL INFO	DRMATION IS ATTACHED
-	
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7. INFORMATION AND ANALYSIS OF EFFLUENT QUALITY FOR OTHER POTENTIALLY TOXIC POLLUTANTS

a. <u>Information on Chemical Additives</u> NOTE(1) Equivalent Chemicals may be purchased from other suppliers. (See Notes 1 – 8 attached)

(Read instructions carefully and use the tabular format to present the required information)

	Chemical Substance or		Average & Maximum	C	Concentration		Lowest Possible Analytical	Whole Product 96 Hr LC50	Whole Product 48 Hr LC50
Outfall	Compound Trade Names or Specific Ingredients	Manufacturer Name and Address	Usage Rate Ibs/day	In-system	Effluent	Units	Detection Level (µg/L)	(mg/L) and species ⁽¹⁾	(mg/L) and species ⁽¹⁾
071	Acrylic Acid Sulfonated Acrylic Acid Copolymer Dispersant, 32.125 PCL-401	Nalco Company 1601 W. Diehl Rd. Naperville, IL 60563-1189	Avg. 950 Max 2,000 (180,000 lbs/yr)	2,400	2,400	μдЛ	1,500	Rainbow Trout (4,900 mg/l)	Daphnia Magna (2,800 mg/l)
071	Hydroxy ethylidene disphosponic acld (HEDP, 32.127 PCL-57	-	Avg. 750 Max 1,500 (90,000 lbs/yr)	4,000	4,000	μgΛ	83	Rainbow Trout (368 mg/l)	Daphnia Magna (527 mg/l)
071	Solution of Quatemary Alkyl Ammonium Compound Molluscide and General Biocide, 32.126 H-130	•	Avg. 800 Max 2,000 (160,000 lbs/yr)	10,600	100	μg/l	100 µg/l [*]	Bluegill Sunfish (0.32-0.59 mg/l)	Daphnia Magna (0.094 mg/l)
071	Sodium Bromide, 32.114 H-940	4	Avg. 500 Max 1,000	3,300	3,300	μg/l	125	Rainbow Trout (0.23 mg/l) Note (2)	Daphnia Magna (0.71 mtg/l)
071/072/079	Magnesium Nitrate and 5- Chloro-2-methyl-4- isothiazolin-1, 32.53 NX-1106	Betz Dearborn Inc. 4636 Somerton Rd. Trevose, PA 19057	See Note 3			•		Rainbow Trout (8.7 mg/l)	Daphnia Magna (2.9 mg/l)
071/072/079	Glutaraldehyde 40%-70%, 32.70 H-550	Nalco Company 1601 W. Diehl Rd. Naperville, IL 60563-1198	See Note 4		-			Flathead Minnow (12 mg/l)	Daphnia Magna (12 mg/l)
071	Proprietary Descaling Agent Betz 860	Betz Dearborn Inc. 4636 Somerton Rd. Trevose, PA 19057	See Note 5					•	••••
071	Bentonite Clay Slurry, 32.128	Nalco Company 1601 W. Diehl Rd. Naperville, IL 60563-1189	Avg 2,000 Max 8,000 (350,000 lbs/yr)	0	330,000	μg⁄l	100		
071/079	Sodium Hypochlorite, 15%, 32.63	Manley-Regan Chemicals 532 East Emaus St. PO Box 280 Middletown, PA 17057	Avg 5,000 Max 10,000	33,000	33,000	μgΛ	400	Ceriodaphnia Dubla (1.23 mg/l)	
071	Rotenone, 32.15	AgroEvo Environmental Health 95 Chestnut Ridge Rd. Montvale, NJ 07645	See Note 6						
071	Fluridone, 32.46	SePro 11550 N. Meridian Carmel, IN 46032	See Note 6						

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 071/079	Sodium Bisulfite, 32.113 Chlorkill 8816	Allied Corp. Chemical Sector PO Box 1139R Morristown, NJ 07960	Avg - 183 Max - 400	0	500	µg/ì	125	Mosquito Fish (240 mg/l)	Mosquito Fish (240 mg/l)
071	Sulfuric Acid, 32.57	Allied Corp. PO Box 2064R Morristown, NJ 079609	(Approx, 435,000 lbs/yr)	• • • • • • • • • • • • • • • • • • •	:				
071	2-(Tert-butylamino)-4-Chloro- 6-(Elthylamino)s-Trizine; Terbuthylazine (Algicide)	FMC Corp. Process Additives Divison 1735 Market St. Philadelphia, PA 19103	(13,800 lbs. Twice a year)	67,000	2,200	μg/1		Rainbow Trout (3.8 mg/l)	Daphni Magna (39 mg/l)
071	2-phosphono-1,2,4- butanetricarboxylic acid aqueous solution (corrosion inhibitor)	Bayer Corp. Product Safety & Reg. Affairs 100 Bayer Road Pittsburgh, PA 15205-9741	(864 lbs. Four times a year)	4,000	131	μg/ì			Rainbow Trout (5,300 mg/l)
071	Depositrol PY5206	Betz Dearborn Inc. 4636 Somerton Rd. Trevose, PA 19057	Avg. – 96 lbs/day Max – 385 lbs/day	32,000	1,140	μgЛ	12,000	Fathead Minnow (1,680 mg/l)	Daphnia Magr (1,635 mg/l)
071	Aquashade, 32.135	Applied Biochemists	See Note 6	5,000 mg/1	5	μgΛ	100		
071/072/079	Miscellaneous	Various	See Note 7		••• **				
(1) If	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	ə provided	.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
(1) lf	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	e provided	.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · ·
(1) If	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	e provided	,	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
(1) lf	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	ə provided	.	·····	· · · · · · · · · · · · · · · · · · ·
(1) If	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	ə provided	.		· · · · · · · · · · · · · · · · · · ·
(1) If	LC50 Data for whole proc	duct is not available, data	for the individual a	active ingred	ients may be	e provided	,		· · · · · · · · · · · · · · · · · · ·
(1) If		• • • • • • • • • • • • • • • • • • •			· · · · · · · · · · · · · · · · · · ·	·····	· · · · · · · · · · · · · · · · · · ·		
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b. Specific Substances which must be identified if Known or Expected to be Present

(Read instructions carefully and use the tabular format and additional pages, where necessary, to present the required information)

Outfall	Chemical Substance or Compound	Reason for Presence in Discharge	Average Effluent Concentration (µg/L)	Analytical Detection Level (µg/L)
		· · · · · · · · · · · · · · · · · · ·		
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
<u></u>				
	e any Table 2 substances identified for w YES," complete the Hazardous Substand	hich a spill reporting exemption is requested?		YES NO
		ed to be present in the discharge.		NONE
Re	port any additional significant detections	in effluent samples on the Other Toxic Chemicals sh	eets	
0		- 5 -		
012				

MODULE I, Item 7, Section a. Continued

Note (1) Equivalent chemicals from other suppliers may be purchased. Product concentrations may change; however, the concentration of active ingredients discharged should remain about the same. Approval numbers are included for those chemicals listed in the Susquehanna Approved Materials Manual. Other chemicals will be approved prior to their use onsite.

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Note (2) Toxicity of hypobromous acid is expressed as bromine.

Note (3) Approximately 25 gallons/year of this biocide is injected into the closed system cooling water to a maximum average concentration of 330 mg/l of product or 5.0 mg/l as active isothiazolin. Occasionally these systems are drained to the Cooling Tower basin. This product would not be expected to be detected in the Cooling Tower blowdown.

Note (4) Glutaraldehyde is added to closed cooling water systems to maintain microbiological control. A maximum concentration of 300 mg/l active or 600. mg/l product is used. Occasionally these systems are drained to the Cooling Tower blowdown. This product would not be expected to be detected in the Cooling Tower blowdown.

Note (5) The Cooling Tower blowdown is isolated when this descaling agent is used in Circulating Water System (4,000 gal/treatment). Treatment has been very infrequent.

Note (6) Rotenone and Fluridone are products used in the Emergency Spray Pond that has been permitted for use by the Pa Fish and Boat Commission and the PaDEP. The Emergency Spray Pond is treated when needed with 1,000 lbs. of Rotenone to a level of 5 mg/l; however, it is detoxified with potassium permanganate at a rate equal to this concentration prior to discharge and, therefore, is not expected to be present in Outfall 071. Also, 32 lbs. of Fluridone will be applied as necessary to an area of 8/10 surface acre along the pond's edge. Aquashade is used around the perimeter of the pond periodically in the summer to control algae growth.

ja ku jaka ku saansa ku shiri ku da shiri ya ku jayi ase Gazara Mayaza Balaza. Ahi ya saasa shekaya shiri ka kata ka shiri ka shirika ka saasa ka saasa na saasa na sa kata ku Saasaa Amarika sa sa adaka ma

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Note (7) Miscellaneous chemicals used in very small quantities for cleaning surfaces, cooling coils, decontamination of floors, walls, and equipment, cleaning agents, liquid dye for flow tests, laboratory reagents and standards, etc. The following are some of these chemicals:

Chemical/SAMM #	Est. gal/yr.
Chemical/SAMM # Power Coil, A-10.29 Coil Rite, C-10.384 Acti-Klean, C-10.326 By-Pas, E-10.11 Organic Orange, E-10.35 Citirikleen, E-10.29 MSA/Cleaner/Sanitizer II, E-10.8 Rhodamine WT Dye, 32.68 Spartan SD-20, C-10.167 Touch It Up, E-10.4 601-Nami-Lo, C-10.74 Powerline PPL10, 32.90 Cobratec TT-50-S, 32.87 Yellow/Green liquid dye, 32.42 Clarifloc C-9490 polymer, 32.109 Nalco 9905, 32.81 Ethylene Glycol mixture, 16.20 Iron Oxalate, 32.129 Polyfloc CP1160, 32.130 Polyfloc AP1100, 32.131 Propylene Glycol Mixture, 16.36	Est. gal/yr. a a 220 110 a 288, b a a 288, b a a 3 50 a 4 50 a 4 50 a 50 a 50 a 220, c d 500 lbs./yr. 20 lbs./yr. 20 lbs./yr. a, d
EPA 2000 WCI-140, B-10.27	a
Trisodium Phosphate, A-20.24 Sodium Hydroxide, 32.59	a 500
Sodium Nitrite, 32.14	200 lb/yr
Nitric Acid, 38.89	. 5
Borax, 32.62 Boric Acid, 32.61	15 10

<u>Key</u>

.

- a. Not available
- b. Ounces
- c. Flocculent aid used infrequently for dewatering sludge
- d. Present in equipment onsite and has potential for entering storm drains. Preventative maintenance and analysis of replacement chemicals such as Propylene Glycol will minimize any adverse impacts to the environment.

Some of these chemicals may be discharged to the Cooling Tower Basins/ Blowdown, Sewage Treatment Plant, or storm drains in accordance with their Material Safety Data Sheet recommendations. I

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	SAMM 32.125	
	MATERIAL SAFET	Y DATA SHEET
NALCO	PRODUCT	
•	PCL-401	
and a second second Second second second Second second	EMERGENCY TELEPHON	NE NUMBER(S)
	(800) 424-9300 (24 Hours)	CHEMTREC
1. CHEMICAL PRODUCT AI	ND COMPANY IDENTIFICA	TION
PRODUCT NAME :	PCL-401	
APPLICATION :	WATER TREATMENT	· · · · · · · · · · · · · · · · · · ·
COMPANY IDENTIFICATION :	Naico Company	
	1601 W. Diehl Road Naperville, Illinois 60563-1198	 A strategic to the second strategic to th
EMERGENCY TELEPHONE NUMBER(S): (800) 424-9300 (24 Hour	s) CHEMTREC
NFPA 704M/HMIS RATING HEALTH: 0 / 1 FLAMMABILITY: 0 = Insignificant 1 = Slight 2 = Modera		/0 OTHER:
2. COMPOSITION/INFORMA	TION ON INGREDIENTS	a a second a
Based on our hazard evaluation, none of t	he substances in this product are	hazardous.
3. HAZARDS IDENTIFICATIO	The second statement of the second statement is second statement of the second statement is second statement is	
	EMERGENCY OVERVIEW	
CAUTION		
	o not take internally. Use with ac	After contact with skin, wash
Near suitable protective clothing. May evolve oxides of carbon (COx) under under fire conditions.	fire conditions. May evolve oxide	es of nitrogen (NOx) and sulfur (SOx)
PRIMARY ROUTES OF EXPOSURE :		
	and an end of the state of the	an a
HUMAN HEALTH HAZARDS - ACUTE :		
YE CONTACT : Nay cause irritation with prolonged contac	in in cubiko oki kus goriji in i L	
SKIN CONTACT : Aay cause irritation with prolonged contact	n an Astronomica Astronomica (Astronomica) Astronomica (Astronomica)	tata kan na kala tata ing kanalan na kanalan Na kanalan na
NGESTION: lot a likely route of exposure. No adverse	effects expected.	
Naico Company 16	01 W. Diehl Road • Naperville, II (630)305-1000	linois 60563-1198
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MATERIAL SAFETY DATA SHEET

PRODUCT

PCL-401

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INHALATION:

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

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 :

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

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 :

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 :

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.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 2 / 9



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NALCO	PRODUCT		
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	EMERGENCY TELEPHONE NUME		
	(800) 424-9300 (24 Hours) CHE	MIREC	<u> </u>
. ACCIDENTAL RELEASE MEA	SURES		,,,,,
ERSONAL PRECAUTIONS : o not touch spilled material. Restrict access to ersonal protective equipment recommended in ny leaks If it is safe to do so. Ventilate spill are	Section 8 (Exposure Controls/Persea if possible.	sonal Protection). Stop or reduce
ETHODS FOR CLEANING UP : MALL SPILLS: Soak up spill with absorbent montainer. Wash affected area. LARGE SPILLS king. Reclaim into recovery or salvage drums r disposal of contaminated recovered material ection 13 (Disposal Considerations).	naterial. Place residues in a suitable S: Contain liquid using absorbent m or tank truck for proper disposal. C	e, covered, pro naterial, by digg Contact an appr	ing trenches or by over waste hauler
NVIRONMENTAL PRECAUTIONS : o not contaminate surface water.			11 역가파 11 (19
HANDLING AND STORAGE		,	·····
ANDLING : void eye and skin contact. Do not take internation of the internation of the sector of the	lly. Ensure all containers are labell	ed. Keep the c	ontainers closed
TORAGE CONDITIONS : ore the containers tightly closed.			
JITABLE CONSTRUCTION MATERIAL : /C, Buna-N, HDPE (high density polyethylene) ompatibility with Plastic Materials can vary; we); Polyurethane, Polypropylene, Pol	yethylene, Stai	
NSUITABLE CONSTRUCTION MATERIAL : ass, Hypalon, Viton, Neoprene, EPDM		· ,	to Ballino State State States -
EXPOSURE CONTROLS/PERS	ONAL PROTECTION	• • •	
CCUPATIONAL EXPOSURE LIMITS : is product does not contain any substance that	it has an established exposure limit		
IGINEERING MEASURES : eneral ventilation is recommended.			· · · · · ·
SPIRATORY PROTECTION : spiratory protection is not normally needed.			
ND PROTECTION : oprene gloves, Nitrile gloves, Butyl gloves, PV	/C gloves		
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SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles. Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :

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

9.	PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE Liq	uid
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APPEARANCE Light yellow

ODOR None

SPECIFIC GRAVITY	1.16 - 1.20
SOLUBILITY IN WATER	Complete
pH ()	4.2 - 5.0
VISCOSITY	20 - 160 cps
FREEZING POINT	25 °F /
VAPOR PRESSURE	Same as water
VOC CONTENT	0.00 % EPA Method 24

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.

HAZARDOUS POLYMERIZATION : Hazardous polymerization will not occur.

CONDITIONS TO AVOID : Freezing temperatures.

MATERIALS TO AVOID : Strong oxidizing agents

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

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 4 / 9



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,					<i>*-</i>		· ·
ACUTE ORAL TOXICITY : Species LD50 Rat 5 g/kg		Test Descrip Product		, <u> </u>	· · _ · · · · ·	nte Atenti di tente Atenti	· · · · · · · · · · · · · · · · · · ·
Rating: Non-Hazardous		an in the analysis for the	* • .	۰ <u>۰</u>	, .•		
ACUTE DERMAL TOXICITY Species LD50		Test Descrip	otor	• • •	n an george (n. 1995) 1997 - Standard (n. 1997) 1997 - Standard (n. 19		
Rabbit 2 g/kg Rating : Non-Hazardous	4	Product :				ن بن المراجع (المراج مراجع (المراجع (المر مراجع (المراجع (الم	
SENSITIZATION : This product is not expected to						n Xin Sinta in An	, ⁴⁴
CARCINOGENICITY : None of the substances in this Cancer (IARC), the National T Hygienists (ACGIH).	s product are liste loxicology Progra	ed as carcinogen im (NTP) or the	is by ti Ameri	ne Interná can Confe	tional Agency rence of Gove	mmental Indus	n trial
12. ECOLOGICAL IN	NFORMATION	1					
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ECOTOXICOLOGICAL EFFE	CTS:						
The following results are for th	ie product.	an an sairte an thair a	· · · ·			te states an	л.
ACUTE FISH RESULTS :		11070					
Creation					antaka -		
Species Rainbow Trout	Exposure 96 brs	LC50		Test Des	scriptor		
Rainbow Trout	96 hrs	4,900 mg/l		Product	scriptor		
	96 hrs 96 hrs	the second se	1.	Product Product		n de geland Transferie	
Rainbow Trout Bluegill Sunfish	96 hrs 96 hrs	4,900 mg/l > 5,000 mg/l		Product Product			
Rainbow Trout Bluegill Sunfish Rating: Essentially non-toxic	96 hrs 96 hrs	4,900 mg/l > 5,000 mg/l	17.	Product Product		te att i sour	
Rainbow Trout Bluegill Sunfish Rating : Essentially non-toxic ACUTE INVERTEBRATE RES Species Daphnia magna	96 hrs 96 hrs SULTS : Exposure 48 hrs	4,900 mg/l > 5,000 mg/l	EC	Product Product		te att i sour	
Rainbow Trout Bluegill Sunfish Rating : Essentially non-toxic ACUTE INVERTEBRATE RES Species Daphnia magna Rating : Essentially non-toxic MOBILITY : The environmental fate was es interface) Suite TM , provided I and output. The level III model intended to give the user a ger	96 hrs 96 hrs SULTS : Exposure 48 hrs stimated using a I by the US EPA. 1 does not require neral estimate of	4,900 mg/l > 5,000 mg/l LC50 2,800 mg/l evel III fugacity in rhe model assur- equilibrium betw the environment	model mes a ween t al fate	Product Product 50 embedde steady sta he defined of this pro	Test Descr Product Product d in the EPI (e ate condition b media. The i oduct under th	iptor stimation progr etween the tota nformation prov e defined condi	am I input ided is tions of
Rainbow Trout Bluegill Sunfish Rating : Essentially non-toxic ACUTE INVERTEBRATE RES Species Daphnia magna Rating : Essentially non-toxic MOBILITY : The environmental fate was es interface) Suite TM, provided and output. The level III model	96 hrs 96 hrs 96 hrs SULTS : Exposure 48 hrs 48 hrs by the US EPA. 1 does not require heral estimate of the environment this	4,900 mg/l > 5,000 mg/l LC50 2,800 mg/l evel III fugacity in rhe model assur- equilibrium betw the environment	model mes a ween t al fate	Product Product 50 embedde steady sta he defined of this pro	Test Description Product d in the EPI (eate condition b d media. The in oduct under the te to the air, w	iptor stimation progr etween the tota nformation prov e defined condi ater and soil/se	am I input ided is tions of idiment
Rainbow Trout Bluegill Sunfish Rating : Essentially non-toxic ACUTE INVERTEBRATE RES Species Daphnia magna Rating : Essentially non-toxic MOBILITY : The environmental fate was es interface) Suite TM , provided I and output. The level III model intended to give the user a ger the models. If released into the	96 hrs 96 hrs 96 hrs SULTS : Exposure 48 hrs 48 hrs by the US EPA. 1 does not require heral estimate of the environment this	4,900 mg/l > 5,000 mg/l LC50 2,800 mg/l evel III fugacity if the model assur- equilibrium betw the environment is material is exp	model mes a ween t al fate	Product Product 50 embedde steady sta he defined of this pro to distribu	Test Descr Product d in the EPI (e ate condition b d media. The i boduct under th te to the air, w	iptor stimation progr etween the tota nformation prov e defined condi	am I input ided is tions of idiment
Rainbow Trout Bluegill Sunfish Rating : Essentially non-toxic ACUTE INVERTEBRATE RES Species Daphnia magna Rating : Essentially non-toxic MOBILITY : The environmental fate was es interface) Suite TM , provided and output. The level III model intended to give the user a ger the models. If released into the in the approximate respective p	96 hrs 96 hrs 96 hrs SULTS : Exposure 48 hrs 48 hrs by the US EPA. T by the US EPA. T does not require neral estimate of t e environment this percentages;	4,900 mg/l > 5,000 mg/l LC50 2,800 mg/l evel III fugacity if fhe model assur- equilibrium betw the environment s material is exp Soi	model mes a ween t al fate ected	Product Product	Test Descr Product d in the EPI (e ate condition b d media. The i boduct under th te to the air, w	iptor stimation progr etween the tota nformation prov e defined condi ater and soil/se	am I input ided is tions of idiment

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198

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PRODUCT

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BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

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.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

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 as follows.

LAND TRANSPORT :

Proper Shipping Name : PRODUC

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, none of the substances in this product are hazardous.

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

> Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 6 / 9

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MALCO	PRODUCT		
	PCL-401		
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SARA/SUPERFUND AMENDMENTS AND 112, AND 313 :	REAUTHORIZATION ACT OF	1986 (TITLE III) - SI	ECTIONS 302, 311,
ECTION 302 - EXTREMELY HAZARDOU: This product does not contain substances list			us Substance.
ECTIONS 311 AND 312 - MATERIAL SAF Dur hazard evaluation has found that this pr	ETY DATA SHEET REQUIRE oduct is not hazardous under 2	MENTS (40 CFR 37 9 CFR 1910.1200.	0):
Inder SARA 311 and 312, the EPA has est he current thresholds are: 500 pounds or the azardous substances and 10,000 pounds f	he threshold planning quantity ((TPQ), whichever is	
ECTION 313 - LIST OF TOXIC CHEMICAL his product does not contain substances or	LS (40 CFR 372) : n the List of Toxic Chemicals.		um Sector
OXIC SUBSTANCES CONTROL ACT (TS he substances in this preparation are inclu	CA) : ded on or exempted from the T	SCA 8(b) Inventory	(40 CFR 710)
EDERAL WATER POLLUTION CONTROL FR 116.4 / formerly Sec. 311 : one of the substances are specifically lister	e general de la companya de la comp	0 CFR 401.15 / form	erly Sec. 307, 40
LEAN AIR ACT, Sec. 111 (40 CFR 60, Vol ollutants), Sec. 602 (40 CFR 82, Class I an lone of the substances are specifically listed	d II Ozone Depleting Substanc		lazardous Air
ALIFORNIA PROPOSITION 65 : his product does not contain substances wi	hich require warning under Cali	fornia Proposition 6	5. * * * * * * * * * * * * * * * * * * *
IICHIGAN CRITICAL MATERIALS : one of the substances are specifically listed	d in the regulation.	• • ·	
TATE RIGHT TO KNOW LAWS :	in the regulation.	на страна (пр. 1996) 1997 — Пр. 1997 — Пр. 1 1997 — Пр. 1997 — Пр. 1	
ATIONAL REGULATIONS, CANADA :	e Propositi de Catalan é e tra		• • • • • • • • • •
ORKPLACE HAZARDOUS MATERIALS IN his product has been classified in accordan PR) and the MSDS contains all the information of the information of the the information of the information o	ce with the hazard criteria of th ation required by the CPR.	e Controlled Produc	ts Regulations
HMIS CLASSIFICATION : ot considered a WHMIS controlled product.	estricale Brace est (* 11. 18. Stat Agene Million - 11		
	en polynte områdelse But Søre en som		
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Nalco Company 160	1 W. Diehl Road • Naperville, II (630)305-1000	linois 60563-1198	
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CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

INTERNATIONAL CHEMICAL CONTROL LAWS

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS) and are listed on the Australian Inventory of Chemical Substances (AICS).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

THE PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippine Inventory of Chemicals & Chemical Substances (PICCS).

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.

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MATERIAL SAFETY DATA SHEET PRODUCT

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

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.

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Prepared By: Product Safety Department Date issued: 02/26/2004 Version Number: 1.4		
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MATERIAL SAFETY DATA SHEET

PRODUCT

PCL-57

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

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :

PCL-57

APPLICATION :

SCALE INHIBITOR

Nalco Energy Services, L.P. P.O. Box 87 Sugar Land, Texas 77487-0087

EMERGENCY TELEPHONE NUMBER(S) :

(800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

COMPANY IDENTIFICATION:

HEALTH: 2/3 FLAMMABILITY: 1/1 INSTABILITY: 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)

 Hydroxyethylidenediphosphonic Acid
 2809-21-4
 60.0 - 100.0

 Phosphonic Acid
 13598-36-2
 1.0 - 5.0

3. | HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

Corrosive. May cause tissue damage.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. 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. Contact with reactive metals (e.g. aluminum) may result in the generation of flammable hydrogen gas. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of phosphorus (POx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE : Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Corrosive. Will cause eye burns and permanent tissue damage.

Nalco Energy Services, L.P. P.O. Box 87 • Sugar Land, Texas 77487-0087 (281)263-7000 1 / 11



May cause severe Imitation or tissue damage depending on the length of exposure and the type of first ald administered. NGESTION : Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach. NHALATION : Not a likely route of exposure. Imitating, in high concentrations, to the eyes, nose, throat and lungs. SYMPTOMS OF EXPOSURE : Aute : A review of available data does not identify any symptoms from exposure not previously mentioned. Chronic : Ydroxyethylenediphosphonic Acid (HEDP) has been reported to alter the development of the bone density by iffecting bone mineralization and calcium and phosphate metabolism in animal studies. AGGRAVATION OF EXISTING CONDITIONS : Verlew of available data does not identify any worsening of existing conditions. HUMAN HEALTH HAZARDS - CHRONIC : 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 Ygienists (ACGIH). I FIRST AID MEASURES EVE CONTACT : ROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 innutes while holding eyelids open. Get Immediate medical attention. KIN CONTACT : ROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 innutes while holding eyelids open. Get Immediate medical attention. KIN CONTACT : ROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 innutes while holding eyelids open. Get Immediate medical attention. KIN CONTACT : NOTACT : NOTICE : NOTACT : NO		PRODUCT
EMERGENCY TELEPHONE NUMBER(5) (800 424-9300 (24 Hours) CHEMTREC SKIN CONTACT: Way cause severe initiation or tissue damage depending on the length of exposure and the type of first ald administered. NGESTION: Vota likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and slomach. NNHALATION: Vota likely route of exposure. Initiating, in high concentrations, to the eyes, nose, throat and lungs. SYMPTOMS OF EXPOSURE: Variation of available data does not identify any symptoms from exposure not previously mentioned. Symptoms OF EXPOSURE: Variation of available data does not identify any symptoms from exposure not previously mentioned. Symptoms OF EXPOSURE: Variation of available data does not identify any symptoms from exposure not previously mentioned. Variation of available data does not identify any symptoms from exposure not previously mentioned. Variation of available data does not identify any symptoms from exposure not previously mentioned. Variation of available data does not identify any worsening of existing conditions. UMAN HEALTH HAZARDS - CHRONIC: None of the substances in this product are listed as carcinogens by the international Agency for Research on ancer (ARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Aylensits (ACGIH). Net CONTACT:	NALCO	
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71/44	EYE CONTACT : PROMPT ACTION IS ESSENTIAL IN CASE OF (ninutes while holding eyelids open. Get immedia KIN CONTACT : nmediately flush with plenty of water for at least temove contaminated clothing. Wash off affected ttention. Contaminated clothing, shoes, and least NGESTION : NO NOT INDUCE VOMITING. If conscious, wash ttention. NHALATION : temove to fresh air, treat symptomatically. Get m OTE TO PHYSICIAN : robable mucosal damage may contraindicate the	CONTACT. Immediately flush eye with water for at least 15 ate medical attention. 15 minutes. For a large splash, flood body under a shower. d area immediately with plenty of water. Get immediate medical ther goods must be discarded or cleaned before re-use. hout mouth and give water to drink. Get immediate medical nedical attention.

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PRODUCT

PCL-57

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

5. FIRE FIGHTING MEASURES

FLASH POINT :

> 200 °F / > 93 °C (TCC)

EXTINGUISHING MEDIA:

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

FIRE AND EXPLOSION HAZARD :

Contact with reactive metals (e.g. aluminum) may result in the generation of flammable hydrogen gas: May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of phosphorus (POx) 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, property 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. 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 in suitable labelled containers. Store separately from bases.

UNSUITABLE CONSTRUCTION MATERIAL :

Product is corrosive to aluminum. Aluminum should not be used for feed, storage, or transportation systems.



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	PCL-57	
4 A	EMERGENCY TELEPHONE NUM	BER(S)
	(800) 424-9300 (24 Hours) CHE	MTREC
B. EXPOSURE	CONTROLS/PERSONAL PROTECTION	
OCCUPATIONAL EXPO	SURE LIMITS : ntain any substance that has an established exposure lim	it.
ENGINEERING MEASU	RES : ommended. Use local exhaust ventilation if necessary to	control airborne mist and vapor.
RESPIRATORY PROTE		
concentrations a positive institute a complete respi		tory protection is required, aining, maintenance and ors or aerosols are generated an
IAND PROTECTION : Neoprene gloves, PVC gl		
SKIN PROTECTION :	Construction of the construction of the	
Vear chemical resistant a	apron, chemical splash goggles, impervious gloves and be	pots. A full slicker suit is
Vear chemical resistant a ecommended if gross ex	apron, chemical splash goggles, impervious gloves and bo	
Wear chemical resistant a recommended if gross ex EYE PROTECTION : Wear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, res	oots. A full slicker suit is
Vear chemical resistant a ecommended if gross ex EYE PROTECTION : - Vear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe wash the affected area.	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, rep aunder contaminated clothing before reuse.	nove clothing and thoroughly
Vear chemical resistant a ecommended if gross ex EYE PROTECTION :- Vear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe vash the affected area. L PHYSICAL A	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, ref aunder contaminated clothing before reuse.	nove clothing and thoroughly
Vear chemical resistant a ecommended if gross ex EYE PROTECTION :- Vear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe vash the affected area. L PHYSICAL A	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, ren aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid	nove clothing and thoroughly
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Wear chemical resistant a recommended if gross ex EYE PROTECTION : Wear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe wash the affected area.	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, rem aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid	nove clothing and thoroughly
Vear chemical resistant a ecommended if gross ex EYE PROTECTION :- Vear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe vash the affected area. L PHYSICAL STATE PPEARANCE DOR PECIFIC GRAVITY ENSITY OLUBILITY IN WATER	apron, chemical splash goggles, impervious gloves and be posure is possible. hemical splash goggles. DATIONS : ety shower are necessary. If clothing is contaminated, ref aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid Clear Light yellow None 1.41 - 1.47 @ 77 °F / 25 °C 11.7 - 12.2 lb/gal Complete	nove clothing and thoroughly
Vear chemical resistant a ecommended if gross ex EYE PROTECTION :- Vear a face shield with cl AYGIENE RECOMMEND and safe vash the affected area. L PHYSICAL STATE PPEARANCE DOR PECIFIC GRAVITY ENSITY OLUBILITY IN WATER H (1 %) ISCOSITY REEZING POINT OLUNG POINT	apron, chemical splash goggles, impervious gloves and be posure is possible. AATIONS : ety shower are necessary. If clothing is contaminated, refu- aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid Clear Light yellow None 1.41 - 1.47 @ 77 °F / 25 °C 11.7 - 12.2 lb/gal Complete <2 40 cps @ 77 °F / 25 °C -13 °F / -25 °C 226 °F / 108 °C	nove clothing and thoroughly
Wear chemical resistant a recommended if gross ex EYE PROTECTION : Wear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe wash the affected area. L PHYSICAL STATE APPEARANCE	apron, chemical splash goggles, impervious gloves and be posure is possible. AATIONS : ety shower are necessary. If clothing is contaminated, refu- aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid Clear Light yellow None 1.41 - 1.47 @ 77 °F / 25 °C 11.7 - 12.2 lb/gal Complete <2 40 cps @ 77 °F / 25 °C -13 °F / -25 °C	nove clothing and thoroughly
Vear chemical resistant a recommended if gross ex EYE PROTECTION :- Wear a face shield with cl HYGIENE RECOMMEND Eye wash station and safe vash the affected area. L PHYSICAL STATE PHYSICAL STATE APPEARANCE DOR SPECIFIC GRAVITY DENSITY SOLUBILITY IN WATER H (1 %) VISCOSITY REEZING POINT COLLING POINT APOR PRESSURE	apron, chemical splash goggles, impervious gloves and be posure is possible. AATIONS : ety shower are necessary. If clothing is contaminated, ren- aunder contaminated clothing before reuse. ND CHEMICAL PROPERTIES Liquid Clear Light yellow None 1.41 - 1.47 @ 77 °F / 25 °C 11.7 - 12.2 lb/gal Complete < 2 40 cps @ 77 °F / 25 °C -13 °F / -25 °C 226 °F / 108 °C Same as water	nove clothing and thoroughly

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Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.

HAZARDOUS POLYMERIZATION : Hazardous polymerization will not occur.

CONDITIONS TO AVOID : Freezing temperatures. Avoid temperatures greater than 392 °F

MATERIALS TO AVOID :

Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors. Contact with reactive metals (e.g. aluminum) may result in the generation of flammable hydrogen gas. Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon, Oxides of phosphorus

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE ORAL TO Species Rat Rating: Non-Ha	LD50 2,400 mg/kg	Test Descriptor Product
ACUTE DERMAL Species Rabbit Rating : Non-Ha	LD50 > 7,940 mg/kg	Test Descriptor Product
PRIMARY SKIN I Draize Score 0.0 / 8.0 Rating : Practica		Test Descriptor Product
PRIMARY EYE IF Draize Score 39 / 110.0 Rating : Moderat		Test Descriptor

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NALC	0	PRODUCT		
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		(800) 424-9300 (2	4 Hours) CH	EMTREC
SENSITIZATION : This product is not expected			de la sance (t	ula d ^{an} an mananan di katika di kawa Mananan mananan mananan katika
Cancer (IARC), the National	is product are li Toxicology Pro	sted as carcinogens by gram (NTP) or the Am	v the Internatio	onal Agency for Research on
Hygienists (ACGIH).		٠,	×	1. 1 - 10 - 10 - 1 - 1 - 1 - 14 A. 2007 (1
HUMAN HAZARD CHARAC Based on our hazard charac		otential human hazard	is: High	n de la Britan Britan († 1930) 1. de merioù e la Britañ († 1930) 1. de merioù e la Britañ († 1930)
12. ECOLOGICAL	NEORMATIC	NI		······································
IZ. ECOLOGICAL I				a direction of the second s
COTOXICOLOGICAL EFFI	ECTS:	医内内肌肉 建石油		en en ser ser en
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he following results are for t	the product.	, , , , , , , , , , , , , , , , , , , 	•	
CUTE FISH RESULTS :	2 10 1000	n y i na Maan av toch. N	·· •	
pecies	Exposure	LC50	Test Desc	riptor
athead Minnow	96 hrs	> 1,000 mg/l	Product	
luegill Sunfish	96 hrs	868 mg/l	Product	·····
ainbow Trout	96 hrs	368 mg/l	Product	
hannel Catfish	96 hrs	695 mg/l	Product	
heepshead Minnow	96 hrs	2,180 mg/l	Product	الم الحرية المراجع الم
	C			
Rating: Essentially non-toxic				
• , · ·				
CUTE INVERTEBRATE RE				
CUTE INVERTEBRATE RE	Exposure	LC50	EC50	Test Descriptor
CUTE INVERTEBRATE RE pecies aphnia magna	Exposure 48 hrs	LC50 520 mg/l	EC50	Test Descriptor Product
CUTE INVERTEBRATE RE Species Daphnia magna Grass Shrimp	Exposure 48 hrs 96 hrs	LC50	· · · · · · ·	Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies paphnia magna grass Shrimp tating : Essentially non-toxic ERSISTENCY AND DEGRA	ADATION :	LC50 520 mg/l	· · · · · · · · · · · · · · · · · · ·	Test Descriptor Product
CUTE INVERTEBRATE RE pecies aphnia magna trass Shrimp ating: Essentially non-toxic ERSISTENCY AND DEGRA hemical Oxygen Demand (C	Exposure 48 hrs 96 hrs c ADATION : COD) : 0.263	LC50 520 mg/l 1,770 mg/l	· · · · · · · · · · · · · · · · · · ·	Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies paphnia magna grass Shrimp ating : Essentially non-toxic ERSISTENCY AND DEGRA hemical Oxygen Demand (C iological Oxygen Demand (E	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l		Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies paphnia magna trass Shrimp tating : Essentially non-toxic ERSISTENCY AND DEGRA themical Oxygen Demand (C iological Oxygen Demand (E iological Oxygen Demand (E	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l		Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies aphnia magna irass Shrimp ating : Essentially non-toxic ERSISTENCY AND DEGR/ hemical Oxygen Demand (C iological Oxygen Demand (E	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l		Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies Daphnia magna Grass Shrimp tating : Essentially non-toxic PERSISTENCY AND DEGRA Chemical Oxygen Demand (C iological Oxygen Demand (C iological Oxygen Demand (E iological Oxygen Demand (E iological Oxygen Demand (E iological Oxygen Demand (E iological Oxygen Demand (E) iological Oxygen Demand (E)	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l		Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies aphnia magna trass Shrimp ating : Essentially non-toxic ERSISTENCY AND DEGR/ hemical Oxygen Demand (C iological Oxygen Demand (E cubation Period Value 0 mg/	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l 3 mg/l Control 12 (Northern B mg/l Control 12 (Northern Control 12 (piodegradable	Test Descriptor Product Product
CUTE INVERTEBRATE RE pecies aphnia magna trass Shrimp ating : Essentially non-toxic ERSISTENCY AND DEGR/ hemical Oxygen Demand (C iological Oxygen Demand (C))	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) :	LC50 520 mg/l 1,770 mg/l	piodegradable	Test Descriptor Product Product
ACUTE INVERTEBRATE RE Species Daphnia magna Grass Shrimp Rating : Essentially non-toxic PERSISTENCY AND DEGRA Chemical Oxygen Demand (C biological Oxygen	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) : 1 eparation is expension estimated using a l by the US EPA el does not requi	LC50 520 mg/l 1,770 mg	biodegradable el embedded i a steady state n the defined n	Test Descriptor Product Product
ACUTE INVERTEBRATE RE Species Daphnia magna Grass Shrimp Rating : Essentially non-toxic PERSISTENCY AND DEGRA Chemical Oxygen Demand (C Notiological Oxygen	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) : 1 eparation is exponent estimated using a l by the US EPA el does not requi eneral estimate of	LC50 520 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1 3 mg/l 1 Test Descriptor 1 Test Descriptor 1 Extension 1 for the environmental failed and the environmental fail	biodegradable el embedded i a steady state n the defined n te of this prod	Test Descriptor Product Product Product in the EPI (estimation program e condition between the total input nedia. The information provided is uct under the defined conditions of
ACUTE INVERTEBRATE RE pecies Paphnia magna prass Shrimp tating : Essentially non-toxic PERSISTENCY AND DEGRA themical Oxygen Demand (C iological Oxygen Demand (C	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) : 1 eparation is exponent estimated using a l by the US EPA el does not requi eneral estimate of	LC50 520 mg/l 1,770 mg	biodegradable el embedded i a steady state n the defined n te of this prod	Test Descriptor Product Product Product in the EPI (estimation program e condition between the total input nedia. The information provided is uct under the defined conditions of
0 mg/ The organic portion of this pre MOBILITY : The environmental fate was enterface) Suite TM , provided and output. The level III mode intended to give the user a ge	Exposure 48 hrs 96 hrs ADATION : COD) : 0.263 BOD) : 1 eparation is exponent estimated using a l by the US EPA el does not requi eneral estimate of	LC50 520 mg/l 1,770 mg/l 1,770 mg/l 1,770 mg/l 1 3 mg/l 1 Test Descriptor 1 Test Descriptor 1 Extension 1 for the environmental failed and the environmental fail	biodegradable el embedded i a steady state n the defined n te of this prod	Test Descriptor Product Product Product in the EPI (estimation program e condition between the total input nedia. The information provided is uct under the defined conditions of

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the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

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 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 as follows.

LAND TRANSPORT :

Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary : Packing Group :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. HYDROXYETHYLIDENE DIPHOSPHONIC ACID UN 3265 8 II
Flash Point :	> 93 °C / > 200 °F
AIR TRANSPORT (ICAO/IATA) :	
Proper Shipping Name : Technical Name(s) :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. HYDROXYETHYLIDENE DIPHOSPHONIC ACID

Nalco Energy Services, L.P. P.O. Box 87 • Sugar Land, Texas 77487-0087 (281)263-7000 7 / 11



NALCO	MATERIAL SAFETY DATA SHEET
	PRODUCT
	PCL-57
•	HONOR BUILD IN THE
	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
	and a second
UN/ID No : Hazard Class - Primary :	UN 3265
Packing Group :	
IATA Cargo Packing Instructions : IATA Cargo Aircraft Limit :	812 30 L (Max net quantity per package)
	The paper with the draw and the second states of the second states and t
MARINE TRANSPORT (IMDG/IMO):	and the second secon Second second
Proper Shipping Name :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. HYDROXYETHYLIDENE DIPHOSPHONIC ACID
Technical Name(s) : UN/ID No :	UN 3265
Hazard Class - Primary :	
Packing Group :	
15. REGULATORY INFORMATION	
NATIONAL REGULATIONS, USA :	2. A PREMI PROPERTY AND A PROPERTY AN A PROPERTY AND A PROPERTY
OSHA HAZARD COMMUNICATION RULE, 29 (CFR 1910.1200 : ubstance(s) in this product is/are hazardous and the reason(s) is/are
shown below.	
Hydroxyethylidenediphosphonic Acid: Corrosiv	re to eves Target Organ - Bone
Phosphonic Acid : Corrosive	
CERCLA/SUPERFUND, 40 CFR 117, 302 :	
Notification of spills of this product is not require	d
	- 「「本語」では、「「「」」でなる話。」 オート・キャッチャッチャッチ
	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311,
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 :	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311,
SARAVSUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311,
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : in Appendix A and B as an Extremely Hazardous Substance. Y DATA SHEET REQUIREMENTS (40 CFR 370) :
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY Our hazard evaluation has found this product to	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : in Appendix A and B as an Extremely Hazardous Substance. / DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY Our hazard evaluation has found this product to indicated EPA hazard categories:	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : in Appendix A and B as an Extremely Hazardous Substance. / DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY Our hazard evaluation has found this product to indicated EPA hazard categories: X Immediate (Acute) Heal	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : in Appendix A and B as an Extremely Hazardous Substance. (DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following Ith Hazard
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SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY Our hazard evaluation has found this product to indicated EPA hazard categories: X Immediate (Acute) Heal X Delayed (Chronic) Heal - Fire Hazard - Sudden Release of Pres - Reactive Hazard Under SARA 311 and 312, the EPA has establish The current thresholds are: 500 pounds or the th	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : In Appendix A and B as an Extremely Hazardous Substance. / DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following lth Hazard lth Hazard ssure Hazard
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 : SECTION 302 - EXTREMELY HAZARDOUS SU This product does not contain substances listed SECTIONS 311 AND 312 - MATERIAL SAFETY Our hazard evaluation has found this product to indicated EPA hazard categories: X Immediate (Acute) Heal X Delayed (Chronic) Heal - Fire Hazard - Sudden Release of Pres - Reactive Hazard Under SARA 311 and 312, the EPA has establish The current thresholds are: 500 pounds or the th	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, JBSTANCES (40 CFR 355) : in Appendix A and B as an Extremely Hazardous Substance. / DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following lth Hazard heat Hazard ssure Hazard ssure Hazard heat threshold quantities for the reporting of hazardous chemicals. areshold planning quantity (TPQ), whichever is lower, for extremely
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PRODUCT

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

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 substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act : When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / 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 :

The following substances are disclosed for compliance with State Right to Know Laws:

Water	7732-18-5
Hydroxyethylidenediphosphonic Acid	2809-21-4
Phosphonic Acid	13598-36-2

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

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

INTERNATIONAL CHEMICAL CONTROL LAWS

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AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS) and are listed on the Australian Inventory of Chemical Substances (AICS). • . . .

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EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories. $(x_i,y_i) \in \{x_i\} \in$. . .

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Ministry of International Trade & industry List (MITI).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

THE PHILIPPINES

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All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippine Inventory of Chemicals & Chemical Substances (PICCS).

OTHER INFORMATION 16.

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.

> Nalco Energy Services, L.P. P.O. Box 87 • Sugar Land, Texas 77487-0087 (281)263-7000 10/11

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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 : 02/26/2004 Version Number : 1.3



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	MATERIAL SAFETY DATA SHEET
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	H-130 MICROBIOCIDE
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1. CHEMICAL PRODUCT AND CO	OMPANY IDENTIFICATION
PRODUCT NAME :	H-130 MICROBIOCIDE
APPLICATION :	BIOCIDETWIN-CHAIN QUATERNARY AMMONIUM
AFFLICATION.	COMPOUND CONCENTRATE
	 Aggregation of the second se Second second seco
COMPANY IDENTIFICATION :	Nalco Company 1601 W. Diehl Road
	Naperville, Illinois
	60563-1198
EMERGENCY TELEPHONE NUMBER(S) :	(800) 424-9300 (24 Hours) CHEMTREC
NFPA 704M/HMIS RATING	
HEALTH: 3/3 FLAMMABILITY: 2/	
) = Insignificant 1 = Slight 2 = Moderate 3 =	-
2. COMPOSITION/INFORMATION	ON INGREDIEN 15
Our hazard evaluation has identified the followin nature of the hazard(s).	g chemical substance(s) as hazardous. Consult Section 15 for the
Hazardous Substance(s)	CAS NO % (w/w)
Didecyl-Dimethyl-Ammonium chloride	7173-51-5 30 - 60
Ethanol	64-17-5 10 - 30
3. HAZARDS IDENTIFICATION	مو د بو بر بو با
. Inazakoo identii toattok	
EME	ERGENCY OVERVIEW
	[10] A. K.
DANGER	An annuation and altim
	to aquatic organisms. Corrosive. Causes severe eye and skin ng. Wears goggles or face shield and rubber gloves when handling.
larmful or fatal if swallowed. Avoid contamination	on of food. KEEP OUT OF REACH OF CHILDREN. Corrosive to
yes and skin. Do not get in eyes, on skin or clot	hing. May be fatal if swallowed or inhaled. Do not swallow. Do not
reathe vapour or mist.	ne o construir de Balgana va construir construir de la construir de la construir de la construir de la constru La construir de Balgana de la construir de la c
	ake internally. Keep away from heat. Keep away from sources of
nillon - No smoking. Use will adequate vehilla case of contact with eves, rinse immediately w	ition. Keep container tightly closed and in a well-ventilated place.
	not get in eyes, on skin or on clothing. Wear goggles or face
hield and rubber gloves when handling. Harmfu	I if inhaled. Avoid breathing vapor. Remove contaminated
lothing and wash before reuse. Harmful or fatal	
Vear chemical resistant apron, chemical splash (
	res at or above the flash point. Empty product containers may heat, weld, or expose containers to flame or other sources of
	er fire conditions. May evolve oxides of nitrogen (NOx) under fire
	. May evolve ammonia (NH4) under fire conditions.
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Nalco Company 1601 W.	Diehl Road • Naperville, Illinois 60563-1198
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PRIMARY ROUTES OF EXPOSURE : Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered.

SKIN CONTACT:

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered.

INGESTION:

May cause burns to mouth and gastro-intestinal tract.

INHALATION:

Repeated or prolonged exposure may irritate the respiratory tract. Can cause central nervous system depression.

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

First Aid: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

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

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 :

109 °F / 43 °C (SETAFLASH)

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EXTINGUISHING MEDIA:

. . Foam, Carbon dioxide, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material. Water mist may be used to cool closed containers.

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Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of the solution of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve HCI under fire conditions. May evolve ammonia (NH4) 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.

ACCIDENTAL RELEASE MEASURES 6.

PERSONAL PRECAUTIONS:

Notify appropriate government, occupational health and safety and environmental authorities. 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. Eliminate ignition sources. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

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 product is toxic to fish and other water organisms. Do not discharge directly into lakes, ponds, streams, waterways or public water supplies.

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HANDLING AND STORAGE 7.

HANDLING:

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid release of vapors or mists into workplace air. Keep the containers closed when not in use. Do not use in locations where vapor is likely to travel to welding flames or arcs or to other hot surfaces. Vapors are much heavier than air, this can are a surfaces. result in uneven distribution. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS:

Store away from heat and sources of ignition. Connections must be grounded to avoid electrical charges. Store the containers tightly closed. Store separately from oxidizers. Store in suitable labelled containers.

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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) Ethanol

TWA: 1,000 ppm, 1,880 mg/m3

OSHA/PEL : Substance(s) Ethanol

TWA: 1,000 ppm , 1,900 mg/m3

ENGINEERING MEASURES : Use general ventilation with local exhaust ventilation.

RESPIRATORY PROTECTION:

If significant mists, vapors or aerosols are generated an approved respirator is recommended. An organic vapor cartridge with dust/mist prefilter 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, Viton# gloves

SKIN PROTECTION : Wear impervious apron and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION : Wear 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. Use good work and personal hygiene practices to avoid exposure.

9. PHYSICAL	AND CHEMICAL PROPERTIES	
PHYSICAL STATE	Liquid	
APPEARANCE	Light yellow	
ODOR	Alcoholic	
SPECIFIC GRAVITY DENSITY	0.93 @ 77 °F / 25 °C 7.7 lb/gal	
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12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

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ACUTE FISH RESULTS :	· · · ·	ار اور او افریکه دروزن دارد. ا	and the second
Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	2.2 mg/l	المردان والموجا بالأفراد المراجع ومرجو والمردان
Bluegill Sunfish	96 hrs	0.92 mg/l	الم
Pating : Veny toxic			

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Rating: Very toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	0.19 mg/l		والمعادية
Mysid Shrimp (Mysidopsis bahia)	96 hrs	0.14 mg/l		
Rating : Very 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: D001

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.

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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 as follows.

LAND TRANSPORT:

Proper Shipping Name : Technical Name(s) :	n. 14 (<u>n</u> .	DISINFECTANTS, LIQUID, CORROSIVE, N	1.O.S. DE
UN/ID No: 1 March 100 Photo	11-11-15	UN 1903	, • · · ·
Hazard Class - Primary :		8	· * * •
Packing Group :	•	11,	

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PRODUCT

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

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SOLUBILITY IN WATER pH (1 %) VISCOSITY FREEZING POINT VAPOR PRESSURE VOC CONTENT Complete 7.0 - 8.0 < 100 cps @ 77 °F / 25 °C 12 °F / 30 mm Hg @ 77 °F / 25 °C 10 % EPA Method 24

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.

HAZARDOUS POLYMERIZATION : Hazardous polymerization will not occur.

CONDITIONS TO AVOID: Heat and sources of ignition including static discharges.

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. Contact with reducing agents (e.g. hydrazine, sulfites, sulfide, aluminum or magnesium dust) may generate heat, fires, explosions and toxic vapors.

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

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE ORAL TOXICITY : Species LD50 Rat 645 mg/kg

ACUTE DERMAL TOXICITY : Species LD50 Rabbit > 4 g/kg Test Descriptor Product

Test Descriptor Product

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).

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	MATERIAL SAFETY DATA SHEET PRODUCT
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	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
Flash Point :	1 (1< 3 0μ) μθ ^{1 (1}) 43 °C / 109 °F
DOT Reportable Quantity (per package) DOT RQ Component :	ge): 1,000 lbs ETHANOL
AIR TRANSPORT (ICAO/IATA) :	
Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary : Hazard Class - Secondary : Packing Group : IATA Cargo Packing Instructions : IATA Cargo Aircraft Limit :	CORROSIVE LIQUID, FLAMMABLE, N.O.S. DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL UN 2920 8 3 II (Max net quantity per package)
MARINE TRANSPORT (IMDG/IMO) :	
Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary : Hazard Class - Secondary : Packing Group :	CORROSIVE LIQUID, FLAMMABLE, N.O.S. DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL 'UN 2920 8 3 11
15. REGULATORY INFORMATIO	No construction of the second se
NATIONAL REGULATIONS, USA :	
OSHA HAZARD COMMUNICATION RULE, 29 Based on our hazard evaluation, the following shown below.	9 CFR 1910.1200 : substance(s) in this product is/are hazardous and the reason(s) is/are
Didecyl-Dimethyl-Ammonium chloride : Corros Ethanol : Flammable	sive
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 quires notification to the NATIONAL RESPONSE CENTER,
RQ Substance Ethanol	<u>RQ</u> 1,000 lbs 10,000 lbs
SARA/SUPERFUND AMENDMENTS AND RE 312, AND 313 :	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311,

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PRODUCT

H-130 MICROBIOCIDE

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

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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 indicated EPA hazard categories:

- X Immediate (Acute) Health Hazard
- Delayed (Chronic) Health Hazard
- X 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 substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) : EPA Reg. No. 1706-186 In all cases follow instructions on the product label.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / 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) : This product contains the following substances listed in the regulation:

Substance(s)	Citations
Ethanol	Sec. 111

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.

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H-130 MICROBIOCIDE

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

NATIONAL REGULATIONS, CANADA :

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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.

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WHMIS CLASSIFICATION :

Pesticide controlled products are not regulated under WHMIS.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): The substances in this preparation 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

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.

> Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 9 / 10



PRODUCT

H-130 MICROBIOCIDE

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

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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 : 02/28/2004 Version Number : 1.6 I

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H-940 MICROBIOCIDE

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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1.	CHEMICAL	PRODUCT	AND C	OMPANY	IDEN	TIFICATIO	N

PRODUCT NAME :

H-940 MICROBIOCIDE

APPLICATION :

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INDUSTRIAL LIQUID MICROBIOCIDE

COMPANY IDENTIFICATION :

Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198

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

NFPA 704M/HMIS RATING

HEALTH: 1/1 FLAMMABILITY: 0/0 INSTABILITY: 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		Sec. Sec. 1	7647-15-6	30.0 - 60.0

3. HAZARDS IDENTIFICATION

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WARNING

Irritation may develop from eye and skin exposure. Avoid contact with eyes. Wear glo	ves	and	l safe	ety g	oggle	S
Wash contaminated clothing before reuse.			•			
Avoid contact with eyes, skin and clothing. Wash with soap and water after handling. R	emc	ive	cont	amin	ated	
clothing and wash before reuse.						· · · ·
May evolve hydrogen bromide and bromine under fire conditions.		•	•		•	2

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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.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000

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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.

FIRST AID MEASURES 4.

Eve contact; Flush eyes with cold water for at least 15 minutes. If irritation persists, seek medical attention,

Skin contact: Prolonged contact can produce skin irritation. If skin contact occurs, wash with cold water for 15 minutes.

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. FLASH POINT :

FIRE FIGHTING MEASURES

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.

PRODUCT

H-940 MICROBIOCIDE

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

METHODS FOR CLEANING UP :

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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.

Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

SKIN PROTECTION : Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

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PRODUCT

H-940 MICROBIOCIDE

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

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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 DENSITY SOLUBILITY IN WATER pH (100 %) FREEZING POINT BOILING POINT VAPOR PRESSURE VOC CONTENT		1.43 @ 77 °F / 25 °C 11.9 lb/gal Complete 5.5 - 9.0 -10 °F / -23.3 °C 218 °F / 103.5 °C Same as water 0.00 % EPA Method 24

Note: These physical properties are typical values for this product and are subject to change.

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 Rat > 5,000 mg/kg

Test Descriptor Product

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 4 / 9

	$\mathbf{}$	PRODUCT			
INALU		H-940 MICF	ROBIOCIDE	•	
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Rating: Non-Hazardous	· · · ·				
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ACUTE DERMAL TOXICITY Species LD50 Rabbit > 2,000 m		Test Descriptor Product			• •
Rating: Non-Hazardous		n net date	:		
PRIMARY SKIN IRRITATION Draize Score 0.4 / 8.0	Test De	escriptor Product	• • • •		• • •
Rating: Minimally irritating				and the second sec	· · · ·
PRIMARY EYE IRRITATION Draize Score		escriptor	· · · · · · · · · · · · · · · · · · ·		
10.8 / 110.0 Rating: Practically non-irritat	Similar ting	Product	•	n an an tha at sitte at site. An an an tha at site at site and a	- î. ; · . * .
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PRODUCT

H-940 MICROBIOCIDE

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

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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 as follows.

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.

> Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 6 / 9

MATERIAL SAFETY DATA SHEET
NALCO PRODUCT
H-940 MICROBIOCIDE
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
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 indicated EPA hazard categories:
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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 INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) : EPA Reg. No. 1706-217 In all cases follow instructions on the product label.
FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / 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: Contract of the state of the s
MICHIGAN CRITICAL MATERIALS : A strange and the second base of the substances are specifically listed in the regulation.
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Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198

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PRODUCT

H-940 MICROBIOCIDE

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

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

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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.

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INALCO	H-940 MICROBIOCIDE
	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
he Teratogen Information System, Universi licromedex, Inc., Englewood, CO.	ty of Washington, Seattle, WA (TOMES CPS# CD-ROM Version),
repared By : Product Safety Department ate issued : 02/28/2004	
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GE Betz

GE Betz, Inc. 4636 Somerton Road Trevose, PA 19053 Business telephone: (215) 355-3300 Material Safety Data Sheet

Issue Date: 17-MAY-2001

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

SPECTRUS NX1106

PRODUCT APPLICATION AREA:

WATER-BASED MICROBIAL CONTROL AGENT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation. This product is subject to the Pennsylvania and New Jersey Worker and Community Right to Know Law.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
10377-60-3	MAGNESIUM NITRATE Oxidizer; irritant (eyes and skin)
26172-55-4	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE Corrosive; toxic (by ingestion and skin absorption); sensitizer (skin)

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

NON-HAZARDOUS INGREDIENTS:

CAS# CHEMICAL NAME

7732-18-5 WATER

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

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DANGER

Corrosive to skin. Skin sensitizer with delayed onset of symptoms. Corrosive to the eyes. Mists/aerosols cause irritation to the upper respiratory tract. The second se

DOT hazard: Corrosive to skin Emergency Response Guide #153 Odor: Slight; Appearance: Light Yellow To Green, Liquid

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; Corrosive to skin. Skin sensitizer with delayed onset of symptoms.

ACUTE EYE EFFECTS:

Corrosive to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols cause irritation to the upper respiratory tract. INGESTION EFFECTS:

May cause severe irritation or burning of mouth, throat, and gastrointestinal tract with severe chest and abdominal pain, nausea, vomiting, diarrhea, lethargy and collapse. Possible death when ingested in very large doses.

TARGET ORGANS:

Prolonged or repeated exposures may cause tissue necrosis and/or skin sensitization.

MEDICAL CONDITIONS AGGRAVATED: Not known.

SYMPTOMS OF EXPOSURE:

Direct contact with skin will cause severe delayed skin reactions or burns if not washed off immediately- follow first aid . . . instructions. -52

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States & Barrison B. 4 FIRST AID MEASURES and the second second

SKIN CONTACT:

URGENT! Wash thoroughly with soap and water. Remove contaminated clothing. Get immediate medical attention. Thoroughly wash clothing before reuse.

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EYE CONTACT:

URGENT! Immediately flush eyes with plenty of low-pressure water for at least 20 minutes while removing contact lenses. Hold eyelids apart. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air

and get medical attention.
INGESTION:
Do not feed anything by mouth to an unconscious or convulsive
victim. Do not induce vomiting. Immediately contact physician.
Dilute contents of stomach using 3-4 glasses milk or water.
NOTES TO PHYSICIANS:
Material is corrosive. It may not be advisable to induce vomiting.
Possible mucosal damage may contraindicate the use of gastric
lavage.

5 FIRE FIGHTING MEASURES

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

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Do not add decontaminant solution to waste drum containing biocide or adsorbent. Decontaminate floor residual with 10% metabisulfite solution. Use 10 volumes of solution to one volume of spill.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Dispose of in approved pesticide facility or according to label instructions.

7 HANDLING & STORAGE

HANDLING:

Contains an oxidizer. Avoid all contact with reducing agents, oils, greases, organics and acids. Corrosive to skin and/or eyes.

STORAGE:

Keep containers closed when not in use. Store between 20-100F for no more than 6 months. Store upright in original vented containers. Product evolves CO2 slowly. Store samples in plastic bottles due to pressure build-up. < 1.00

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

MAGNESIUM NITRATE PEL (OSHA): NOT DETERMINED TLV (ACGIH): NOT DETERMINED 5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED
MISC: Note-mfg. sugg. exp. limit:0.1 mg/m3 TWA;0.3mg/m3 STEL total
isothiazoline).

ENGINEERING CONTROLS:

Adequate ventilation to maintain air contaminants below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I RESPIRATORY PROTECTION:

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

gauntlet-type butyl gloves, chemical resistant apron-- Wash
off after each use. Replace as necessary.
EYE PROTECTION:

splash proof chemical goggles, face shield

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9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav.(70F,21C)1.033Freeze Point (F)28Freeze Point (C)-2Viscosity(cps 70F,21C)8

Vapor Pressure (mmHG) ~ 18.0 Vapor Density (air=1) < 1.00 * Solubility (water) 100.0

Odor Appearance Physical State Flash Point P-M(CC) pH As Is (approx.) Evaporation Rate (Ether=1) % Solubility (wate Slight Light Yellow To Green Liquid > 200F > 93C 3.0 < 1.00</pre>

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

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

11 TOXICOLOGICAL INFORMATION

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Oral LD50 RAT: Teratology : Dermal LD50 RABBIT: NOTE - Estimated value Skin Sensitization HUMAN: Non-Ames Mutagenicity : >5,000 mg/kg NEGATIVE >2,000 mg/kg

POSITIVE NEGATIVE

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Acute Bioassay LC50= 12.1; No Effect Level= 6.5 mg/L
Daphnia magna 48 Hour Flow-Thru Bioassay LC50= 2.9; 10% Mortality= .6 mg/L
Fathead Minnow 36 Day Early Life Stage Test LOEC= 4; No Effect Level= 1.3 mg/L
Fathead Minnow 96 Hour Flow-Thru Bioassay LC50= 6.6; No Effect Level= 2.5 mg/L
Rainbow Trout 14 Day Chronic Bioassay LC50= 4.6; No Effect Level= 3.3 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay LC50= 8.7; No Effect Level= 6.5 mg/L
Sheepshead Minnow 96 Hour Static Acute Bioassay LC50= 20; No Effect Level= 12 mg/L

BIODEGRADATION

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BOD-28 (mg/g): 0
BOD-5 (mg/g): 0
COD (mg/g): 17
TOC (mg/g): 6
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13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

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

15 REGULATORY INFORMATION

TSCA: This is an EPA registered biocide and is exempt from TSCA inventory requirements. CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ): No regulated constituent present at OSHA thresholds FIFRA REGISTRATION NUMBER: 3876- 143 FOOD AND DRUG ADMINISTRATION:

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	he ingredients 76.300.	in this product are appro	ved by FDA under 21 CFR	
	DERALLY INSPECT EC.G7	ED MEAT AND POULTRY PLANT	5:	
SARA SE	CTION 312 HAZAR			
	mmediate(acute) CTION 302 CHEMI	;Delayed(Chronic) (
N	o regulated con	stituent present at OSHA	thresholds	e e e e
	CTION 313 CHEMI	CALS: CHEMICAL NAME	RANGE	
	7-60-3	MAGNESIUM NITRATE	2.0-5.0%	· · · · ·
CALIFORNIA I	REGULATORY INFO	RMATION		
		NG WATER AND TOXIC SITION 65) CHEMICALS PRES		1
	-	- 		
		tuent present at OSHA three	esholds	
MICHIGAN RE	SULATORY INFORM	ATION		
No re	egulated consti	tuent present at OSHA three	esholds	
16 OTHER	INFORMATI			,
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NFPA/1	IMIS		CODE TRANSLATION	
Health		3 Serious Ha	,	
Reactiv: Special	lty	0 Minimal Ha: CORR DOT corros		
(1) Prot	cective Equipment	nt D Goggles, Fac	e Shield, Gloves, Apron	
(1) Prot (1) 1	cective Equipments refer to section	nt D Goggles, Fac n 8 of MSDS for additional	e Shield, Gloves, Apron	
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PRODUCT

H-550

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

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :

H-550

APPLICATION :

COMPANY IDENTIFICATION :

Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198

MICROBIOCIDE

EMERGENCY TELEPHONE NUMBER(S) :

(800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

HEALTH: 3/3 FLAMMABILITY: 1/1 INSTABILITY: 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)	C	CAS NO	% (w/w)
Glutaraldehyde		· 1	111-30-8	30.0 - 60.0

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if inhaled. May be fatal if swallowed. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Causes asthmatic signs and symptoms in hyper-reactive individuals.

Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Do not swallow. Wear goggles, protective clothing, and rubber gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Not flammable or combustible. May evolve oxides of carbon (COx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE : Eye, Skin, Inhalation

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Corrosive. Will cause eye burns and permanent tissue damage.

PRODUCT

H-550

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SKIN CONTACT :

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

INGESTION :

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

INHALATION :

Irritating, in high concentrations, to the eyes, nose, throat and lungs. Inhalation of product mist or vapors may cause respiratory allergy.

SYMPTOMS OF EXPOSURE :

NALCO

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned. Chronic : and the second state of the se 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.

HUMAN HEALTH HAZARDS - CHRONIC : Prolonged inhalation of product can increase lung injury in persons with emphysema, asthma, or other lung disorders.

FIRST AID MEASURES 4.

EYE CONTACT :

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

SKIN CONTACT :

Get immediate medical attention. 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. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

INGESTION:

Get immediate medical attention. DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to States and the states in the drink.

in the second ウトレートおようさくのない INHALATION : Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. Get immediate medical attention.

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

IF INHALED: Remove to fresh air. If breathing is difficult, administer oxygen. If symptoms persist, call a physician.

IF SWALLOWED: DO NOT INDUCE VOMITING. Do not give anything to drink. Seek medical advice with urgency.



PRODUCT

H-550

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

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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.

5.		IGHTING	MEACI	IDEC
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FLASH POINT :

None

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.

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. Dilute the glutaraldehyde to 5% or less with water. Add sodium bisulfite (2-3 parts by weight per part glutaraldehyde). This will typically reduce the glutaraldehyde concentration to 2 ppm or less in 5 minutes at room temperature. The remaining solution can be disposed of via appropriate means. 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. 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.

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	MATERIAL SAFETY DATA SHEET
NALCO	PRODUCT H-550
	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
7. HANDLING AND STORAGE	
HANDLING : Do not get in eyes, on skin, on clothing. Do not aerosols and mists. Keep the containers closed leaks, etc.) readily available.	take internally. Use with adequate ventilation. Avoid generating when not in use. Have emergency equipment (for fires, spills,
STORAGE CONDITIONS : Store the containers tightly closed. Store separa	ately from oxidizers. Store in suitable labelled containers.
SUITABLE CONSTRUCTION MATERIAL : Compatibility with Plastic Materials can vary; we	therefore recommend that compatibility is tested prior to use.
UNSUITABLE CONSTRUCTION MATERIAL : Aluminum, Tin, Zinc, Steel	and and an
8. EXPOSURE CONTROLS/PERS	
shown below. ACGIH/TLV : Substance(s)	for this product. Available exposure limits for the substance(s) are
OSHA/PEL :	
Substance(s) Giutaraldehyde CEILING: 0.2 pp	pm , 0.8 mg/m3
ENGINEERING MEASURES : General ventilation is recommended. Use local e	exhaust ventilation if necessary to control airborne mist and vapor.
cartridge may be used. In event of emergency or	ated an approved respirator is recommended. A dust, mist, fume r planned entry into unknown concentrations a positive pressure, ry protection is required, institute a complete respiratory protection naintenance and inspection.
HAND PROTECTION : BUTYL GLOVES, NEOPRENE GLOVES, Viton#	n and the gradient of the second of the s gloves ?™™™ and a second of the second of t
SKIN PROTECTION : Wear chemical resistant apron, chemical splash g recommended if gross exposure is possible.	goggles, impervious gloves and boots. A full slicker suit is

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Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 4 / 12



PRODUCT	
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H-550

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

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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 Colorless

ODOR Aldehyde

SPECIFIC GRAVITY	1.11 - 1.13 @ 77 °F / 25 °C
DENSITY	9.4 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	3.1 - 4.5
VISCOSITY	21 cps @ 68 °F / 20 °C
FREEZING POINT	-5.8 °F / -21 °C
BOILING POINT	213 °F / 100.5 °C
VAPOR PRESSURE	16 mm Hg
VAPOR DENSITY	1.1
VAPOR DENSITY	1.1
VOC CONTENT	54 % EPA Method 24

Note: These physical properties are typical values for this product and are subject to change.

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 strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS : Under fire conditions: Oxides of carbon

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	MATERIAL SAFETY DATA SHEET
NALCO	PRODUCT
	H-550
	EMERGENCY TELEPHONE NUMBER(S)
	(800) 424-9300 (24 Hours) CHEMTREC
11. TOXICOLOGICAL INFORMAT	
The following results are for the product.	
ACUTE ORAL TOXICITY :	
Species LD50 Rat 1,300 mg/kg	Test Descriptor Product Glutaraldehyde
Rat 1.2 ml/kg	45% Active Ingredient
	25% Active Ingredient
Rat 1.07 - 1.62 ml/kg Rating : Harmful	10% Active Ingredient
raung. Hannur.	
ACUTE DERMAL TOXICITY :	
SpeciesLD50Rabbit897 mg/kg	Test Descriptor
Rabbit 2.00 - 2.71 ml/kg	Product Glutaraldehyde 45% Active Ingredient
Rabbit 8.0 - 12.8 ml/kg	25% Active Ingredient
Rating: Harmful	
ACUTE INHALATION TOXICITY : Species LC50 Rat 0.48 mg/l () Rating : Very Toxic	Test Descriptor Product
PRIMARY SKIN IRRITATION: At 10% or great irritation, with possible necrosis after prolonged of	ter, glutaraldehyde solutions may cause moderate to severe contact.
PRIMARY EYE IRRITATION: At levels of 0.2% above 0.2% of glutaraldehyde produced modera	6 and below of glutaraldehyde, no eye irritation was noted. Levels te to severe irritation and corneal injury.
SENSITIZATION:	
Levels of greater than 0.2% of glutaraidehyde pr	oduced allergic contact dermatitis in human studies. May cause
sensitization by inhalation and skin contact.	n an ann an Arland an Arland ann an Arland ann an Arland an Arland an Arland an Arland an Arland an Arland an A Arland an Arland an A Arland an Arland an A
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 Hygienists (ACGIH).	n (NTP) or the American Conference of Governmental Industrial
HUMAN HAZARD CHARACTERIZATION :	المعلقي . المراجع معري المعري المعالي المعالية المعرف المرأة المعمر من 1999 من المعري المعرف المعرف المعرف الم
Based on our hazard characterization, the potent	tial human hazard is: High
12. ECOLOGICAL INFORMATION	S. M. ART BELLEVICE TO DUTING TO THE ACTIVATION OF THE ACTIVATI
ECOTOXICOLOGICAL EFFECTS :	per states to respect to the second
The following results are for the product along with	th results on the active substances.
:	
Nalco Company 1601 W	Diehl Road • Naperville, Illinois 60563-1198

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•.



PRODUCT

H-550

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

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor	
Bluegill Sunfish	96 hrs	22.4 mg/l	Product	
Fathead Minnow	96 hrs	10.8 mg/l	Product	
Sheepshead Minnow	96 hrs	64 mg/l	Product	
Rainbow Trout	96 hrs	24 mg/l	Product	

Rating: Slightly toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor	
Daphnia magna	48 hrs	11.5 mg/l		Product	
Shore Crab	96 hrs	930 mg/l		Product	
Grass Shrimp	96 hrs	82 mg/l		Product	
Mysid Shrimp (Mysidopsis bahia)	96 hrs	14.2 mg/l		Product	
American Oyster	96 hrs	· · ·	1.56 mg/l	Product	
Acartia tonsa	48 hrs		0.22 mg/l	Product	

Rating: Slightly toxic

AQUATIC PLANT RESULTS :

Species	Exposure	EC50/LC50	Test Descriptor	
Marine Algae (Skeletonema costatum)	72 hrs	1.22 mg/l	Product	
Algae (Scenedesmus subspicatus)	72 hrs	1.7 mg/l	Product	

Rating: Toxic

AQUATIC MICROORGANISM RESULTS :

Species	Exposure	EC50/LC50	Test Descriptor
Sewage Microorganisms	96 hrs	34 mg/l	Active Substance

AVIAN RESULTS :

Species	Exposure	LC50	Test Descriptor
Bobwhite Quail	8 Days	10,000 ppm	Active Substance
Mallard Duck	8 Days	10,000 ppm	Active Substance
Mallard Duck		933 mg/kg	50% Active Ingredient

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 7 / 12

	MATERIAL SAFET			
	PRODUCT			
INALOO	H-550			
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and a second s Second second s Second second	EMERGENCY TELEPHO (800) 424-9300 (24 Hours			
he portion in water is expected to be soluble	e or dispersible.			
IOACCUMULATION POTENTIAL his preparation or material is not expected to	o bioaccumulate.			
NVIRONMENTAL HAZARD AND EXPOSU lased on our hazard characterization, the po	RE CHARACTERIZATION	is: Moderate		· · · · · · · · · · · · · · · · · · ·
released into the environment, see CERCL	A/SUPERFUND in Section 1	5		
3. DISPOSAL CONSIDERATIO	NS ⁺	,	n an	
this product becomes a waste, it is not a ha ct (RCRA) 40 CFR 261, since it does not ha				
s a non-hazardous waste, it is not subject to andling, treatment or disposal requirements. sposal or recycling facility.	federal regulation. Consult s For disposal, contact a prop	state or local regi perly licensed wa	llation for any add ste treatment, sto	itional rage,
or recycling or reconditioning, or puncture an tate and local authorities. Plastic Containers	d dispose of in a sanitary lan s: May be incinerated, or, if a	dfill, or other pro	cedures approved and local authoritie	by s, by
or recycling or reconditioning, or puncture an tate and local authorities. Plastic Containers urning. If burned, stay out of smoke. Metal	d dispose of in a sanitary lan s: May be incinerated, or, if a	dfill, or other pro	cedures approved and local authoritie	by s, by
or recycling or reconditioning, or puncture an tate and local authorities. Plastic Containers uming. If burned, stay out of smoke. Metal netal containers.	d dispose of in a sanitary lan s: May be incinerated, or, if a Containers: Must not be inci	dfill, or other pro illowed by state a nerated. Do not	cedures approved and local authoritie cut or weld on or i	by s, by
or recycling or reconditioning, or puncture an tate and local authorities. Plastic Containers uming. If burned, stay out of smoke. Metal hetal containers. 4. TRANSPORT INFORMATION he information in this section is for reference pecific to an order. Please note that the proc	d dispose of in a sanitary lan s: May be incinerated, or, if a Containers: Must not be inci only and should not take the per Shipping Name / Hazard	dfill, or other pro illowed by state a nerated. Do not	cedures approved and local authoritie cut or weld on or i	by near ading) perties
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or recycling or reconditioning, or puncture and tate and local authorities. Plastic Containers uming. If burned, stay out of smoke. Metal hetal containers.	d dispose of in a sanitary lan S: May be incinerated, or, if a Containers: Must not be inci a only and should not take the per Shipping Name / Hazard hipping Names for this produ	dfill, or other pro illowed by state a nerated. Do not place of a shipp Class may vary b ict are as follows D. ACIDIC. ORG	cedures approved and local authoritie cut or weld on or i bing paper (bill of la by packaging, prop ANIC, N.O.S.	by near ading) perties,
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AND TRANSPORT : Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary :	d dispose of in a sanitary lan : May be incinerated, or, if a Containers: Must not be inci e only and should not take the ber Shipping Name / Hazard hipping Names for this produ CORROSIVE LIQUI GLUTARALDEHYD UN 3265 8 II	dfill, or other pro illowed by state a nerated. Do not e place of a shipp Class may vary t ict are as follows D, ACIDIC, ORG E	cedures approved and local authoritie cut or weld on or i bing paper (bill of l by packaging, prop ANIC, N.O.S.	by near ading) perties,
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r recycling or reconditioning, or puncture an ate and local authorities. Plastic Containers uming. If burned, stay out of smoke. Metal etal containers.	d dispose of in a sanitary lan : May be incinerated, or, if a Containers: Must not be inci a conly and should not take the ber Shipping Name / Hazard hipping Names for this produced CORROSIVE LIQUI GLUTARALDEHYDI UN 3265 8 II None CORROSIVE LIQUI GLUTARALDEHYDI	dfill, or other pro illowed by state a nerated. Do not e place of a shipp Class may vary t ict are as follows D, ACIDIC, ORG E	ANIC, N.O.S.	by near ading) perties,
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NALCO	MATERIAL SAFETY DATA SHEET PRODUCT H-550
	EMERGENCY TELEPHONE NUMBER(S)
	(800) 424-9300 (24 Hours) CHEMTREC
IATA Cargo Packing Instructions : IATA Cargo Aircraft Limit :	812 30 L (Max net quantity per package)
MARINE TRANSPORT (IMDG/IMO) :	· · ·
Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary : Packing Group :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. GLUTARALDEHYDE UN 3265 · 8 II
15. REGULATORY INFORMATIO	N
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.

Glutaraldehyde : Corrosive, Sensitizer

CERCLA/SUPERFUND, 40 CFR 117, 302 : This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product.

RQ Substance Methanol

<u>RQ</u> 5.000 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 indicated 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.

	MATERIAL SAFETY DATA SHEET
NALCO	PRODUCT
INALCO	H-550
	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
SECTION 313 - LIST OF TOXIC CHEMICALS (40 This product contains the following substance(s), (Chemicals	CFR 372) : with CAS # and % range) which appear(s) on the List of Toxic
<u>Hazardous Substance(s)</u> Methanol	<u>CAS NO</u> <u>% (w/w)</u> 67-56-1 1.0 - 5.0
TOXIC SUBSTANCES CONTROL ACT (TSCA) : This product is exempted under TSCA and regulat	ed under FIFRA. The inerts are on the Inventory List.
FEDERAL INSECTICIDE, FUNGICIDE AND ROD EPA Reg. No. 464-704-1706 In all cases follow instructions on the product label	A Weight And A Strand Control and A strand Control of A strand strand strands.
FEDERAL WATER POLLUTION CONTROL ACT, CFR 116.4 / formerly Sec. 311 : None of the substances are specifically listed in the	CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 e regulation.
CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile O Pollutants), Sec. 602 (40 CFR 82, Class I and II Oz This product contains the following substances liste	
Substance(s)	Citations
Methanol	Sec. 111, Sec. 112
CALIFORNIA PROPOSITION 65 :	
This product does not contain substances which re	quire warning under California Proposition 65.
MICHIGAN CRITICAL MATERIALS : None of the substances are specifically listed in the	regulation.
· · · · · · · · · · · · · · · · · · ·	and the second
STATE RIGHT TO KNOW LAWS : This product is a registered biocide and is exempt f	rom State Right to Know Labelling Laws.
Glutaraldehvde	67-56-1 111-30-8
NATIONAL REGULATIONS, CANADA :	
WORKPLACE HAZARDOUS MATERIALS INFORM This product has been classified in accordance with (CPR) and the MSDS contains all the information re	the hazard criteria of the Controlled Products Regulations equired by the CPR.
WHMIS CLASSIFICATION :	
Pesticide controlled products are not regulated unde	er WHMIS.
	iehl Road • Naperville, Illinois 60563-1198
(630)305-1000 10 / 12

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PRODUCT

H-550

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

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

INTERNATIONAL CHEMICAL CONTROL LAWS

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Chemical Control Law and are listed on the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Ministry of International Trade & industry List (MITI).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

NEW ZEALAND

This product's trade name is registered with the Environmental Risk Management Authority (ERMA).

THE PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippine Inventory of Chemicals & Chemical Substances (PICCS).

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.

NALCO	MATERIAL SAFETY PRODUCT H-550	DATA SHEET	
· · · · · · · · · · · · · · · · · · ·	EMERGENCY TELEPHONE (800) 424-9300 (24 Hours)		
IARC Monographs on the Evaluation of the Organization, International Agency for Re	he Carcinogenic Risk of Chemicals	And the second second second second	
Integrated Risk Information System, U.S. ROM Version), Micromedex, Inc., Englew	Environmental Protection Agency, vood, CO.	Washington, D.C. (TOMES CPS# CD	
Annual Report on Carcinogens, National * Public Health Service.	Toxicology Program, U.S. Departm		
Title 29 Code of Federal Regulations, Par and Health Administration (OSHA), (Ariel	rt 1910, Subpart Z, Toxic and Haza Insight# CD-ROM Version), Ariel F	rdous Substances, Occupational Safe tesearch Corp., Bethesda, MD.	ty - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995
Registry of Toxic Effects of Chemical Sub OH, (TOMES CPS# CD-ROM Version), M	stances, National Institute for Occu Aicromedex, Inc., Englewood, CO.	pational Safety and Health, Cincinnat	i ,
Ariel Insight# (An integrated guide to indu: North American Module, Western Europe Insight# CD-ROM Version), Ariel Researc	an Module, Chemical Inventories N		
The Teratogen Information System, Unive Micromedex, Inc., Englewood, CO.		FOMES CPS# CD-ROM Version),	•
	#		<u>.</u>
Prepared By: Product Safety Departmen		••• •••	
Date issued : 04/22/2004 Version Number : 1.9	n Touris (CESE) (See Real Se		
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BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 25-FEB-1997 PRINTED DATE: 25-FEB-1997

Proprietary Descaling Accent

- 1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : BETZ 860

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

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

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

2) COMPOSITION / INFORMATION ON INGREDIENTS

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

HAZARDOUS INGREDIENTS:

CAS#

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- :

CHEMICAL NAME

TRADE SECRET INGREDIENT(E195); TSRN 125438 - 5118P Irritant (eyes)

TRADE SECRET INGREDIENT(122);;TSRN 125438 - 5214P Potential irritant (eyes)

TRADE SECRET INGREDIENT(222); TSRN 125438 - 5238P Oxidizer; corrosive; pulmonary damage; dental erosion

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

PRODUCT NAME : BETZ 860 EFFECTIVE DATE: 25-FEB-1997 3) HAZARDS IDENTIFICATION ***** WARNING AND STREAMER AND AND A May cause slight irritation to the skin. Severe irritant to the eyes. Vapors; gases, mists and/or aerosols cause irritation to the upper respiratory tract. upper respiratory tract. DOT hazard: Corrosive to steel Emergency Response Guide #154 Odor: Acid; Appearance: Yellow To Dark Brown, Liquid Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water POTENTIAL HEALTH EFFECTS ACUTE SKIN EFFECTS: Primary route of exposure; May cause slight irritation to the skin. ACUTE EYE EFFECTS: Severe irritant to the eyes. ACUTE RESPIRATORY EFFECTS: Primary route of exposure; Vapors, gases, mists and/or aerosols cause irritation to the upper respiratory tract. **INGESTION EFFECTS:** May cause slight gastrointestinal irritation. ARGET ORGANS: Prolonged or repeated exposures may active still TARGET ORGANS: Prolonged or repeated exposures may cause primary irritant dermatitis and/or toxicity to the lung. MEDICAL CONDITIONS AGGRAVATED: EDICAL CONDITIONS AGGRAVATED: Not known. SYMPTOMS OF EXPOSURE: Inhalation may cause irritation of the respiratory tract. Skin contact may cause itching and/or redness.

CONTINUED

AGF 2

4) FIRST AID MEASURES SKIN CONTACT: Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes. EYE CONTACT: Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment. INHALATION: Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary. **INGESTION:** Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water. 5) FIRE FIGHTING MEASURES FIRE FIGHTING INSTRUCTIONS: Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type). **EXTINGUISHING MEDIA:** dry chemical, carbon dioxide, foam or water HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition (destructive fires) yields elemental oxides. **FLASH POINT:** > 200F P-M(CC) **MISCELLANEOUS:** Corrosive to steel UN3264; Emergency Response Guide #154

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit. DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

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7) HANDLING AND STORAGE	
HANDLING: Contains an oxidizer. Avoid all contact with reducing agents, or greases, organics and acids. STORAGE:	pils,
Keep containers closed when not in use. Use approved contain only. Store in cool, well-vented area. Contact with metals may release flammable hydrogen gas.	
8) EXPOSURE CONTROLS/PERSONAL PROTECTION	
EXPOSURE LIMITS CHEMICAL NAME	
TRADE SECRET INGREDIENT(E195);TSRN 125438 - 5118P PEL (OSHA): NOT DETERMINED TLV (ACGIH): NOT DETERMINED	
TRADE SECRET INGREDIENT(122);;TSRN 125438 - 5214P PEL (OSHA): NUISANCE DUST TLV (ACGIH): 5 MG/M3 MISC: Note: manufacturer's recommended exposure limit: 10	mg/m3.
TRADE SECRET INGREDIENT(222);TSRN 125438 - 5238P PEL (OSHA): 5 MG/M3(10MG/M3-STEL) TLV (ACGIH): 5 MG/M3(10MG/M3-STEL)	
 ENGINEERING CONTROLS: Adequate ventilation to maintain air contaminants below expositimits. PERSONAL PROTECTIVE EQUIPMENT: Use protective equipment in accordance with 29CFR 1910 Sub RESPIRATORY PROTECTION: A RESPIRATORY PROTECTION PROGRAM THAT MEETS OF 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FO WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S U USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATI WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESP An air-supplying respirator (positive pressure full facepiece) may be needed for this product. SKIN PROTECTION: neoprene gloves Wash off after each use. Replace as necessary. EYE PROTECTION: splash proof chemical goggles 	DSHA'S 29 CFR DLLOWED WHENEVER JSE. IONS ASSOCIATED
	terra and an annual br>∎
PAGE 4 CONTINUED	• •

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9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav. (70F) 1.098 Vapor Pressure (mmHG) ~ 18.0 26.00 Freeze Point (F) Vapor Density (air=1) < 1.00 Viscosity (cps 70F) ND % Solubility (water) 100.0 Odor Acid Appearance Yellow To Dark Brown Physical State Liquid Flash Point (F) > 200 P-M(CC) pH As Is (approx.) 1.4 Evaporation Rate (Ether=1) < 1.00

NA = not applicable ND = not determined

10) STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions. HAZARDOUS POLYMERIZATION: Will not occur.

"D"

INCOMPATIBILITIES: May react with organics or alkaline materials. DECOMPOSITION PRODUCTS: Thermal decomposition (destructive fires) yields elemental oxides. BETZ INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT: >2,000 mg/kg NOTE - Estimated value Dermal LD50 RABBIT: >2,000 mg/kg NOTE - Estimated value Inhalation LC50 RAT: >2,000 ppm/hr NOTE - Estimated value

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY No Data Available.

BIODEGRADATION

COD (mg/gm):443TOC (mg/gm):203BOD-5 (mg/gm):381BOD-28 (mg/gm):505

PRODUCT NAME : BETZ 860 IFFECTIVE DATE: 25-FEB-1997 13) DISPOSAL CONSIDERATIONS If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is : D002 = Corrosive(pH, steel). Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material. 14) TRANSPORT INFORMATION DOT HAZARD: UN / NA NUMBER: UN3264 DOT EMERGENCY RESPONSE GUIDE #: 154 15) REGULATORY INFORMATION TSCA: All components of this product are listed in the TSCA inventory.
If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is : D002=Corrosive(pH, steel). Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material. 14) TRANSPORT INFORMATION DOT HAZARD: UN / NA NUMBER: UN / NA NUMBER: UN3264 DOT EMERGENCY RESPONSE GUIDE #: 154 15) REGULATORY INFORMATION TSCA: All components of this product are listed in the TSCA inventory.
<pre>waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.</pre> 14) TRANSPORT INFORMATION DOT HAZARD: UN / NA NUMBER: UN3264 DOT EMERGENCY RESPONSE GUIDE #: 154 15) REGULATORY INFORMATION TSCA: All components of this product are listed in the TSCA inventory.
DOT HAZARD: UN / NA NUMBER: DOT EMERGENCY RESPONSE GUIDE #: 154 15) REGULATORY INFORMATION TSCA: All components of this product are listed in the TSCA inventory.
UN / NA NUMBER: DOT EMERGENCY RESPONSE GUIDE #: 154 15) REGULATORY INFORMATION TSCA: All components of this product are listed in the TSCA inventory.
TSCA: All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ): 9,111 gallons due to (122);5,466 gallons due to (222); SARA SECTION 312 HAZARD CLASS: Immediate(acute);Delayed(Chronic) SARA SECTION 302 CHEMICALS:
CAS# CHEMICAL NAME TRADE SECRET (222) INORGANIC ACID SARA SECTION 313 CHEMICALS: CAS# CHEMICAL NAME CHEMICAL NAME TRADE SECRET (222) INORGANIC ACID 2.0-5.0%
ALIFORNIA REGULATORY INFORMATION
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:
No regulated constituent present at OSHA thresholds
MICHIGAN REGULATORY INFORMATION
No regulated constituent present at OSHA thresholds

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716) OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

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078

te Hazard
Hazard
l Hazard
rrosive
s,Gloves

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

CHANGE LOG

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	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES	
MSDS status:		REVISED FORMAT	** NEW **	
	28-SEP-1996 25-FEB-1997	• •	22-AUG-1995 28-SEP-1996	·

SAMM 32.128
MATERIAL SAFETY DATA SHEET
NALCO PRODUCT
NALCO COAGULANT AID 35
EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
PRODUCT NAME : COAGULANT AID 35
COMPANY IDENTIFICATION : Nalco Company 1601 W. Diehl Road
Naperville, Illinois
60563-1198
EMERGENCY TELEPHONE NUMBER(S): (800) 424-9300 (24 Hours) CHEMTREC
NFPA 704M/HMIS RATING
HEALTH: 0/1 FLAMMABILITY: 1/1 INSTABILITY: 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)Quartz, crystalline silica14808-60-71.0 - 5.0
3. HAZARDS IDENTIFICATION
EMERGENCY OVERVIEW
CAUTION
May cause irritation with prolonged contact. Inhalation of crystalline silica can cause silicosis. Do not get in eyes, on skin, on clothing. Do not take internally. Do not breathe dust. Wear suitable protective
clothing. 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 soap and water.
Not flammable or combustible. Water in contact with the product will cause slippery floor conditions.
PRIMARY ROUTES OF EXPOSURE :
Eye, Skin
HUMAN HEALTH HAZARDS - ACUTE :
EYE CONTACT:
Particles may scratch eye surfaces or cause mechanical irritation.
SKIN CONTACT: May cause irritation with prolonged contact.
INGESTION : Not a likely route of exposure. No adverse effects expected.
Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198
(630)305-1000 1 / 8
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COAGULANT AID 35

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

INHALATION :

Repeated or prolonged exposure may irritate the respiratory tract. May cause irritation of mucous membranes.

PRODUCT

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 :

Prolonged inhalation of product can increase lung injury in persons with emphysema, asthma, or other lung disorders.

4. FIRST AID MEASURES

EYE CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT:

First aid is normally not required. If symptoms develop, seek medical advice.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION:

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

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

FLASH POINT :

5.

None

EXTINGUISHING MEDIA:

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

FIRE AND EXPLOSION HAZARD :

Not flammable or combustible. Water in contact with the product will cause slippery floor conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

FIRE FIGHTING MEASURES

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

NALCO	PRODUCT			
	COAGULANT AID	35		
•	EMERGENCY TELEPHONE			
	(800) 424-9300 (24 Hours)	CHEMTREC		. • •
ACCIDENTAL R	ELEASE MEASURES	<u>~~~~</u>		ът. т.,
	, occupational health and safety and environme ended in Section 8 (Exposure Controls/Persona		Use personal	•
ETHODS FOR CLEANING L weep up and shovel. Reclair idicated in Section 13 (Disposion onditions.	JP : m into recovery or salvage drums. Dispose of r sal Considerations). Water in contact with the p	naterial in compli product will cause	ance with regulations slippery floor	•
NVIRONMENTAL PRECAUT				
HANDLING AND	STORAGE			
		······		
ANDLING : o not take internally. Ensure	all containers are labelled. Avoid eye and skin	contact. Avoid	generating dusts.	.
	na an an an an an an an an an an an an a	· · · · ·		•
eep in dry place.	ITROLS/PERSONAL PROTECTION			•
eep in dry place.		····		•
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b		posure limits for t	he substance(s) are	• • •
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV :	LIMITS :	oosure limits for t	he substance(s) are	• • • •
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV : ubstance(s) Respirable Nuisance	LIMITS :	oosure limits for t		· · · · · · · · · · · · · · · · · · ·
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE kposure guidelines have not b hown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance	ELIMITS : been established for this product. Available exp TWA: 3 mg/m3	oosure limits for t	he substance(s) are	
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance	ELIMITS : been established for this product. Available exp TWA: 3 mg/m3	posure limits for f		· · · · · · · · · · · · · · · · · · ·
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Quartz, crystalline silica SHA/PEL :	ELIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3	posure limits for t		· · · · · · · · · · · · · · · · · · ·
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE kposure guidelines have not b lown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Quartz, crystalline silica SHA/PEL : ubstance(s) Respirable Nuisance	ELIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3	posure limits for t		
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE kposure guidelines have not b hown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Quartz, crystalline silica SHA/PEL : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Inhalable Nuisance articulates Inhalable (Total)	ELIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3 TWA: 0.1 mg/m3 0.1 mg/m3	posure limits for t		
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Quartz, crystalline silica SHA/PEL : ubstance(s) Respirable Nuisance articulates Inhalable (Total)	E LIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3 TWA: 0.1 mg/m3 0.1 mg/m3 TWA: 5 mg/m3	posure limits for f		
eep in dry place. EXPOSURE CON CCUPATIONAL EXPOSURE xposure guidelines have not b nown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Quartz, crystalline silica SHA/PEL : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Inhalable (Total) uisance Particulates Quartz, crystalline silica	E LIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3 TWA: 0.1 mg/m3 0.1 mg/m3 TWA: 5 mg/m3 TWA: 15 mg/m3 (total dust)	posure limits for t		
CCUPATIONAL EXPOSURE xposure guidelines have not t hown below. CGIH/TLV : ubstance(s) Respirable Nuisance articulates Inhalable (Total) Nuisance articulates Quartz, crystalline silica SHA/PEL : ubstance(s) Respirable Nuisance articulates Inhalable (Total) uisance Particulates Quartz, crystalline silica NGINEERING MEASURES :	E LIMITS : been established for this product. Available exp TWA: 3 mg/m3 TWA: 10 mg/m3 TWA: 0.1 mg/m3 0.1 mg/m3 TWA: 5 mg/m3 TWA: 15 mg/m3 (total dust)			

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PRODUCT

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RESPIRATORY PROTECTION:

An approved respirator must be worn if the occupational exposure limit is likely to be exceeded. If dusts are generated, use an approved air-purifying respirator. A dust, mist, fume cartridge may be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

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

SKIN PROTECTION : Wear standard protective clothing.

EYE PROTECTION : Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS : Keep an eye wash fountain available. Keep a safety shower available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Light grey

PHYSICAL STATE Powder

APPEARANCE

ODOR None

SOLUBILITY IN WATERInsolublepH (5 %)8.5 - 10.5

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.

HAZARDOUS POLYMERIZATION : Hazardous polymerization will not occur.

CONDITIONS TO AVOID : Moisture

MATERIALS TO AVOID : None known

HAZARDOUS DECOMPOSITION PRODUCTS : Under fire conditions: None known

	MATERIAL SAFETY DATA SHEET
NALCO	PRODUCT
NALCO	COAGULANT AID 35
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	EMERGENCY-TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
11. TOXICOLOGICAL INFORMATIO	· · · · · · · · · · · · · · · · · · ·
No toxicity studies have been conducted on this	product.
evaluated crystalline silica (inhaled in the form of a human carcinogen (Group 1) based on sufficie Toxicology Program (NTP) has evaluated crystal	The International Agency for Research on Cancer (IARC) has f guartz or cristobalite from occupational sources) and found it to be ent animal data and sufficent human evidence. The National illine silica and found it may be reasonably anticipated to be a ble dust (less than or equal to 5 microns in size) may lead to lung disease.
12. ECOLOGICAL INFORMATION	14. (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1 1997) (19
ECOTOXICOLOGICAL EFFECTS :	
to toxicity studies have been conducted on this	product.
freleased into the environment, see CERCLA/S	UPERFUND in Section 15.
13. DISPOSAL CONSIDERATIONS	
	deral regulation. Consult state or local regulation for any additional or disposal, contact a properly licensed waste treatment, storage,
4. TRANSPORT INFORMATION	n and a second second second second second second second second second second second second second second secon In the second second second second second second second second second second second second second second second
The information in this section is for reference on pecific to an order. Please note that the proper and mode of transportation. Typical Proper Ship	ly and should not take the place of a shipping paper (bill of lading) Shipping Name / Hazard Class may vary by packaging, properties, ping Names for this product are as follows.
AND TRANSPORT :	to the second second second second second second second second second second second second second second second
Proper Shipping Name :	PRODUCT IS NOT REGULATED DURING TRANSPORTATION
IR TRANSPORT (ICAO/IATA):	
Proper Shipping Name :	PRODUCT IS NOT REGULATED DURING TRANSPORTATION
IARINE TRANSPORT (IMDG/IMO) :	ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang taon ang Ang taon ang
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• Nalco Company 1601 W.	Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 5 / 8
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PRODUCT

COAGULANT AID 35

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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.

Quartz, crystalline silica : Cancer suspect agent (refer to Section 3)

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 that this product is not hazardous under 29 CFR 1910.1200.

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 does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act : When use situations necessitate compliance with FDA regulations, this product is acceptable under: 21 CFR 173.310 Boiler Water Additives, 21 CFR 176.170 Components of paper and paperboard in contact with aqueous and fatty foods and 21 CFR 176.180 Components of paper and paperboard in contact with dry foods.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 : None of the substances are specifically listed in the regulation.

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MATERIAL	SAFETY	DATA SHEET

PRODUCT

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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 :

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• CALIFORNIA PROPOSITION 65 : This product contains the following substances which require warning under California Proposition 65.

Substance(s)	Concentration	EFFECTS		.:	ì	··]
Quartz, crystalline silica	5%	Causes Cancer				t, in] : · · ·
L			 `_	,			J ∙Č
MICHIGAN CRITICAL MATERIALS :		. •	с. С	•	: ' e		.)
None of the substances are specifically listed in th	e regulation.			•		۰. ۱۹	
STATE RIGHT TO KNOW LAWS		•		• ••		•	
The following substances are disclosed for complia	ance with State R	ight to Know Laws:			· · ·	•	•
Quartz, crystalline silica	14808-60-7		••	1	• • • • ?	••• •	•
NATIONAL REGULATIONS, CANADA :	· •		•• • •	- <u>.</u>		•	
WORKPLACE HAZARDOUS MATERIALS INFOR This product has been classified in accordance wit (CPR) and the MSDS contains all the information r	th the hazard crite	ria of the Controlled	l Produ	icts Regi	ulation	S .	
WHMIS CLASSIFICATION : D2A - Materials Causing Other Toxic Effects - Ven	y Toxic Material			· .	مر ر		
CANADIAN ENVIRONMENTAL PROTECTION AC The substances in this preparation are listed on the reported in accordance with the New Substances	e Domestic Subst	ances List (DSL), a lations.	re exe	mpt, or h			,
16. OTHER INFORMATION					_		
This product material safety data sheet provides he applications consistent with our product literature. recommended safety precautions and should have be evaluated so that appropriate handling practices workplace operations. Please consult your local sa	Individuals handl access to this int s and training pro	ing this product shou ormation. For any c grams can be establ	uld be i other u lished i	informed ses, exp to insure	of the	s should	
	REFERENCES						
Threshold Limit Values for Chemical Substances a	nd Physical Agen	ts and Biological Ex	posure	Indices	, Amei	rican	

Thr Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

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PRODUCT

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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 : 02/21/2004 Version Number : 1.6

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SODIUM HYPOCHLORITE SOLUTION

1 - Chemical Product and	Company Identifi	ication	
MANUFACTURER'S N	AME:	MANLEY-REG. DIVISION OF E	AN CHEMICALS +E (US) INC.
EMERGENCY TELEPH	ONE NUMBER:	800-424-9300 (Cl 24 hours a day, 7	semtree)
ADDRESS:	•	532 EAST EMAU P.O. BOX 280 MIDDLETOWN 800-283-0326	•
DATE OF REVISION:		September 19, 19	98
2 - Composition/Informatio	n on Ingredients	X	
TRADE NAME:		SODIUM HYPOC	HLORITE 15% CL/VOL
Component: Sodium Hypochlorite Soluti	ion	CAS Number:	7681-52-9
CONTAINS: Sodium Hydroxide	CAS NUMBER: 1310-73-2	PERCENTAGE: 0.8 to 2.4	PEL/TLV -SOURCE FEL 8hr 2mg/m(3) OSHA
Chlorine (Available)	7782-50-5	Approx. 10	TLV 5tr 2mg/m(3) Ceiling ACGIH OSHA (PEL) TWA - 0.5 ppm
		an an taon an t Taon an taon an	STEL - I ppm ACGIH (TLV) TWA - 0.5 ppm
Water	7732-18-5	Approx. 89.0	STEL-Ippm
******	*********	**************** ********************	*********
Synonyms/Common Names: Chemical Formula:	من الم مراجع الم	Chlorine Bleach, So NaOCI	da Bleach, Liquid Chlorine
DOT Proper Shipping Name: DOT Hazard Class:		Hypochlorite Solutio	מא
DOT ID Number: DOT Packing Group: DOT Hazardous Substance: DOT Marine Pollutant:		UN1791 III RQ 100# (Sodium H N/A	ypochlorite)
Additional Description Require	ement:	N/A	

Page 1 of 5

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<u>3 - Physical Data</u>		Page 2 of
Boiling Point:	(@760 mm Hg)	Decomposes above 110 Deg C (230 Deg F)
Freezing Point:	Weight %	Freezing Point Deg F
	10	7
· .	12	- 3
Vapor Pressure:	Temperature Deg I	- min Hg PSIA
- · · ·	48.2	3.7 0.071
´ ` •	60.8	8.0 0.15
	68.0	12.1 0.23
	89.6	31.1 0.60
	118.4	100.00 1.93
Specific Gravity:	(H20) = 1)	Approximately 1.19
Solubility in H20	(By Weight)	100%
pH .	9 - 12	•
Appezrance'Odor:	Colorless to light ye	llow-green liquid with chlorine like odor.
4 - Emergency and	First Aid Procedures	
EYES:	Immediately flush eyes with within one (1) minute is ess SEEK MEDICAL ATTEN	a flowing water for at least 15 minutes. Washing eyes ential to achieve maximum effectiveness. TION IMMEDIATELY.
SKIN:	shower while removing con	re initation. Fluch thoroughly with cool water under taminated clothing and shoes. Discard non-rubber
 ```		reuse. Continue to flush until medical attention
	BITIVES, SEEK MEDICAL ATTENI	TION IMMEDIATELY.
INHALATION:	Remove to fresh air. If brea	thing is difficult, have a qualified person administer
	oxygen. If respiration stops, GET IMMEDIATE MEDIC	give month-to-month resuscitation. CAL ATTENTION.
NGESTION:	INDUCE YOMITING. Giv	th to an unconscious person. If swallowed, DO NOT e large quantities of milk. If these are not available,
· · · ·	give large quantities of water	. If vomiting occurs spontaneously keep airway clear Avoid vomiting, lavage or acidic actidotes.

ingestion do not use emesis, lavage or acidic antidotes. Dilute immediately by giving milk, melted Ice cream, beaten egg white, starch paste or antacids such as milk of magnesia, aluminum hydroxide gel or magnesium trisilicate gel. Avoid sodium bicarbonate because of carbon dioxide release. Sodium thiosulfate solution may prove beneficial by reducing unreacted material.

7



Page 3 of 5 5- First Aid Measures and Effects of Overexnosure Inhalation of hypochlorous acid fumes may cause severe respiratory tract initation INHALATION: and pulmonary edema. SKIN: Skin contact may cause severe irritation and burns. EYE CONTACT: Eye contact may cause severe initation, buins and/or corrosion. **INGESTION:** Ingestion may cause pain and inflammation of the mouth and digestive system, burns and perforation of the esophagus or stomach, vomiting, circulatory collapse, confusion, delirium and come EFFECTS OF OVEREXPOSURE: ACUTE: Corrosive and strongly irritating to the eyes, skin, and respiratory tract. Inhalation of fumes may cause pulmonary edema. Ingestion may cause burns to the mouth and digestive tract and abdominal distress. No Data CHRONIC: 6 - Fire and Explosion Hazard Data FLASH POINT (test method) : Non-Flemmable AUTOIGNITION TEMPERATURE: None FLAMMABILITY LIMITS IN AIR: None UEL: LEL: N/A N/A EXTINGUISHING MEDIA: Use water spray, fog, foam, dry chemical, or carbon dioxide or agents suitable for materials in surrounding fire. SPECIAL FIRE FIGHTING PROCEDURES: Avoid fumes from spilled or exposed liquid, dilute copionsly, ventilate and be prepared to use respiratory protection if needed. Use self-contained breathing apparatus and full protective equipment. Acid contamination will produce very initating fumes similar to chlorine. UNUSUAL FIRE AND EXPLOSION HAZARD: Product decomposes when heated and may cause containers to rupture or explode. Vigorous reaction is possible with organic materials or oxidizing agents and may result in fire.

7 - Reactivity Data

CONDITIONS CONTRIBUTING TO INSTABILITY: Strong condizer, stability decreases with concentration, heat, light, decrease in pH and contamination by metals.

INCOMPATIBILITY: Avoid contamination with heavy metals, reducing agents, ether, ammonia, and acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Acid fumes.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

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8-Special Protection

VENTILATION REQUIREMENTS: Provide good general room ventilation plus local exhaust at points of emission.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY: NIOSH/MSHA approved respirator, following manufacturer's recommendations, should be used as a precamionary measure where airborne contaminants may occur.

EYE: Wear chemical safety goggles plus full face shield to protect against splashing when appropriate.

GLOVES: Wear impervious gloves such as rubber, neoprene or vinyl.

OTHER CLOTHING AND EQUIPMENT: Wear impervious protective clothing including gloves, apron or rain suit and boots to avoid bodily contact. Eye wash facility and emergency shower should be in close proximity.

9- Handling and Storage

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HANDLING AND STORAGE PRECAUTIONS: Do not store adjacent to chemicals that may react if spillage occurs. Comply with DOT regulations when shipped. If closed containers become heated, vent to release decomposition products (mainly oxygen under normal decomposition). Do not mix or contaminate with ammonia, bydrecarbons, acids, alcohol's or others.

DO NOT REUSE CONTAINERS: Product residues may remain in containers. All labeled precamions must be observed. Dispose of container in a manner meeting government regulations.

PRODUCT DISPOSAL: Product should be completely removed from containers. Material that cannot be used or chemically reprocessed should be disposed of in a manner meeting government regulations.

10 - Environmental Procedures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Do not allow spilled material to enter sewers or streams. Flush with water to dilute as much as possible and pump into polyethylene containers for disposal. Avoid heat and contamination with acid materials. Do not use combustible materials such as sawdust to absorb Sodium Hypochlorite Solution.

WASTE DISPOSAL METHOD: Reduce with agents such as bisulfites or ferrors salt solutions. Some heat will be produced. Keep on alkaline side and dilute with copious amount of water. Main end-product is salt water. Comply with all applicable governmental regulations.

11 - Toxicological Information

TOXICOLOGY DATA:

The taxicity and convosivity of Sodium Hypochlorite is a function of concentration. Industrial grades of higher concentrations than household bleach are more taxic and corrosive.

Aquatic Toxicity Rating: -	•	96 hr. LCS0
Ceriodaphnia dubia:		1.23 ppm
Pimephales promelas:		1.19 ppm

Sodium Hypochlorite @ 12.5% (Ret, Oral LD50) Sodium Hypochlorite @ 5.25% (Ret, Oral LD50) Test Result 5.0 g/kg Test Result 13.0 g/kg

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, 12-Additional Information	and the second second second second second second second second second second second second second second secon	
This blend does not contain any substances subject to th requirements of Section 313 of the act.	e Threshold Planning (uantity (IPQ)
CONTAINER DISPOSAL: Dispose in a licensed facili prevent unauthorized reuse,	ity. Recommend crushi	ng or other means to
NSF LIMITS: NSF Maximum Drinking Water Use Con The finished drinking water should be ma accordance with state and U.S. E.P.A. reg and chlorate ion should not exceed 10 pp	mitored for disinfection gulations and guidelines	by-products in
USDA APPROVAL: This product is acceptable as a san rinse in official establishments operating under the Feder inspection programs.	nitizer for all surfaces n ral meat, poultry, shell o	ot always requiring a egg, and egg products
Section 311 of The Clean Water Act lists this product as water, may require immediate response to mitigate dange pounds or more must be reported to the National Respon 8802	er to public health and v	velfare. Spills of 100
Material is contained on a composite list as required und	er 101 (14) of CERCL	L
	A under the Federal Ins	ecticide, Fungicide and
Sodium Hypochlorite Solution is regulated by the USEP. Rodenticide Acid (FIFRA) as a pesticide product.	~ ··· `	• • • • • •
Sodium Hypochlorite Solution is regulated by the USEP. Rodenticide Acid (FIFRA) as a pesticide product.	*****	******
Rodenticide Acid (FIFRA) as a pesticide product. 4************************************	are offered for the users elf that they are suitable I should be consulted to	and complete for its
Rodenticide Acid (FIFRA) as a pesticide product. ************************************	are offered for the users elf that they are suitable I should be consulted to container. upressed or implied, and contained herein.	and complete for in insure proper health, assumes no
Rodenticide Acid (FIFRA) as a pesticide product. ************************************	are offered for the users elf that they are suitable I should be consulted to container. upressed or implied, and contained herein.	and complete for in insure proper health, assumes no
Rodenticide Acid (FIFRA) as a pesticide product. ************************************	are offered for the user elf that they are suitable I should be consulted to container. upressed or implied, and contained herein. communication standar	and complete for in insure proper health, assumes no



Material Safety Data Sheet

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

AgrEvo Environmental Health 95 Chestnut Ridge Road Montvale, NJ 07645

COMPANY CONTACT: Regulatory Department TELEPHONE NUMBER: (800)438-5837

EMERGENCY TELEPHONE NUMBER (800)471-0660

PRODUCT NAME: NUSYN-NOXFISH® FISH TOXICANT PRODUCT CODE: B467413 CHEMICAL NAME: Mixture: a.i.'s, rotenone and piperonyl butoxide EPA REGISTRY NUMBER: 432-550 MSDS IDENTIFICATION CODE/NUMBER: B467413

Nusyn-Noxfish is a registered trademark of AgrEvo Environmental Health, Inc.

PRODUCT DESCRIPTION: Nusyn-Noxfish Fish Toxicant is a restricted use pesticide to be used in fisheries management for the eradication of fish from lakes, ponds, reservoirs and streams.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	EXPOSURE LIMITS	CONCENTRATION PERCENT BY WEIGHT	
Rotenone CAS NUMBER: 83-79-4	ACGIH TLV-TWA 5 mg/m3 OSHA PEL-TWA 5 mg/m3	= 2.5	•
Piperonyl Butoxide, technical CAS NUMBER: 51-03-6	None established	= 2.5	
Other associated resins	None established	= 5	•
Other ingredients, including:		= 90	
••			

Aromatic petroleum solvent CAS NUMBER: 64742-94-5 100 ppm (Manufacturer recommended) < 85

SECTION 3. HAZARDS IDENTIFICATION

A clear to brown liquid with a mild odor. = Fatal if inhaled.	OVERVIEW ************************************
 May be fatal if swallowed. Harmful if absorbed through skin. 	· · ·
 Causes substantial but temporary eye injury. Causes skin irritation. Combustible mixture. 	
This pesticide is extremely toxic to fish.	• **************
POTENTIAL HEALTH EFFECTS	·. ·

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 3. HAZARDS IDENTIFICATION - Continued

PRIMARY ROUTE(S) OF ENTRY

Inhalation, ingestion, skin and eye contact.

EYES Causes substantial but temporary eye injury.

SKIN

Causes skin irritation.

INGESTION May be fatal if swallowed.

INHALATION Fatal if inhaled.

SECTION 4. FIRST AID MEASURES

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

SKIN

Wash with plenty of soap and water. Get medical attention.

INGESTION

Promptly drink a large quantity of milk, egg white, gelatin, solution or if these are not available, large quantities of water. Avoid alcohol. Do not induce vomiting. Call a physician or Poison Control Center.

INHALATION

Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. Get medical attention.

NOTE TO PHYSICIAN

This product is highly toxic when spray mist is inhaled, moderately toxic by the oral route and slightly toxic by the dermal route. This product causes substantial but reversible eye irritation. Initial treatment is removal of exposure by washing, emesis or lavage and is followed by symptomatic and supportive care.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES FLASH POINT: 115°F 46°C TCC

FIRE AND EXPLOSION HAZARDS Keep away from sources of ignition.

EXTINGUISHING MEDIA Fog, foam, carbon dioxide or dry chemical.

FIRE FIGHTING INSTRUCTIONS As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. If possible, move containers from area. Extinguish only if flow can be stopped. Use flooding amounts of water as a fog. Cool containers with flooding amounts of water from as far a distance as possible. Avoid breathing vapors.

FLAMMABILITY CLASSIFICATION/RATING:

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 5. FIRE FIGHTING MEASURES - Continued

NFPA/OSHA Class: II NFPA Rating (Fire): 2

SECTION 6. ACCIDENTAL RELEASE MEASURES

<u>GENERAL AND DISPOSAL</u> Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the adverse effect of the spill. Ensure that the disposal is in compliance with all Federal, State/Provincial, and local regulations (See Section 13 for applicable RCRA Number). Refer to Section 15 for applicable Reportable Quantity (RQ) and other regulatory requirements.

LAND SPILL OR LEAK

Small Spills: Absorb liquid with an inert absorbent material such as granular clay, saw dust, or pet litter. Sweep up carefully while avoiding the formation of a dust cloud. Place in an approved chemical waste container for disposal. Rinse spill area with small amount of soapy water. Contain and absorb the rinsate with inert absorbents and place into the same disposal container. Area can be washed with water to remove the last trace residue. Do not allow water to contaminate water supplies or sewers.

Large Spills: Eliminate all ignition sources. Stop leak if you can do so without coming into contact with spilled material. Dike far ahead of liquid spill for later disposal. All equipment used to clean up spill should be grounded. Prevent entry into waterways, sewers, basements or confined areas. Inform appropriate authorities immediately if contamination occurs. Contact AgrEvo for further assistance if necessary.

SECTION 7. HANDLING AND STORAGE

HANDLING PRECAUTIONS

- Do not breathe spray mist.
- Do not get in eyes, on skin or on clothing.
- Do not use near heat or open flame.

STORAGE PRECAUTIONS

- Do not store near heat or open flame.
- Do not store near near or open name. Do not contaminate water, food or feed by storage. Store only in original containers, in a dry place inaccessible to children and pets. Nusyn-Noxfish will not solidify nor show any separation at temperatures down to 40°F and is stable for a minimum of one year when stored in sealed drums at 70°F.

WORK/HYGIENIC PRACTICES

- Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco.
- Remove contaminated clothing and wash before reuse.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

MANUFACTURING, FORMULATION AND OTHER NON-AGRICULTURAL USES

ENGINEERING CONTROLS

Control airborne concentrations below the appropriate exposure guideline (see Section 2 for applicable OSHA/ACGIH Exposure Limits). Local exhaust ventilation may be necessary.

EYE/FACE PROTECTION

Wear safety glasses, splash goggles or face shield.

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION Continued

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<u>SKIN PROTECTION</u> Wear chemical-resistant gloves (Neoprene, Nitrile, PVC) and other protective clothing to avoid skin contact.

RESPIRATORY PROTECTION

Ensure good ventilation. If not adequate, use a chemical cartridge-type respirator approved by the National Institute of Occupational Health and Safety.

GENERAL PROTECTION

Eye wash facility and safety shower should be available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear, brown liquid.

<u>ODOR</u> Mild odor.

BASIC PHYSICAL PROPERTIES

PHYSICAL STATE: Liquid pH: Not available VAPOR PRESSURE: Not available VAPOK FRESSORE: Not available VAPOR DENSITY (AIR=1): Not available EVAPORATION RATE (BUTYL ACETATE = 1): Not available SPECIFIC GRAVITY OR DENSITY (G/ML): Not available PACKING (BULK) DENSITY (LB/GAL): 8.25 BOILING POINT/RANGE: 200°C MELTING/FREEZING POINT RANGE: Not available MELITING/FREEZING FUNT TANGE. Not available SOLUBILITY (IN WATER): Miscible SOLUBILITY IN SOLVENTS/OIL (SPECIFIED): Not available DUST EXPLOSION SEVERITY DATA: Not applicable MINIMUM IGNITION ENERGY (MJ): Not available MINIMUM EXPLOSION CONCENTRATION (MEC): Not available LIMITED OXYGEN CONCENTRATION (LOC): Not available

SECTION 10. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY) None. .

INCOMPATIBLE MATERIALS Strong oxidizing and strong reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide and carbon dioxide.

CONDITIONS TO AVOID (POLYMERIZATION) Avoid excessive heat and ignition sources.

HAZARDOUS POLYMERIZATION: Will not occur.

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE STUDIES

THE FOLLOWING DATA WERE DEVELOPED WITH: Nusyn-Noxfish Fish Toxicant.

EYE EFFECTS (Rabbit) Moderately irritating

SKIN EFFECTS

Irritation (Rabbit): Moderately irritating Absorption (Rabbit): LD50 > 2020 mg/kg (slightly toxic) Sensitization (Guinea Pig): non-sensitizing

ACUTE ORAL EFFECTS

Oral LD50 (Rat, female): 147 mg/kg (moderately toxic) Oral LD50 (Rat, male): 704 mg/kg (slightly toxic) Oral LD50 (Rat, overall): 561 mg/kg (slightly toxic)

ACUTE INHALATION EFFECTS 4-Hour LC50 (Rat, female): .041 mg/l (highly toxic) 4-Hour LC50 (Rat, male): .059 mg/l (moderately toxic) 4-Hour LC50 (Rat, overall): .049 mg/l (highly toxic)

NOTE: The severity classifications listed above are those of AgrEvo, and, particularly for eye irritation, may not always coincide with EPA-mandated Precautionary Statements.

THE FOLLOWING DATA WERE DEVELOPED WITH: rotenone and piperonyl butoxide, the active ingredients

CHRONIC (CANCER INFORMATION)

Rotenone was not carcinogenic when tested in rats and mice.

A statistically significant increase in the number of benign liver tumors appeared in mice fed piperonyl butoxide technical at doses which far exceed any anticipated daily human intake. Independent and industry toxicological experts who have reviewed the data agree that the findings of the study do not indicate a health risk to human beings.

CARCINOGENICITY: NTP: No IARC: No OSHA: No

TERATOGENICITY (BIRTH DEFECTS)

Rotenone was not teratogenic or fetotoxic when tested in rats and mice.

REPRODUCTIVE EFFECTS

Rotenone had no adverse effects on reproduction when tested over two successive generations in rats.

MUTAGENICITY (GENETIC EFFECTS)

Rotenone was not mutagenic nor clastogenic when tested in the Ames Test, Yeast Test, Mouse Lymphoma Test, Mouse Micronucleus Test, Chromosome Aberration Test and the Mitotic Recombination Test in Yeast.

SECTION 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL PRECAUTIONS: This pesticide is extremely toxic to fish. Fish kills are expected at recommended rates. Consult your State Fish and Game Agency before applying this product to public waters to determine if a permit is needed for such an application. Do not contaminate untreated water when disposing of equipment washwaters.

NUSYN-NOXFISH® FISH TOXICANT

SECTION 13. DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed by disposal.

Pesticide 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 the label instructions contact your state pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

RCRA INFORMATION RCRA HAZARDOUS WASTE INGREDIENTS: None

SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: Pesticides, liquid, toxic, flammable, n.o.s. (Rotenone, petroleum distillate)

HAZARD CLASS: 6.1, PG I SUBSIDIARY HAZARD CLASS: 3 DOT IDENTIFICATION NUMBER: UN2903 DOT SHIPPING LABEL: Poison and/or Toxic

NOTE: For transport purposes (49 CFR Part 173.132), the calculated 1-Hour LC50 (Rat, overall) is: .196 mg/l

SECTION 15. REGULATORY INFORMATION

U.S. FEDERAL REGULATORY INFORMATION EPA Registration Number: 432-550 TSCA Inventory: registered pesticide, exempt from TSCA

SARA TITLE III NOTIFICATION AND INFORMATION Section 302 (EHS) ingredients: None Section 304 (CERCLA & EHS) ingredients (RQ): None Section 313 ingredients: None

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES: Acute Health Hazard - "Yes" Chronic Health Hazard - "No" Fire Hazard - "Yes" Sudden Release of Pressure Hazard - "No Reactivity Hazard - "No"

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER INGREDIENT NAME PERCENT BY WEIGHT 51-03-6 Piperonyl Butoxide, technical = 2.5

This information must be included on all MSDSs that are copied and distributed for this material.

REGULATED INGREDIENTS

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 15. REGULATORY INFORMATION - Continued

REGULATED INGREDIENTS - Continued

INGREDIENT: Rotenone CAS NUMBER: 83-79-4 PERCENT BY WEIGHT: = 2.5 Regulations: Illinois Toxic Substance Massachusetts Hazardous Substance New Jersey Special Health Hazardous Substance New Jersey Workplace Hazardous Substance Pennsylvania Workplace Hazardous Substance

INGREDIENT: Piperonyl Butoxide, technical CAS NUMBER: 51-03-6 PERCENT BY WEIGHT: = 2.5 Regulations: SARA Section 313 Toxic Chemical

U.S. STATE REGULATORY INFORMATION

CALIFORNIA (Proposition 65): This product does not contain any chemical which is known to the State of California to cause cancer or birth defects or other reproductive harm.

CANADIAN REGULATORY INFORMATION CPC NUMBER: None

WHMIS Classification for Control Product Regulations (CPR): Registered pesticide under US FIFRA regulations; exempt from CPR classification.

The MSDS contains all CPR required hazard-related information.

WHMIS HAZARD RATING: See HMIS rating (Section 16)

SECTION 16. OTHER INFORMATION

HMIS HAZARD RATING - HEALTH: 3 High - FIRE: 2 Moderate - REACTIVITY: 0 Negligible - PROTECTION: H

NFPA HAZARD RATING - HEALTH: 3 High - FIRE: 2 Moderate - REACTIVITY: 0 Negligible - SPECIAL:

MSDS IDENTIFICATION CODE/NUMBER: B467413

PREPARED BY: *Regulatory* PHONE: (800)438-5837 SUPERCEDES MSDS DATED: 02/14/96

DATE AND TIME OF PRINTING: 07/28/98 11:23:44

MSDS Revision Indicators: Revisions made in Section 1 (added trademarks and product description), Section 2 (added Other ingredient statement), Section 3 (Emergency Overview), Section 5 (changed Flash Point and Fire Fighting Procedures and added Flammability Classification/Rating), Section 7 (changed text under each heading), Section 8 (changed text under each heading), Section 9 (Basic Physical Properties), Section 11 (changed the eye, skin irritation toxicity data, added to the acute oral and inhalation toxicity data, chronic toxicity data, added where the data was developed from and what animal was used in the study), Section 12 (Environmental Precautions), Section 13 (Disposal Considerations), Section 14 (changed DOT

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NUSYN-NOXFISH® FISH TOXICANT

SECTION 16. OTHER INFORMATION - Continued

Shipping Label and added 1-Hour LC50) Section 15 (added Regulatory Information) and Section 16 (added HMIS Protection Code and Disclaimer).

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions.

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Material Safety Data Sheet



SONAR* SRP Herbicide 32.46

Emergency Phone: 317-580-8282 General Phone: 1-317-580-8282

EPA Reg. Number: 67690-3 Effective Date: August 25, 1994

SePRO Corporation • Carmel, IN

1. INGREDIENTS: (% w/w, unless otherwise noted)

1-Methyl-3-phenyl-5-(3-(trifluoromethyl)phenyl)-4(1H)-pyridinone (Fluridone)

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: Not applicable

VAP. PRESS: Not applicable

VAP. DENSITY: Not applicable.

SOL. IN WATER: Insoluble, but disintegrates in water SP. GRAVITY: Not applicable

APPEARANCE: Dark gray to dark brown pellet

ODOR: Faint musty odor

pH: (aqueous 50/50) 3.5

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: Not applicable METHOD USED: Not applicable

FLAMMABLE LIMITS:

LFL: Not applicable

UFL: Not applicable

AUTO-IGNITION TEMPERATURE: No ignition up to 1382°F, 750°C

EXTINGUISHING MEDIA: Use water, CO2 or dry chemicals.

FIRE AND EXPLOSION HAZARDS: Will emit toxic vapors as it burns.

FIRE-FIGHTING EQUIPMENT: Wear full protective clothing and use self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) None known INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) None known

*Trademark of SePRO Corporation

HAZARDOUS DECOMPOSITION PRODUCTS: Will : emit toxic vapors as it burns.

HAZARDOUS POLYMERIZATION: Does not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ENVIRONMENTAL DATA: Follow use directions carefully so as to minimize adverse effects on nontarget organisms. IN ORDER TO AVOID IMPACT ON THREATENED OR ENDANGERED AQUATIC PLANT OR ANIMAL SPECIES, USERS MUST CONSULT THEIR STATE FISH AND GAME AGENCY OR THE U.S. FISH AND WILDLIFE SERVICE BEFORE MAK-ING APPLICATIONS. Do not contaminate water by cleaning of equipment or disposal of wastes. Trees and shrubs growing in water treated with SONAR may be injured. Do not apply in tidewater or brackish water. Do not apply in lakes, ponds, or other bodies of water where crayfish farming is performed.

ACTION TO TAKE FOR SPILLS: Contain and sweep up material of small spills and dispose as waste. Large spills report to CHEMTREC and SePRO Corporation for assistance. Prevent runoff.

DISPOSAL METHOD: Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of at an approved waste disposal facility in accordance with applicable regulations.

6. HEALTH HAZARD DATA:

ACUTE EXPOSURE (SONAR SRP)

Eyes - Rabbit, irritant

Skin - Rabbit, 2000 mg/kg, no deaths or toxicity, nonirritant

Inhalation - This formulation is not considered to be an inhalation hazard due to pelleted nature of material Ingestion - Rat, 500 mg/kg, no deaths or toxicity

Sensitization - This formulation was not tested. Fluridone technical is not a contact sensitizer in guinea pigs.

CHRONIC EXPOSURE (Fluridone Technical) The following effects were reported in chronic, teratogenic, and reproductive toxicity studies in laboratory animals where experimental dosage levels and durations of exposure were far in excess of those likely to occur in humans.

Chronic Toxicity - Decreased survival in lifetime feeding study. Increased liver enzyme activity, liver weight, liver cell size, and microscopic liver cell changes.

Material Safety Data Sheet



Emergency Phone: 317-580-8282 General Phone: 1-317-580-8282

EPA Reg. Number: 67690-3 Effective Date: August 25, 1994

SePRO Corporation • Carmel, IN

SONAR* SRP Herbicide

Increased kidney weights, and microscopic kidney cell changes. Increased serum enzyme levels.

Teratology & Reproduction - Not teratogenic. Fetal , deaths at maternally toxic doses. No effects on reproductive performance.

Mutagenicity - Not mutagenic in either bacterial or ______ mammalian cells.

Carcinogenicity - Not listed as a carcinogen or potential carcinogen by IARC, NCI/NTP, OSHA, or ACGIH. Not considered to be carcinogenic in lifetime feeding studies.

SIGNS AND SYMPTOMS OF EXPOSURE: There are no reports of significant exposure to SONAR SRP. In two reports of children swimming in water treated with SONAR, no symptoms developed.

PRIMARY ROUTES OF ENTRY: Skin and inhalation.

7. FIRST AID:

EYES: Flush eyes with plenty of water and call a physician if irritation develops.

SKIN: Wash exposed areas with plenty of soap and water. Wash all contaminated clothing before reuse. Call a physician if irritation develops.

INGESTION: Do not induce vomiting. Call a physician or Poison Control Center. If available, administer activated charcoal (6-8 heaping teaspoonfuls) with a large quantity of water. Do not give anything by mouth to an unconscious person. Immediately transport to a medical care facility and see a physician.

INHALATION: If discomfort occurs, move individual to fresh air. If breathing difficulty occurs, get medical attention. If not breathing, provide cardiopulmonary resuscitation assistance and get medical attention immediately.

MEDICAL CONDITIONS GENERALLY AGGRAVAT-ED BY EXPOSURE: No information available.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): PEL and TLV not established.

VENTILATION: Good general ventilation should be sufficient for most conditions.

RESPIRATORY PROTECTION: No respiratory protection should be needed when used in accordance with label instructions. SKIN PROTECTION: No precautions other than normal work clothing should be needed.

EYE PROTECTION: Use safety glasses.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HAN-DLING AND STORAGE: Keep out of reach of children. Harmful if swallowed, absorbed through skin, or if inhaled. Avoid breathing of dust or contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Wash exposed clothing before reuse.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 704) (4=Extreme; 3=High; 2=Moderate; 1=Slight; 0=Insignificant) Health: 2 Flammability: 1 Reactivity: 0 SHIPPING REQUIREMENTS DOT Hazard Class: Not regulated.

MSDS STATUS: Revised 1/92, Section 8

REGULATORY INFORMATION:

(Not meant to be all-inclusive—selected regulations represented). NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another, it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories: An immediate health hazard

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult SePRO Corporation For Further Information.

JAMA	1-02.115
	MATERIAL SAFETY DATA SHEET
MALCO	PRODUCT
	ChlorKill 8816
• ·	EMERGENCY TELEPHONE NUMBER(S)
	(800) 424-9300 (24 Hours) CHEMTREC
1. CHEMICAL PRODUCT AND C	OMPANY IDENTIFICATION
PRODUCT NAME :	ChlorKill 8816
APPLICATION :	WATER TREATMENT
COMPANY IDENTIFICATION :	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198
EMERGENCY TELEPHONE NUMBER(S) :	(800) 424-9300 (24 Hours) CHEMTREC
NFPA 704M/HMIS RATING HEALTH: 1/2 FLAMMABILITY: 0/ 0 = Insignificant 1 = Slight 2 = Moderate 3	
2. COMPOSITION/INFORMATION	N ON INGREDIENTS
Our hazard evaluation has identified the followin nature of the hazard(s).	ng chemical substance(s) as hazardous. Consult Section 15 for the
Hazardous Substance(s) Sodium Bisulfite	CAS NO % (w/w) 7631-90-5 30.0 - 60.0
3. HAZARDS IDENTIFICATION	
EM	ERGENCY OVERVIEW
Do not get in eyes, on skin, on clothing. Do not	asthmatic signs and symptoms in hyper-reactive individuals. take internally. Use with adequate ventilation. In case of contact r and seek medical advice. After contact with skin, wash aditions.
PRIMARY ROUTES OF EXPOSURE : Skin, Eye, Inhalation	
HUMAN HEALTH HAZARDS - ACUTE :	
EYE CONTACT : Can cause mild irritation.	
SKIN CONTACT : Can cause mild irritation.	
Naico Company 1601 W	/. Diehl Road • Naperville, Illinois 60563-1198
	(630)305-1000 1 / 11
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1. P. 1041. MATERIAL SAFETY DATA SHEET NALC PRODUCT ang dista. ChlorKill 8816 EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC **INGESTION:** Not a likely route of exposure. May cause asthmatic-like attack. INHALATION : Irritant to respiratory system. Causes asthmatic signs and symptoms in hyper-reactive individuals. and the second second second second second second second second second second second second second second second SYMPTOMS OF EXPOSURE : Acute : A review of available data does not identify any symptoms from exposure not previously mentioned. ទីស្រី ដោះ សារ ខ • 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. HUMAN HEALTH HAZARDS - CHRONIC : Ingestion of sulfite can cause a severe allergic reaction in asthmatics and some sulfite sensitive individuals. The Ingestion of suitite can cause a severe anergic reaction in asumatics and some suitie sensitive instruction resulting symptoms can include difficulty in breathing, flushed skin and a rash. Chronic exposure to sulfites may cause symptoms of upper respiratory disease and affect sense of taste and smell. 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 medical attention. an an arrange and a second second second INHALATION : Remove to fresh air, treat symptomatically. If breathing is difficult, administer oxygen. Get medical attention. and the set of the set of the NOTE TO PHYSICIAN : Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition. **FIRE FIGHTING MEASURES** ENERGY TO US None the Classification of the Providence of the Prov FLASH POINT : energy to specific the second second second EXTINGUISHING MEDIA: This product would not be expected to burn unless all the water is boiled away. The remaining organics may be

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ionitable. Keep containers cool by spraying with water. Use extinguishing media appropriate for surrounding fire.



MATERIAL SAFETY DATA SHEET

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FIRE AND EXPLOSION HAZARD :

May evolve oxides of 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. Ensure adequate ventilation. 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. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles.

SUITABLE CONSTRUCTION MATERIAL :

HDPE (high density polyethylene), Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

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. Exposure limits are listed for sulfur dioxide (SO2) since this product evolves SO2 when open to the atmosphere.

ACGIH/TLV : Substance(s) . .

		MATERIAL SA	FETY DATA SH	IEET	
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•		EMERGENCY TELE (800) 424-9300 (24	PHONE NUMBER(S) Iours) CHEMTRE	and the second se	
Sodium Bisulfite	TWA: 5 mg/r				—
Sulfur Dioxide	· . · · · ·	, 5.2 mg/m3		· · ·	
	STEL: 5 ppm	13 mg/m3			
OSHA/PEL : Substance(s) Sodium Bisulfite	TWA: 5 mg/n	n3			•••
Sulfur Dioxide	TWA: 2 ppm STEL: 5 ppm			•	۰. ۲
ENGINEERING MEASU General ventilation is rec generated.		khaust ventilation may t	be necessary when	dusts or mists are	···· · · · · · · · · · · · · · · · · ·
RESPIRATORY PROTEC If significant mists, vapors respirator must be worn in	s or aerosols are gen	erated an approved res posure limit is likely to b	pirator is recommende exceeded.	nded. An approved	· · ·
HAND PROTECTION : Neoprene gloves, Nitrile g	gioves, Butyl gloves,	PVC gloves			· · · ·
SKIN PROTECTION : Wear standard protective	clothing.		• • •		
EYE PROTECTION : Wear chemical splash go	ggles.	i index e i			•• •
HYGIENE RECOMMEND If clothing is contaminated before reuse. Keep an ey	i, remove clothing an	d thoroughly wash the ilable. Keep a safety sh	affected area. Laur nower available.	nder contaminated clothing	J
9. PHYSICAL A	ND CHEMICAL F	PROPERTIES			
PHYSICAL STATE	Liquid	ing georee		• • •	· •
APPEARANCE	Yellow			· .	
ODOR	Pungent			t in the	
SPECIFIC GRAVITY DENSITY BULK DENSITY SOLUBILITY IN WATER	1.37 @ 11.4 lb/ 11.4 lb/ Comple 4.1	/ft3		: • • • • •	
pH (1 %) VISCOSITY FREEZING POINT		@ 77 °F / 25 °C 1.1 °C			
Na	co Company 1601 \	W. Diehl Road • Napen (630)305-1000 4 / 11		198	
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MATERIAL SAFETY DATA SHEET

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BOILING POINT VAPOR PRESSURE VAPOR DENSITY VOC CONTENT 219 °F / 104 °C 32 mm Hg @ 77 °F / 25 °C 76 mm Hg @ 99.9 °F / 37.7 °C 2.2 (Air = 1) 0.00 % EPA Method 24

Note: These physical properties are typical values for this product and are subject to change.

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 strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. SO2 may react with vapors from neutralizing amines and may produce a visible cloud of amine salt particles.

HAZARDOUS DECOMPOSITION PRODUCTS : Under fire conditions: Oxides of sulfur

11. TOXICOLOGICAL INFORMATION

The following results are for a similar product.

ACUTE ORAL	TOXICITY:
Species	LD50
Rat	4.1 g/kg
Rating: Non-H	lazardous

ACUTE DERMAL TOXICITY : Species LD50 Rabbit 3 g/kg Rating : Non-Hazardous

Test Descriptor Similar Product

Test Descriptor Similar Product

PRIMARY SKIN IRRITATION : Draize Score 1.0 / 8.0 Rating : Slightly irritating

Test Descriptor Similar Product

NALCO	J	PRODUC	1			
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		EMERGENC	Y TELEPHONE			
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PRIMARY EYE IRRITATION :		• •	1, 			
Draize Score 9.4 / 110.0	i est De Similar	escriptor Broduct				
Rating: Practically non-irritatir	Julian	Product Product Product		•		
	· ··	en de la trafa :	• • • •	•	•	• • •
SENSITIZATION :	<i>,</i>			. ti	,, ,	. • .
Sulfites can cause an allergic n	eaction in sens	itive individuals.	all managers and the		,	
CARCINOGENICITY :			:	· · · ·		
None of the substances in this	product are list	led as carcinoger	s by the Intern	national Agency	for Research or	ו
Cancer (IARC), the National To	oxicology Progr	am (NTP) or the	American Cont	ference of Gove	mmental Indust	rial
Hygienists (ACGIH).						
HUMAN HAZARD CHARACTE		a an an an an an an an an an an an an an				:
Based on our hazard character	ization, the pot	ential human haz	ard is: Low	· · · ·	• • •	. • .
	· · · · · · · · · · · · · · · · · · ·					
12. ECOLOGICAL IN	FORMATIO	<u>N</u>				
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ECOTOXICOLOGICAL EFFEC	TS:					
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The following results are for the		similar product.	•	•		
The following results are for the		similar product.	• •	•		
ACUTE FISH RESULTS :	product and a	· · · · ·	· · ·	• •	میروند ایران ۱۹۹۰ <u>م</u> رون ۱۹۹۰ کارون اوران ۱۹۹۰ کارون اوران	
ACUTE FISH RESULTS : Species	product and a	LC50		escriptor		2000 - 100 -
ACUTE FISH RESULTS : Species Rainbow Trout	e product and a Exposure 96 hrs	LC50 > 100 mg/l	Produc	xt		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow	product and a	LC50	Produc			
ACUTE FISH RESULTS : Species Rainbow Trout	e product and a Exposure 96 hrs	LC50 > 100 mg/l	Produc	xt		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow	e product and a Exposure 96 hrs 96 hrs	LC50 > 100 mg/l	Produc	xt		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic	e product and a Exposure 96 hrs 96 hrs	LC50 > 100 mg/i 382 mg/i	Produc	xt	iptor	
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna	Exposure 96 hrs 96 hrs 96 hrs ULTS : Exposure 48 hrs	LC50 > 100 mg/i 382 mg/i LC50 728 mg/i	Produc Similar	Product		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna Daphnia magna	e product and a Exposure 96 hrs 96 hrs ULTS : Exposure	LC50 > 100 mg/i 382 mg/i	Produc Similar	Product		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna	Exposure 96 hrs 96 hrs 96 hrs ULTS : Exposure 48 hrs	LC50 > 100 mg/l 382 mg/l LC50 728 mg/l 275 mg/l	EC50	Product Test Descr Similar Pro		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna Daphnia magna Rating : Essentially non-toxic	Exposure 96 hrs 96 hrs 96 hrs ULTS : Exposure 48 hrs	LC50 > 100 mg/l 382 mg/l LC50 728 mg/l 275 mg/l	EC50	Test Descr Similar Pro Product		
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna Daphnia magna Rating : Essentially non-toxic MOBILITY :	e product and a Exposure 96 hrs 96 hrs 96 hrs 96 hrs ULTS : Exposure 48 hrs 48 hrs	LC50 > 100 mg/i 382 mg/i LC50 728 mg/i 275 mg/i	Produc Similar EC50	Test Descr Similar Pro Product	duct	
ACUTE FISH RESULTS : Species Rainbow Trout Fathead Minnow Rating : Essentially non-toxic ACUTE INVERTEBRATE RESU Species Daphnia magna Daphnia magna Rating : Essentially non-toxic MOBILITY : The environmental fate was est	e product and a Exposure 96 hrs 96 hrs 96 hrs 96 hrs ULTS : Exposure 48 hrs 48 hrs 48 hrs	LC50 > 100 mg/i 382 mg/i LC50 728 mg/i 275 mg/i	EC50	Test Descr Similar Pro Product	duct	am je sa s
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MATERIAL SAFETY DATA SHEET

PRODUCT

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BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

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.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a property licensed waste treatment, storage, disposal or recycling facility.

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 as follows.

LAND TRANSPORT:

Proper Shipping Name :	BISULFITES, AQUEOUS SOLUTION, N.O.S.
Technical Name(s) :	SODIUM BISULFITE
UN/ID No :	UN 2693
Hazard Class - Primary :	8
Packing Group :	III
Flash Point :	None
DOT Reportable Quantity (per package) :	12,500 lbs
DOT RQ Component :	SODIUM BISULFITE
AIR TRANSPORT (ICAO/IATA) :	
Proper Shipping Name :	BISULPHITES, AQUEOUS SOLUTION, N.O.S.
Technical Name(s) :	SODIUM BISULPHITE
UN/ID No :	UN 2693
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) :

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NALCO	PRODUCT ChlorKill 8816
	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
Proper Shipping Name : Technical Name(s) : UN/ID No : Hazard Class - Primary : Packing Group :	BISULPHITES, AQUEOUS SOLUTION, N.O.S. SODIUM BISULPHITE UN 2693 8 III
15. REGULATORY INFORMATIO	N
NATIONAL REGULATIONS, USA :	
OSHA HAZARD COMMUNICATION RULE, 29 Based on our hazard evaluation, the following s shown below.	OCFR 1910.1200 : substance(s) in this product is/are hazardous and the reason(s) is/are
Sodium Bisulfite: Respiratory irritant	
CERCLA/SUPERFUND, 40 CFR 117, 302 : This product contains the following Reportable	Quantity (RQ) Substance. Also listed is the RQ for the product.
<u>RQ Substance</u> Sodium Bisulfite	<u>RO</u> 12,000 lbs
SARA/SUPERFUND AMENDMENTS AND REA 312, AND 313 :	AUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311,
SECTION 302 - EXTREMELY HAZARDOUS SI This product does not contain substances listed	UBSTANCES (40 CFR 355) : I in Appendix A and B as an Extremely Hazardous Substance.
SECTIONS 311 AND 312 - MATERIAL SAFET Dur hazard evaluation has found this product to ndicated EPA hazard categories:	Y DATA SHEET REQUIREMENTS (40 CFR 370) : be hazardous. The product should be reported under the following
XImmediate (Acute) Hea-Delayed (Chronic) Hea-Fire Hazard-Sudden Release of Pre-Reactive Hazard	alth Hazard Bis Continuing essure Hazard
he current thresholds are: 500 pounds or the the	shed threshold quantities for the reporting of hazardous chemicals. hreshold planning quantity (TPQ), whichever is lower, for extremely Il other hazardous chemicals.
SECTION 313 - LIST OF TOXIC CHEMICALS ((40 CFR 372) : e List of Toxic Chemicals.
OXIC SUBSTANCES CONTROL ACT (TSCA)	on or exempted from the TSCA 8(b) Inventory (40 CFR 710)
he substances in this preparation are included) ที่ "คณะไข้ทรี่ 155 แต่ 10 แม่ 10 ได้ และสารได้ 10 และสารได้ 10 และสารได้ 10 และสารได้ 10 และสาร ได้

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FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act: When use situations necessitate compliance with FDA regulations, this product is acceptable under: 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product contains the following substances listed in the regulation:

Substance(s)	Citations		
Sodium Bisulfite	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 Bisulfite	7631-90-5
Water	7732-18-5

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

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

INTERNATIONAL CHEMICAL CONTROL LAWS

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS) and are listed on the Australian Inventory of Chemical Substances (AICS).

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MATER	IAL	SAF	ETY	DATA	SHEET

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CHINA

All substances in this product comply with the Chemical Control Law and are listed on the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Ministry of International Trade & industry List (MITI).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

NEW ZEALAND

This product's trade name is registered with the Environmental Risk Management Authority (ERMA).

THE PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippine Inventory of Chemicals & Chemical Substances (PICCS).

16. OTHER INFORMATION

NALC(

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.

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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: 02/23/2004 Version Number: 1.6

		- FOR INFORMATION	UNLT			Expires C
,	Material Safety Genium Publishing 1145 Catalyn Schenectady, NY 123 (518) 377-8	Corporation Street 03-1836 USA		Revisi Issued	32. URIC ACID, ENTRATEL on C October 19 d: February 1	792 192 192 10f
·		RIALFIDENTIFICATION	A. C.	a	1998 St. 1998 - 2 -	19
	MATERIAL NAME: SULFU	il of Vitriol, Hydrogen Sulfate; H2S	Or CAS #7664-93-9			322
		R: Available from many suppliers, i			HDAIS	V
•		S. Avalable from hilly support, 1 S.R. Monistown, NJ 07960; Telep		a an an an an an an an an an an an an an	- H3	R 1
					R: 2 PPE: *	54
		. .	•	•••	* Sec Sect. 8	KO
14	SECTION 2. INGRE	DIENTS AND HAZARD	S	W. W. W. W.	ZARD DAT	A
• . •	Hydrogen Sallate (H2SO4)			96 TW	A: 1 mg/m3	
	Water		Bele		Miss Inhalation,	
2	• Material is obtained by the 1	reaction of SO3 and water. Can con	itain .		ng/m ³ , 24 wk. fouth Effects)	
	with H2SO4 control.	1 0.02% max of iron as Fe. Property		Rat, On	L	
۰.	Current OSHA standard and A	CGIH (1985-86) TLV. NIOSH bus	a 10-br		2140 mg/kg	· · ·
	TWA, 40-br. work week, of 1					
		•				
	SECTION 3. PHYSIC	CAL	and the second second second second second second second second second second second second second second second	X		
• • •	BECHONSETTION	93.19% H/SQ	98.33% H2SO4	100% H-SO		
	Bolling Point, 1 atm, deg C Specific Gravity (60/60°F) Volatiles, % @ 340°C Melting Point, deg C Water Solubility Complete M	cz 231 1.8354 cz 100 cz -34	ca 338 1.64 ca 100 ca 3	CE 330 (40 1.54 CE 100 104		
:	reported in degrees Baume Be)	DF <1 (93.19% H-SO ₄); Dep). Formula is Be-145 [145/sp gr for	f. Baume 2. 66 (93.19 liquids heavier than v	16 H2SU4) - Den Maler].	miy or H3504 E	
	3		th no odor. Mista gree	ster than 1 mg/m	3 are early	
•	Appendice and odor Clear, o	Sonet, Bygroscope, buy Aqua wi				
	recognizable. Those at 5 mg/m	a are distinctly objectionable.		ix the trade with	LOWER	UPPER
	Appendice and other Clear, or recognizable. Those at 5 mg/m -SECTION 4. FIRE A Flash Point and Method	a are distinctly objectionable.	Flammability Lin		LOWER	UPPER
· · ·	recognizable. Those at S mg/m -SECTION 4. FIRE A Flash Point and Method Noce - Nooffammeble	n ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA	1	mits In Air	NA	NA
	recognizable. Those at 5 mg/m -SECTION 4. FIRE A Flash Point and Method Noce - Nortfammable Salimic acid is poplammable:	n ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA bowever, E is a strong oxidizing an	NA	mits In Air	NA with combestible	NA
· · · · ·	recognizable. Those at S mg/m -SECTION 4. FIRE A Flach Point and Method Noce - Norffammable Sulfuric acid is nonflammable; materials. Small fires may be	a ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA NA however, it is a strong oxidizing eg mothered with milable dry chemics	cos and may cause ign L. Cool exterior of sta	mits In Air	NA with combustible SO4 with water	NA ID
	recognizable. Those at 5 mg/m -SECTION 4. FIRE A Flach Point and Method Noce - Nonflammable Sulfaric acid is scollammable; materials. Small fires may be 1 avoid reptare if exposed to fire react with metals to Bherste fla	a ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong axidizing ag smothered with suitable dry chemica Do not add writer or other liquid 1 mmable hydrogen gat.	tor and may cause ign al. Cool exterior of sto to the acid! The acid,	mits In Air	NA with combustible SO4 with water	NA ID
	recognizable. Those at 5 mg/m -SECTION 4. FIRE A Flach Point and Method None - Nonflammable Salfuric acid is sonflammable; materials. Small first may be (svoid reptare if exposed to fire react with metals to Bherste fla Salfuric acid mists and vacors	n ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong auditing ag smothered with suitable dry chemics Do not add writer or other liquid 1 multic hydrogen gas. from a fire area are convolve (acc a	Enc and may cause ign al. Cool exterior of six to the actid! The actid, act. 5).	mits In Air	NA with combustible SO4 with water	NA ID
	recognizable. Those at 5 mg/m -SECTION 4. FIRE A Flach Point and Method None - Nonflammable Salfuric acid is sonflammable; materials. Small first may be (svoid reptare if exposed to fire react with metals to Bherste fla Salfuric acid mists and vacors	a ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong axidizing ag smothered with suitable dry chemica Do not add writer or other liquid 1 mmable hydrogen gat.	Enc and may cause ign al. Cool exterior of six to the actid! The actid, act. 5).	mits In Air	NA with combustible SO4 with water	NA ID
, , , ,	recognizable. Those at S me/m -SECTION 4. FIRE A Flach Point and Method Noce - Norflammable Sulfuric acid is norflammable; materials. Small fires may be avoid reptare if exposed to fire react with metals to liberate fla Sulfuric acid mists and vapors Fire fighters must wear self-cor	and are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong oxidizing ag smothered with suitable dry chemics Do not add water or other liquid 1 mmable hydrogen gas. from a fare area are convolve (see a stained breaching equipment and fall	tot and may cause ign al. Cool exterior of str in the acid! The acid, act. 5). by protective clothing.	mits In Air	NA with combestible SO4 with water diluted with wat	NA ID
	recognizable. Those at S me/re -SECTION 4. FIRE A Flach Point and Method Noce - Nortfammable Salfuric acid is scollammable; materials. Scall fires may be a svoid rupture if exposed to fire react with metals to Eberate fla Salfuric acid mists and vapors Fire fighters must were self-con SECTION S.*REACT	Dar are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong oxidizing ag smothered with suitable dry chemica Do not add water or other liquid 1 mushle hydrogen gas. from a fire area are consolve (are a ntained breaching equipment and full TVITY-DATA	tot and may cause ign al. Cool exterior of str to the acid! The acid, ect. 5). by protective clothing.	mits In Air	NA with combestible SO4 with water diluted with wate	NA ID
	recognizable. Those at S me/m -SECTION 4. FIRE A Flach Point and Method Noce - Norflammable Sulfuric acid is soullammable; materials. Small fires may be a svoid reptare if exposed to fire react with metals to Eberste fla Sulfuric acid mists and vapors Fire fighters must wear self-con SECTION S.*REACT Sulfuric acid is stable under nor strong mineral acid reacting with	and are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong oxidizing ag smothered with suitable dry chemics Do not add water or other liquid 1 mmable hydrogen gas. from a fare area are convolve (see a stained breaching equipment and fall	NA tot and may cause ign al. Cool exterior of str in the acid! The acid, ect. 5). by protective clothing. It does not undergo ha acid is also a dehyd	mits In Air	NA with combestible SO4 with water diluted with water diluted with water fization. It is a king up moisture	NA to tr, cat
	recognizable. Those at S mayn -SECTION 4. FIRE A Flach Point and Method None - Nonflammable Sallaric acid is souflammable; materials. Small first may be 1 svoid reptare if exposed to fire react with metals to Bherste fla Sallaric acid mists and vapors 1 Fire fighters must wear self-con SECTION 5.*REACT Salfuric acid is stable under nor strong mineral acid reacting with readily from the air or other ma This material macts exothermice	D are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong oxidizing ag smothered with suitable dry chemics Do not add writer or other liquid 1 mmable hydrogen gas. from a fire area are conneive (see a national breathing equipment and fall IVITY DATA rmal conditions of use and storage. th bases and metals. The concentrat iterials. Hydrogen gas may be genera- ally with water. (Acid should alway	NA cot and may cause ign al. Cool exterior of six in the acid! The acid, ect. 5). by protective clothing. It does not undergo ha ed acid is also a debye rated within a H ₂ SO ₄ rate added alowly to	mits In Air mits In Air orage tanks of Hy especially when especially especial especially	NA with combustible SO4 with water diluted with wate diluted with wate fization. It is a king up moleture drums cautionily ded to acid can c	NA to cr, call
	recognizable. Those at S mayn -SECTION 4. FIRE A Flach Point and Method None - Nonflammable Sallaric acid is souflammable; materials. Small first may be 1 svoid reptare if exposed to fire react with metals to Bherste fla Sallaric acid mists and vapors 1 Fire fighters must wear self-con SECTION 5.*REACT Salfuric acid is stable under nor strong mineral acid reacting with readily from the air or other ma This material macts exothermice	n ³ are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong axidizing ag smothered with suitable dry chemics Do not add writer or other liquid 1 mmable hydrogen gat. from a fire area are corrosive (ace a intained breathing equipment and full TVITY DATA rmal conditions of use and storage. h bases and metals. The concentrat iterials. Hydrogen gas may be general	NA cot and may cause ign al. Cool exterior of six in the acid! The acid, ect. 5). by protective clothing. It does not undergo ha ed acid is also a debye rated within a H ₂ SO ₄ rate added alowly to	mits In Air mits In Air orage tanks of Hy especially when especially especial especially	NA with combustible SO4 with water diluted with wate diluted with wate fization. It is a king up moleture drums cautionily ded to acid can c	NA to cr, call
	recognizable. Those at S mp/m -SECTION 4. FIRE A Flach Point and Method Noce - Norffammable Sulfuric acid is scollammable; materials. Small first may be a svoid reptare if exposed to fire react with metals to Eberste fla Sulfuric acid mists and vapors Fire fighters must wear self-con SECTION S.*REACT Sulfuric acid is stable under nor strong mineral acid reacting will readily from the air or other ma This material reacts exothermics bolling and uncontrolled splatch	D are distinctly objectionable. ND EXPLOSION DATA Autoignition Temp. NA however, it is a strong oxidizing ag smothered with suitable dry chemics Do not add writer or other liquid 1 mmable hydrogen gas. from a fire area are conneive (see a national breathing equipment and fall IVITY DATA rmal conditions of use and storage. th bases and metals. The concentrat iterials. Hydrogen gas may be genera- ally with water. (Acid should alway	NA cot and may cause ign al. Cool exterior of six in the acid! The acid, ect. 5). by protective clothing. It does not undergo ha ed acid is also a debye rated within a H ₂ SO ₄ rate added alowly to	mits In Air mits In Air orage tanks of Hy especially when especially especial especially	NA with combustible SO4 with water diluted with wate diluted with wate fization. It is a king up moleture drums cautionily ded to acid can c	NA to cr, call

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	DTINIA I IUNI UNIL T
No. 9 2/86 SULFURIC ACID, CONCE	NTRATED (Rev. C) I dent 735 30f
SECTION 6. HEALTH HAZARD INFOR	MATION TLY *** MERCENTICAL
human tissue with which is comes in contact. Ingestion may	ring agent, and a dehydrating spent that is rapidly damaging to hill y cause severe injury or death. Eye contact produces severe or upper respiratory tract and the langs. Sulfaric acid is not listed as
FIRST AID: EYE CONTACT: Immediately flush eyes () minutes. Speed in diluting and rinsing out acid with water i	
immediately with large amounts of milk or water, then give	milk of magnetis to neutralize. Never give anything by mouth to s spontaneously, continue to administer fluid. Obtain medical
• GET MEDICAL HELP = In plant, parametic, community	
SECTION 7. SPILL, LEAK, AND DISPOS	SAL PROCEDURES
	ier for assistance in this planning, in specting local regulations, Provide optimum ventilation; vapors are extremely initiating.
Cleanup personnel need protection against inhalation or contr diluted with much water and neutralized with sode ash or im sches, or gravel and neutralize cautiously with sode ash or in	sci. Keep upwind. Contain spill. Minor leaks or spills can be be. If water is not available, cover contaminated area with sand, me.
explosion hazard. EPA (CWA) RQ 1000 Ibs. (40 CFR 117).	
	FORMATION FRANK WAR
miciency particulate respirator with full facepiece is warrante resourcedemand mode is used to 100 mg/m ³ .	s in the workplace. Where mists are up to 50 mg/m ³ , a high- ed; a type-C supplier-air respirator with full facepiece operated in shield where splashing may occur. Acid-resistant protective scommended to avoid body contact.
Evewach fountain and safety showers with deluge type of her scred.	eds should be <u>readily</u> available where this material is handled or
Contact lenses pose a special bazard; soft lenses may absorb Comprehensive preplacement and annual medical examination nuccess membrane imitation and cough are indicated.	and all inners concentrate initiatia. as with emphasis on dental erosion, cardiopulmonary system, and
SECTION 9. SPECIAL PRECAUTIONS A	ND COMMENTS
ininage. Keep out of direct smilight, do not store above 89. natorials, metallic powders, chromstes, chlorates, nitraies, car a general storage or work areas for emergency use. Protoct o xotection. Sulfuric acid is highly corrosive to most metals, e	ventilisted storige areas having acid-resistant floors with good 6F (32°C). Storage facilities are to be separate from organic bides, oxidizables, etc. Sods ash, sand, or lime should be kept containers against physical damage. Glass bottles need extra especially below 77% H ₂ SO ₄ . Avoid breathing mist or vaport.
would contact with shin or eyes. Do not ingest. Do not add to open cautiously. Use nonsparking tools free of all, dirt, at	water to concentrated acid. Drums may contain hydrogen gas,
OT Classification: Corrosive Material. ID No.: I	UN1830 : Label: Corrosive
Data Source(s) Code: 1-12, 19, 20, 24, 26, 31, 37-39, 42, 82	. cx
formato a la fae michility al'information benis for perchancio perposes	Approvals Antunceu, 6/86.
secure of y perchange a representative. Therefore, stronger reaccentie cars been taken in the properties of such information, Omeans Publishing Corp. actor so very means and the secure secure secure secure to the properties of the accuracy or subshifty of such information for application to purchaser's	Indust. Hygiene/Safety JW 6/96
no accuracy or suitabulty of such advertiginous for applications to purchaseer's and/od purposes or for consequences of its wes.	Medical Review

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NOV02' 99 (TUE) 10:59 HOUGHTON CHEMI	CAL TEL:161	172542713	P. 002
- JAN-09-1998 29:15 FROM	то	81617	542713 7.8 2
HATERIAL SAPETY DATA	BELLACIDE (R) - 325		FMC
	5915 - 12 -41 -3 -2	· · · · · · · · · · · · · · · · · · ·	
U.S. /CANADA VERSION	EFFECTIVE: 06728795	Pr	INTED: 02/23/94
PRINTED FOR	FMC CORPORATION	, :	
	I. CHENICAL PRODUCT	COMPANY IDEN	TIFICATION ====
FRODUCT NAME	BELLAGIDE 325 ALGICIDE		
SYNDNYMS	2- (TERT-BUTYLAMIND) - 5-TRIAZINE; TERBUTHY		ETHYLAHINO)-
INFORMATION PROVIDED BY	FMC CORPORATION PROCESS ADDITIVES DI 1735 Market Street	VIBION	the state of the second s
	PHILADELPHIA, FA 19 (800) 545-6532	103	•
EMERGENCY PHONE NUMBERS	(800) 424-9300	•	
MEDICAL PLANT/OTHER	(303) 595-9048 CALL (304) 755-6300 CALL	COLLECT	
	2. COMPOSITION/INFOR	Mation on in	GREDIENTS SAME !
CAS # AND COMPONENTS	2- (TERT-BUTYLAMINO)- S-TRIAZINE	4-CHLORD-6-(ETHYLAMINO)-
	CAS#: 5715-41-3 PERCENT: 4%		•
	HATER CAS#: 7732-18-5		
FEFORD#2====================================	3. HAZARD . IDENTIFICA	IDN :=======	
EMERGENCY OVERVIEW	PRODUCT IS STABLE UND USE. UNDER FIRE COND	DER NORMAL C	NDITIONS OF
HEALTH EFFECTS	DXIDES AND CHLORINE D Product 15 Slightly T	OMPOUNDS MA	BE RELEASED.
	4. FIRSTAID MEASURES		
EYES	FLUSH WITH PLENTY OF ATTENTION IF IRRITATE	WATER. GET	HEDICAL D PERSISTS.
SKIN:	WASH WITH PLENTY OF S Attention if irritati	DAP AND WATE	R. GET HEDICAL
- INHALATION	REMOVE TO FRESH AIR. Discomfort Occurs and	IF BREATHIN	G DIFFICULTY OR
INGESTION.	ATTENTION. DRINK 1: DR "2 GLASSES VOMITING BY TOUCHING	OF WATER AN	INDUCE
	WITH A FINGER DR BY G NEVER INDUCE VOMITING	IVING SYRUP	DF IPECAC.
	TD AN UNCONSCIDUS PER DOCTOR.	SON. CONTAC	T A MEDICAL
- NOTES TO PHYBICIAN	NOT AVAILABLE	i	
	:	•	
PAD		CONTI	UED) PAGE 01 .
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UZ YY (TUET TU: 59 HOUGHTUN CHEMICA	L TEL: 16172542713	P. 003
JAN-89-1998 89:15 FROM	TO 8161	72542713 P.03
•		•
•		FMC
MATERIAL SAFETY DATA	BELLACIDE (R) 325	
	5915 -41 -3 -2	•
U.S:/CANADA VERSION	EFFECTIVE: 06/28/95	RINTED: 02/23/96
i	[
	S. FIRE FIGHTING MEASURES ======	**********************
I I I I I I I I I I I I I I I I I I I	CARDON DIANIDE ERAM DON CURNI	TAL UNTED CORAN
	CARBON DIOXIDE, FOAM, DRY CHEMI USE-SELF CONTAINED BREATHING AF	
PROCEDURES		
	DECOMPOSITION AND COMBUSTION PR	DDUCTS MAY BE
	THERMAL DECOMPOSITION AND BURNI	THE MAY PRODUCE
PRODUCTS	CARBON MUNDXIDE, CARBON DIOXIDE	NITROGEN AND
	SULFUR DXIDES, CHLORINE COMPOUN Toxic species.	AND DTHER
	6. AGCIDENTAL RELEASE MEASURES	**************
PROCEDURE FOR RELEASE	ISOLATE AREA. WEAR PRESCRIBED	PROTECTIVE
OR SPILL	CLOTHING AND EQUIPMENT. DIKE T	CONFINE SPILL .
	ABSORD WITH AN ABSORDENT OR SHO An Approved container and dispo	
	THE METHOD OUTLINED UNDER THE "	DISPOSAL
	CONSIDERATIONS" SECTION. TO DE Area, tools and equipment wash	
	ADD TO DRUNS OF WASTE ALREADY C	
		• •
	7. HANDLING AND STORAGE	
	AVOID DIRECT CONTACT WHEN HANDL	
VENTILATION	USE WITH GENERAL ROOM VENTILATI CONTAMINATION IS EXPECTED.	ON WHEN AIRBORNE
STORAGE	KEEP CONTAINERS CLOSED WHEN NOT	
	FROM HEAT, FLAME AND PHYSICAL D	AHAGE.
22203222728222224C3232	8. EXPOSURE CONTROLS PERSONAL P	ROTECTION =====
	•	
CONTROL NEASURES	UNDER NORMAL CONDITIONS OF USE NOT BE A SIGNIFICANT CONCERN.	
	CONDITIONS THE PERSONAL PROTECT	IVE EQUIPHENT
RECOMMENDED PERSONAL	INDICATED BELOW IS RECOMMENDED.	
PROTECTIVE EQUIPMENT	•	
RESPIRATORY	USE MSHA/NIDSH APPROVED ORGANIC	PESPIRATORY
	PROTECTION WHEN AIRBORNE VAPOR USE CHEMICAL TYPE GOGGLES OR FA	
GLOVES	USE IMPERVIOUS GLOVES.	
SPECIAL CLOTHING	WEAR INPERVIOUS APRON AND GAUNT	LETE WHEN
· · · · · · · · · · · · · · · · · · ·	SPLASHING IS EXPECTED DURING LI Normal Workshoes Except in Cond	
	WHERE RUBBER OVERSHOES OR BOOTS	
•	REQUIRED.	
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PAD	/ A	
· · · · · · · · · · · · · · · · · · ·	I CUN F	INVEDI PAGE 02

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NOV02' 99 (TUE) 10:59 HOUG	HTON CHEMICAL	_ TEL:161	72542713		<u>P. 004</u>
Jan-09-1998 09:16	PROM	סז	R16172	542713	P:84
MATERIAL SAFETY DATA	BELLA	CIDE (R) -325		алан (1997) 1994 — С. С. С. С. С. С. С. С. С. С. С. С. С.	FMC
	5715	-41 -3 -2		• •	
1 + U.S./CANADA VERS	ION EFFEC	TIVE: 06/28/95	PR	INTED	02/23/96
TELERD NDSETTELES		YSICAL AND CHEM	ICAL PROPERT	IES ===)=>z>ppppc
MELTING/FREEZING		VAILABLE		•	ه د د ور میر د
BBILING PDINT		VAILABLE		· · · · ·	
VAPOR DENSITY (A)	IR=11 NOT A	PPLICABLE			· · · · · · · · · · · · · · · · · · ·
APPEARANCE AN		TD BEIGE AQUED	US DISPERSIO	N	· · · ·
ODOR	SLIGH	T. CHALKY DOOR			
SFECIFIC GRAVITY SOLUBILITY'IN HE		VAILABLE			
7 VOLATILES	NOT A	VAILABLE	•		÷, · · · · · · · · · · · · · · · · · · ·
EVAPORATION RATE (BUTYL ACETAT		VAILABLE	•		• .
PH (AS 15)					
PH (17 SOLUTION) ODOR THRESHOLD		VAILABLE VAILABLE		,	
DENSITY . (G(HL)	NOT A	VAILABLE			
PARTITION COEFFIC		VAILABLE			
FLASH POINT	NOT A	PPLICABLE	•		•
AUTOIGNITION TEMP		VAILABLE PPLICABLE	• •	. ·	•
(AIR)	LOWER NOT A	PPLICABLE		1 - E	• • •
EXPLOSIVE PROPERT		PPLICABLE PPLICABLE	•	1. S.	
SOLUBILITY	NBT A	VAILABLE	· · ·	1	
- FAT. SOLUBILI			•		
		TARILITY AND PE	ACTIVITY ===	-	
	• 1.			1	
HAZARDOUS POLYMER	RIZATION : NILL'	E Not occur			
CONDITIONS TO AVE	DID AVDID	STDRAGE AT EXT	RENE TEMPERA	URES.	
HATERIALS TO AVOI			. :	il ·	
CONTRIBUTE TO INS	TABILITY		•	l	•
INCOMPATIBLITY.				HAY P	RODUCE
PRODUCTS	CARBOI	N HONOXIDE, CAR	BON DIDXIDE.	NITROG	EN AND
		R DXIDES, CHLDR SPECIES,	INE COMPOUND	ș and O	II HER
SENSITIVITY TO ME	CH NONE				•
IMPACT SENSITIVATY TO ST			:		•
DISCHARGE	• •				
		DXICOLOGICAL IN	DRMATION ==		INTEESSAR
EYE CONTACT			, t		
PAD :		·	GONTI	HUEDS P	AGE D3
	-	•		1	
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201	2 99 (TUE) 10:59 HOUGHTON CH	EMICAL TEL: 16172542713 P. 005
-04		
	JAN-09-1998 09:16 FROM	TU 916172542713 P.05
	•	
<u>I</u> LI	ATERIAL SAFETY DATA	BELLACIDE (R) 325 FMC.
		3913 -41 -3 -2 :
r		
77	U.S./CANADA VERSION	EFFECTIVE: 06/28/95 PRINTED: 02/23/96 ;
• . •	• • •	
:	. 29222222242294623222222	==== 11. TOXICOLOGICAL INFORMATION ====================================
	SKIN CONTACT	: NON-IRRITANT (RABBIT)
		NDN-SENSITIZER (GUINEA PIG)
	SKIN ABSORPTION	NO DATA AVAILABLE
	INGESTION	
		PRODUCT IS SLIGHTLY TOXIC BY INCESTION.
	OVEREXPOSURE	
.	.CHRONIC EFFECTS FROM	
ļ	, OVEREXPOSURE (ÉFFECTS)CONSIDERED	TESTES, TYHMUS AND STOMACH WHEN PRODUCT WAS APPLIED DERMALLY. LONG-TERM ANIMAL STUDIES WITH
i	INCLUDE	THE ACTIVE INGREDIENT INDICATED FOXIC EFFECTS IN
	SENSITIVITIES.	LYMPH NODES, THYMUS AND SPLEEN FOLLOWING ORAL
	CARCINOGENICITY,	
I	TERATOGENICITY,	INCIDENCE OF MAMMORY TUMORS WAS NOTED IN RATS.
i	MUTAGENICITY, Synergistic	INHALATION DR INCESTION OF ETYHLENE CLYCOL MAY Result in central nervous system depression,
:	PRODUCTS, AND AN	
	MEDICAL CONDITIO	NS TERATOGENICITY.
1	GENERALLY RECOGN	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ļ	AS BEING AGGRAVA	TEU
;	. pj EArdaune./	
11	=======================================	==== 12. ECOLOGICAL INFORMATION ====================================
:}	SUUTOANSSTAL SEATE	SEWAGE BACTERIAL TOXICITY
1	EAVIRUNCEATHE FRIETIS	INHIBITORY CONCENTRATION ON RESPIRATION OF
		AEROBIC WASTE WATER - IC20, IC30 IC80 > 100 PPH
ł	ENVIRONMENTAL EFFECTS.	
	1	BELOW IS FOR TERBUTHYLAZINE, THE MAJOR
1		INGREDIENT: FISH TOXICITY -
		BLUEGILL: 96 HR LC50 = 7.6 PPN
	ł	RAINBOW TROUT: 96 HR LCSO = J. 8 PPH
		INVERTEBRATE TOXICITY -
		DAPHNIA MAGNA: 48 HR ECSD = 39 PPM
1	•	AVIAN TOXICITY -
	•	BOBWHITE QUAIL: B DAY DIETARY LOSO > 5620. PPM
	•	HALLARD DUCK: & DAY DIETARY LCSO > 3620 PPM
		TARA 13 DIEDORAL CONSIDERATIONS
1	ب بن بن بن بن بن بن بن بن بن بن بن بن بن	==== 13. DISPOSAL CONSIDERATIONS ====================================
	WASTE DISPOSAL NETHOD.	OPEN DUMPING OR BURNING OF THIS MATERIAL IS
ļ	•	PROHIBITED. AN ACCEPTABLE METHON OF DISPOSAL IS
i	-	TO BURN IN AN INCINERATOR IN ACCORDANCE WITH ALL
	•	LDCAL. STATE AND FEDERAL ENVIRONMENTAL LAWS,
	•	RULES, STANDARDS AND REGULATIONS, The Appropriate Regulatory Agencies Should be
	•	CONTACTED PRIOR TO DISPOSAL.
1	•	
	PAD .	(CONTINUED) PAGE 04
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-02'99 (TUE) 11:00 HOUGHTON CHEMICA	AL TEL:16172542713	P. 006
Jak-89-1992 05:17 From	21619 ÖT	2542713 P.86
-		SMC
	BELLACIDE (R) 325	
	3915	
U.S. / CANADA VERSION	EFFECTIVE: 06/28/95 P	RINTED: 02/23/96
***************************************	14. TRANSPORT INFORMATION	
DDT PROPERISHIPPING NAME.	NOT REGULATED AS A HAZARDOUS MA	EPTAL BY U.S.
	DDT 47 CFR 172,101	
	NDT REGULATED	1
DOT CLASSIFICATION	NOT REGULATED	
DOT LABELSI		
DOT MARKING		•
DOT PLACARD		•
	NOT APPLICABLE	l:
HAZARDOUS SUBSTANCE/R0 :		
i 49 STCC NUMBER	NOT AVAILABLE	
PRECAUTIONS TO BE TAKEN :		PROTECT AGAINST
IN TRANSPORTATION	PHYSICAL DAMAGE.	· · · · · · · · · · · · · · · · · · ·
DTHER SHIPPING,	NONE	i .
INFORMATION		
	15. REGULATORY INFORMATION APPE	******
DSHA		
EXPOSURE LIMITS		
SUBSTANCE(S)	NDNE	
STEL		
CEILING		
SKIN DESIGNATION.:		•
	NDT APPLICABLE	
STEL	NOT APPLICABLE	•
CEILING	NDT APPLICABLE	
SKIN DESIGNATION.:	NOT APPLICABLE	
TARGET DRGAN EFFECTS	LIVER, TESTES, THYMUS, STIOMACH,	SPLEEN
I CARCINDEENIC ROTENTIAL	NP.	ł
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LISTED DN NTP REPORT IARC GROUP 1, 2A, 2B	NU	
U.S. EPA' REQUIREMENTS		
U.S. EPA' REQUIREMENTS RELEASE REPORTING		
CERCLA (40 CFR 302)	[1] Weight and Market br>Market and Market and Mar Market and Market and Mar Market and Market and	1
LISTED SUBSTANCE(S)	NONE	1
RQ	NOT APPLICABLE	
CATEGDRY	NOT APPLICABLE	
RCRA WASTE ND	NOT APPLICABLE	1
UNLISTED SUBSTANCETS	NONE	1
RG CHARACTERISTIC:	NUI APPLICABLE	
RCRA WASTE ND	NOT APPI 1CADI C	and the second sec
SARA TITLE TTT SEC 313	INCONTELAUNDEE	· ·
(40 CFR 372)!	· •	4
LISTED TOXIC CHEMICAL.	NONE	
INVENTORY REPORTING	In the second seco	
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		-FMC
SATERIAL SAFETY DATA	BELLACIDE(R) 325	
•	5915 -41 -3 -2	
U.S. /CANADA VERSION	EFFECTIVE: 06/28/95 P	RINTED: 02/23/96
U.S. / CARADA VERSIDA		AIRIED: 02/23/96 1
	• ;	•
	15. REGULATORY INFORMATION ====	
SARA TITLE III SEC 311/312	•	•
(40 CFR 370)	•	
SUBSTANCE (S)	NOT. APPLICABLE ;	•
	DELAYED (CHRONIC) HEALTH HAZARD	: il
PLANNING THRESHOLD :		
ENERGENCY PLANNING	•	- 1
SARA TITLE III SEC 302-303	•	
(40 CFR 355)		
LISTED SUBSTANCE(S)	NUNE Not Appl'icable	
PLANNING THRESHOLD.		
U.S. TSCA STATUS		
CANADA -	· · · · · · · · · · · · · · · · · · ·	· · · ·
INGREDIENT DISCLOSURE LIST		•
SUBSTANCE (5) ,		
	NOT EVALUATED FOR CANADA	•
HAZARD SYMBOLE		· •
PRODUCT IDENTIFICATION NO:		.
DOMESTIC SUBSTANCE LIST		l I
CEPA PRIORITY LIST		
CARCINDGENICITY	• • • • • • • • • • • • • • • • • • •	
ACGIH APPENDIX A		· · !'
AI - CONFIRMED HUMAN		
AI - SUSPECTED HUMAN:		
LABEL LANGUAGE (US/CANADA)		
HEALTH	U.S CAUTION- HARMFUL IF SHALL	ONED OR ADSORBED
	THROUGH THE SKIN, AVOID CONTACT	WITH SKIN AND
•	CLOTHING. HASH THORDUGHLY AFTER	HANDLING.
	RENOVE AND WASH CONTAMINATED CLI	THING BEFORE
	REUSE.	1 1
	NOT APPLICABLE	
	KEEP OUT OF REACH OF CHILDREN. Do not contaminate water: food (
	STORAGE AND DISPOSAL. PROTECT I	ROM ERFETING
FIRST AID	FIRST AID IN CASE OF CONTACT:	
[[]	EYES: FLUSH EYES WITH FLENTY O	WATER FOR AT
1	LEASE 15 MINUTEE. GET HEDICAL /	TTENTION.
	SKIN: FLUCH SKIN WITH PLENTY DE	WATER DR WASH
	WITH MILD SOAP AND WATER.	
	INGESTION: IF CONSCIOUS, GIVE And induce vomiting by phacing	LENTY OF WATER
i li	OF THROAT. GET MEDICAL ATTENTIC	INGER IN BACK
	NONE KNOWN	
1 1	· ·	
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Internal SAFETY DATA DELLACIDE (R) 325 DELLACIDE (R) 325 V.B. / CANADA VERSION EFFECTIVE: 04/28/75 PRINTED: 02/23/76 PRODUCT USES ALGICIDE ALGICIDE PRODUCT USES ALGICIDE REPAIL PRODUCT USES ALGICIDE ALGICIDE PRODUCT USES ALGICIDE ALGICIDE PRODUCT USES ALGICIDE REDATATION PRODUCT USES ALGICIDE REDATATION PRODUCT USES ALGICIDE REDATATION PRODUCT USES REDATATION REDATATION PRODUCT USES REDATATION REDATATION PRODUCT USES REDATATION REDATATION PRODUCT HAS BEEN RESTED IN ACCURANCE WITH THE PRODUCT HAS BEEN RESTED IN ACCURANCE WITH THE PRODUCT HAS BEEN RESTED IN ACCURANCE REST. RETERIAL-AS SAFE AND EXPERTION RECOMMEND FILS AFEILACAST I I FLEATATION RESTENDING I PRODUCT HAS BEEN RESTED IN ACCURANCE WITH SERANCE I REALTA I I I FLEATATION AND FORMATION AND CONTRACT THIS MADAND INFORMATION SYSTEM THANDOUS HATERIAL INFORMATION SYSTEM THANDOUS </th <th>ANTERNAL SAFETY DATA BELLACIDE (R) 325 5915 -41 -3 -2 U.B. /CANADA VERSION EFFECTIVE: 06/28/75: PRINTED: 02/23 FRODUCT USES</th> <th>713 <u>P</u>.</th> <th>CAL TEL:10</th> <th>99 (TUE) 11:00 HOUGHTON CHEMI</th> <th>-02' 99 (TUE</th> <th>)¥. <u>-</u></th>	ANTERNAL SAFETY DATA BELLACIDE (R) 325 5915 -41 -3 -2 U.B. /CANADA VERSION EFFECTIVE: 06/28/75: PRINTED: 02/23 FRODUCT USES	713 <u>P</u> .	CAL TEL:10	99 (TUE) 11:00 HOUGHTON CHEMI	-02' 99 (TUE)¥. <u>-</u>
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MATERIAL SAFETY DATA SHEET

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· · · ·	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: Bayhibit AM Inh PRODUCT CODE: V801 CHEMICAL FAMILY: Phosphonates CHEMICAL NAME: 2-phosphono-1,2 solution SYNONYMS	,4-butanetricarboxylic acid aqueous
2. COMPOSITION/INFORMATION ON INGR	EDIENTS:
INGREDIENT NAME /CAS NUMBER EXPOSURE LIMITS 	CONCENTRATION (%)
2-phosphono-1,2,4-butanetricarboxylic 37971-36-1 OSBA : Not Established ACGIH: Not Established	Approx. 50 %
3. HAZARDS IDENTIFICATION:	
* EMERGENO * * CAUTION! Color: Colorless t * Odor: Very slight odor; May	cause eye irritation; Contact * able gas; Corrosive to steel or * cay to cool fire-exposed * risk of rupture; Irritating *.
Product Code: V801 Approval date: 11/18/1998	MSDS Page 1 Continued on next page

3. EAZARDS IDENTIFICATION (Continued)

* decomposition. * POTENTIAL HEALTH EFFECTS: لير ويراه يعطون عاور فالا الالم ROUTE(S) OF ENTRY..... Eye-Contact; Skin Contact; Inhalation HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE: ACUTE EFFECTS OF EXPOSURE....: On the basis of Animal Toxicity testing (see Section 11), we would expect this product to be moderately irritating to the eyes, with symptoms such as tearing, reddening and swelling. We would also expect this product to be non-irritating to the skin and to be essentially non-toxic by ingestion. CHRONIC EFFECTS OF EXPOSURE...: Prolonged or repeated skin contact could result in skin irritation. Possible symptoms include itching, reddening, swelling, rash and scaling. Based on animal test results, no mutagenic or teratogenic effects are expected. Also, sub-chronic three (3) month animal feeding studies were conducted without any adverse effects. CARCINOGENICITY...... This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing eye conditions may be 4. FIRST AID MEASURES: وحلوات المراقع الترجيع المراجع المراجع المراجع FIRST AID FOR EYES: Flush eyes with water for at least 15 minutes. Consult a physician if irritation persists. FIRST AID FOR SKIN Wash thoroughly with soap and water. Consult a physician if irritation develops. FIRST AID FOR INHALATION: Remove to fresh air. Consult a physician if searching is difficult. FIRST AID FOR INGESTION .: Consult a physician. FIRE FIGHTING MEASURES: EXTINGUISHING MEDIA.....: Water; Foam; Carbon Dioxide Product Code: V801 MSDS Page 2 ٠. Approval date: 11/18/1998 Continued on next page

5. FIRE FIGHTING MEASURES (Continued)

SPECIAL FIRE FIGHTING PROCEDURES: Under fire conditions irritating and/or toxic gases and aerosols may be present. Firefighters should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES:	
SPILL OR LEAK PROCEDURES Utilize equipment. Spills should be taken up wi in containers. Spill area can be washed for approved disposal. Bayhibit AM may precipitation by flocculation with iron	th a suitable absorbent and placed with water. Collect wash water be eliminated from sewage water via
7. HANDLING AND STORAGE:	
STORAGE TEMPERATURE (MIN/MAX): Ambient/122 F SHELF LIFE: At least two (SPECIAL SENSITIVITY: None known. HANDLING/STORAGE PRECAUTIONS: Do not store in Bayhibit AM solution will dissolve steel generation of hydrogen gas (flammable). have a complete polyethylene liner on sig into approved containers. Store away fro Handle as any moderately strong acid wou product will not effect its quality. Kee feeds.	2) years. n unlined steel containers as and other metals, causing the Steel or metal containers must des, top and bottom. Repack only om alkalis, food and beverages. Id be handled. Freezing of this
8. PERSONAL PROTECTION:	
EYE PROTECTION REQUIREMENTS: Chemical SKIN PROTECTION REQUIREMENTS: Rubber, other splash protection as appropriate for Employees should wash their hands and fac tobacco products. VENTILATION REQUIREMENTS: Local ex RESPIRATOR REQUIREMENTS: Local ex RESPIRATOR REQUIREMENTS: None recouse. ADDITIONAL PROTECTIVE MEASURES: Safety s	PVC, Nitrile gloves, aprons and or the conditions of use. ce before eating, drinking or using whaust ventilation at work area. <u>quired under normal conditions of</u> showers and eyewash facilities
should be available. Employees should be handling of hazardous chemicals.	e trained in the sale use and

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9. PHYSICAL AND CHEMICAL PROPERTIES: PHYSICAL FORM.....: Liquid distribution of the second seco ODOR..... Very slight odor MOLECULAR WEIGHT..... Approx. 270 for PBTC SPECIFIC GRAVITY: 1.27 to 1.30 @ 68 F (20 C) BULK DENSITY...... Not Established & VOLATILE BY VOLUME.....: 50 to 55 % VAPOR PRESSURE: 19.6 mbar @ 68 F (20 C); 107 mbar @ 122 F (50 C) 10. STABILITY AND REACTIVITY: STABILITY..... of use and storage, the product is stable. a a strategy to be a strategy of the second strategy of the second strategy of the strategy of the second st HAZARDOUS POLYMERIZATION ...: Will not occur. INCOMPATIBILITIES.....: Steel, bases, sodium hypochlorite solution and strong alkalis (vigorous reaction which generates heat due to neutralization process). Bayhibit AM may be added safely to dilute alkali solutions under controlled conditions, i.e. adding slowly with constant mixing. INSTABILITY CONDITIONS (see INCOMPATIBLE MATERIALS). DECOMPOSITION TEMPERATURE ..: No decomposition below 212 F (100 C). DECOMPOSITION PRODUCTS: Thermal decomposition may emit phosphoric acid, carbon monoxide, carbon dioxide and other unidentified by-products. 11. TOXICOLOGICAL INFORMATION: ر بر از از از از از از از این می مدر میردند. به معرفی موجو به ما ما ما ما ها موجو بود و بر این می م in a start of the start of the start of the ACUTE TOXICITY ORAL LD50..... Greater than 6,500 mg/kg (Rat). (1) INHALATION LC50....: Aerosol concentrations of up to 3,000 mg/m3 were tolerated without development of symptoms. (2) EYE EFFECTS.....: Moderately irritating to rabbit eyes. (1) SKIN EFFECTS.....: Non-irritating to rabbit skin (24 hrs.). (1) SUBCHRONIC TOXICITY ...: Feeding experiment/test over a three month period: In tests, doses of up to 6,800 mg/kg were tolerated without any adverse effect. (2) MSDS Page:4-Product Code: V801 Continued on next page Approval date: 11/18/1998 ٢.

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11. TOXICOLOGICAL INFORMATION (Continued)

II. TOXICOLOGICAL INFORMATION (Continued)
CHRONIC TOXICITY: Data not established for product. MUTAGENICITY: Salmonella/microsome test (Ames test): No evidence of mutagenic effects. (2) REPRODUCTION: Pregnant rats were administered doses of up to 1,000 mg/kg body weight; no evidence of possible embryotoxicity or teratogenicity were found. (2)
(1) Tests at the Institute for Toxicology of Bayer AG. (2) Tests performed with Bayhibit S (sodium salts): Data recalculated to correspond with Bayhibit AM.
12. ECOLOGICAL INFORMATION:
AQUATIC TOXICITY: ACUTE BACTERIA TOXICITY: No harmful effects to Escherichia coli at 105,000 mg/l, 24 hrs. and Pseudomonas fluorescens at 105,000 mg/l, 24 hrs. (3); DAPHNIA TOXICITY: No harmful effects to daphnia magna Strauss at 300 mg/l, 24 hrs. (3); FISH TOXICITY: Rainbow trout (Salmo gairdneri) LCo = 5,300 mg/l, 48 hrs. (3); OTHER AQUATIC TOXICITY: No harmful effect to Scenedesmus quadricauda (green algae) at 1,300 mg/l, 24 hrs. (3); BIOLOGICAL DEGRADATION: 17 % after 28 days (Zahn-Wellens Test) (3) NOTE: Based on experience to date, no interference to biological purification installations if product is used appropriately. (4) (3) Tests performed with neutralized solution - results recalculated for Bayhibit AM. (4) Tests carried out in the biological laboratories of the Environmental Protection Department of Bayer AG.
13. DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHOD: May incinerate or dispose of in closed containers at suitable deposit site if in accordance with federal, state and local environmental control regulations. Empty packing materials should be disposed of at authorized incineration installations in accordance with applicable regulations.
14. TRANSPORTATION INFORMATION:
TECHNICAL SHIPPING NAME: 2-phosphono-1,2,4-butanetricarboxylic acid in water FREIGHT CLASS BULK: Cleaning or Washing Compounds, NOI, Liquid FREIGHT CLASS PACKAGE: Cleaning or Washing Compounds, NOI, Liquid
Product Code: V801MSDS Page 5Approval date: 11/18/1998Continued on next page

11.

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14. TRANSPORTATION INFORMATION (Continued) DOT (DOMESTIC SURFACE) PROPER SHIPPING NAME...... Corrosive Liquid, Acidic, Organic, N.O.S. HAZARD CLASS OR DIVISION 8 UN/NA NUMBER..... UN3265 PACKING GROUP III DOT PRODUCT RQ lbs (kgs) None HAZARD LABEL (5) Corrosive HAZARD LABLL (5) Corrosive IMO / IMDG CODE (OCEAN) . ÷ .:. PROPER SHIPPING NAME Corrosive Liquid, Acidic, Organic, N.O.S. . . * ICAO / IATA (AIR) PROPER SHIPPING NAME Corrosive Liquid, Acidic, Organic, N.O.S. HAZARD CLASS DIVISION NUMBER...: 8 UN NUMBER. UN3265 SUBSIDIARY RISK..... None PACKING GROUP..... III PASSENGER PACKING INSTRUCTION. .: 818 CARGO AIR - MAX. QTY. 60 L CARGO AIR PACKING INSTRUCTION..: 820 ~~ स ह³ : · · · · · · · · · · 15. REGULATORY INFORMATION: OSHA STATUS..... This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. the second second second CERCLA REPORTABLE QUANTITY ..: None. SARA TITLE III: SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES ...: None. . . 2 Product Code: V801 MSDS Page 6 Approval date: 11/18/1998 Continued on next page

15. REGULATORY INFORMATION (Continued)

SECTION 311/312	
HAZARD CATEGORIES:	Immediate Health Hazard
SECTION 313	
TOXIC CHEMICALS	
RCRA STATUS:	When discarded in its purchased form, this product meets the criteria of corrosivity, and should be managed as a hazardous waste (EPA Hazardous Waste Number D002). (40 CFR 261.20-24) - pH is less than 2.

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.

CONCENTRATION	STATE CODE	
cicarboxylic acid		
Approx. 50 %	PA3, NJ4	\sim
		•
Approx. 50 %	PA3, NJ4	•
· · ·		
< 0.02 ppm* (1)	CA	
•	• • •	
< 0.02 ppm* (1)	CA	
	•	
< 0.001 ppm* (1)	CA	
0.2 ppm*	CA .	•
	ricarboxylic acid Approx. 50 % Approx. 50 %	ricarboxylic acid Approx. 50 % PA3, NJ4 Approx. 50 % PA3, NJ4 < 0.02 ppm* (1) CA < 0.02 ppm* (1) CA < 0.001 ppm* (1) CA

CA = California Proposition 65

NJ4 = New Jersey Other - included in 5 predominant ingredients > 1% PA3 = Pennsylvania Non-hazardous present at 3% or greater.

MASSACHUSETTS SUBSTANCE LIST (MSL)

Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. To the best of our knowledge, this product contains no substances at a level which could require reporting under the statute.

* Please note that these were random sample analyses and content may vary from batch to batch.

(1) Value indicated is the detection limit.

Product Code: V801 Approval date: 11/18/1998 MSDS Page 7 Continued on next page

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HMIS RATI	NGS:	Неа	lth Flar	mability	Reactiv	ity	
•	•	l O=Min	imal 1=Sl	l lght 2=Mo	derate 3	=Serious	4=Severe
Baver's m	ethod of h	azard co	mmunicatio	on is com	rised of.	Product	Labels and
Material a service.	Safety Data	a Sheets	. HMIS rat	ings are	provided	by Bayer	as a customer
REASON FO	R ISSUE	· · · · · · · · :	Revise En	ergency O	verview S	ection	
PREPARED	by	:	Ann M. Co	lo		•	
APPROVAL J	DATE		11/18/199	8.			
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BETZDEARBORN MATERIAL SAFETY DATA SHEET



II.

EFFECTIVE DATE: 08-MAR-1999 PRINTED DATE: 14-JUN-1999

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DEPOSITROL PY5206

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

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

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

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation. This product is subject to the Pennsylvania and New Jersey Worker and Community Right to Know Law.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

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

PRODUCT NAME : DEPOSITROL PY5206 EFFECTIVE DATE: 08-MAR-1999 NON-HAZARDOUS INGREDIENTS:

CAS#

;

CHEMICAL NAME

7732-18-5

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WATER TRADE SECRET (N320) TSRN: 125438 - 6148

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PAGE 2

PRODUCT NAME : DEPOSITROL PY5206 EFFECTIVE DATE: 08-MAR-1999

3) HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

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

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

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause slight irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

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

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED: Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

PAGE 3

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PRODUCT NAME : DEPOSITROL PY5206 **EFFECTIVE DATE: 08-MAR-1999**

4) FIRST AID MEASURES

SKIN CONTACT:

Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.

EYE CONTACT: Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.

. . . .

INHALATION:

Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water. and a star of a second star in a star for

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing - 長いたけです。 しんすいすいて apparatus (full face-piece type).

EXTINGUISHING MEDIA:

- dry chemical, carbon dioxide, foam or water HAZARDOUS DECOMPOSITION PRODUCTS:
- Thermal decomposition (destructive fires) yields elemental oxides.
- FLASH POINT:
- > 200F > 93C P-M(CC)

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit. **DISPOSAL INSTRUCTIONS:**

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:

Alkaline. Do not mix with acidic material.

STORAGE:

Keep containers closed when not in use. Protect from freezing, Do not store at elevated temperatures.

PAGE 4

CONTINUED

PRODUCT NAME : DEPOSITROL PY5206 EFFECTIVE DATE: 08-MAR-1999

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

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

splash proof chemical goggles

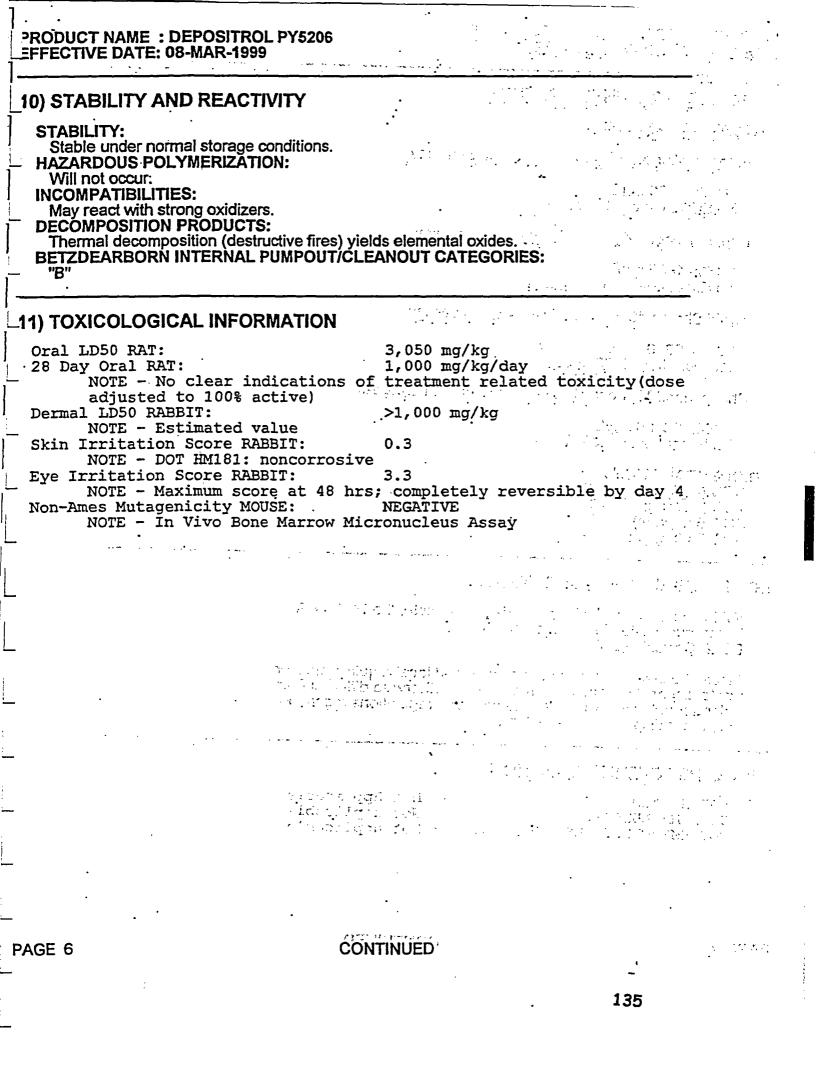
9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav. (70F, 21C) 1.270 Vapor Pressure (mmHG) 18.0 27 Freeze Point (F) Vapor Density (air=1) < 1.00 Freeze Point (C) -3 Viscosity(cps 70F,21C) 22 % Solubility (water) 100.0 Mild Odor Pale Yellow Appearance Physical State Liquid Flash Point P-M(CC)> 200F > 93C 13.1 pH As Is (approx.) < 1.00 Evaporation Rate (Ether=1)

NA = not applicable ND = not determined

PAGE 5 .

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PRÔDUCT NAME : DEPOSITROL PY5206 EFFECTIVE DATE: 08-MAR-1999	
12) ECOLOGICAL INFORMATION	
Fathead Minnow 96 Hour Static Acute Bioassay	
LC50: 1680 mg/L No Effect Level: 1350 mg/L	
Daphnia magna 48 Hour Static Acute Bioassay	
LC50: 1635 mg/L No Effect Level: 870 mg/L	
Mysid Shrimp 48 Hour Static Renewal Bioassay	
LC50: 9900 mg/L 5% Mortality: 4000 mg/L	
Sheepshead Minnow 96 Hour Static Renewal Bioassay	•
LC50: 28300 mg/L No Effect Level: 20000 mg/L	-
BIODEGRADATION COD (mg/gm): 130 TOC (mg/gm): 70 BOD-5 (mg/gm): 9 BOD-28 (mg/gm): 9	•
13) DISPOSAL CONSIDERATIONS	- <u></u>

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

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

14) TRANSPORT INFORMATION

DOT	HAZARD:				Not	Applicable
	' NA NUMBEI					applicable
DOT	EMERGENCY	RESPONSE	GUIDE	#:	Not	applicable

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RÓDUCT NAME : DEPOSITROL	_ PY5206	
FFECTIVE DATE: 08-MAR-1999	ر مرجو المحمد المحمد المحمد الم	· .
	TION DECK	
TSCA: All components of this product CERCLA AND/OR SARA REPO No regulated constituent pres SARA SECTION 312 HAZARD O Product is non-hazardous un SARA SECTION 302 CHEMICAI No regulated constituent pres	sent at OSHA thresholds CLASS: der Section 311/312	
SARA SECTION 313 CHEMICAL No regulated constituent pres		
ALIFORNIA REGULATORY CALIFORNIA SAFE DRINKING ENFORCEMENT ACT (PROPOS	and the second second second second second second second second second second second second second second second	T:
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MICHIGAN REGULATORY IN No regulated constituent prese	and the second second second second second second second second second second second second second second secon	
6) OTHER INFORMATION NFPA/HMIS	CODE TRANSLATIO	DN
Health Fire Reactivity Special (1) Protective Equipme	1 Slight Haz 1 Slight Haz 0 Minimal Ha ALK PH above 1 Goggles,Gl	ard zard 2.0
(1) refer to section 8 of MSDS f	or additional protective equipment	
CHANGE LOG	andaria († 1997) 1990 - Artiguet Maria, 1990 1990 - Robert Garage 1990 - Robert Garage († 1997) 1991 - Robert Garage († 1997)	na ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en ser en se Ser en ser en Ser en ser en
EFFECTIVE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status: 21-MAY-1997 08-MAR-1999		 ** NEW ** 21-MAY-1997
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JAMM 32.135 Material Safety Data Sheet Page 1 of 2 EMERGENCY _____ FOR CHEMICAL EMERGENCY: SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY or NIGHT - (800) 424-9300 **AB AQUASHADE OA** Product Name: _________ SECTION I - GENERAL INFORMATION _____ APPLIED BIOCHEMISTS Manufacturer's Name: W175 N11163 Stonewood Drive Suite 234 Germantown, WI 53022-4799 (800) 558-5106 AB AQUASHADE OA Trade Name & Synonyms: WATER SOLUBLE DYE Chemical Name & Synonyms: Generic Description: ORNAMENTAL APPLICATION DYE PROPRIETARY Formula: NOT REGULATED D.O.T, Proper Shipping Name: U.N. or N.A. Identification #: NOT REGULATED D.O.T. Hazard Class: NON-HAZARDOUS D.O.T. Emergency Response Guide: N/A Hazardous Matis ID System Values (HMIS): Health - 1 Flammability - 0 Reactivity - 0 Personal Protection - B Health - 0 Flammability - 0 Nat'l Fire Protection Assn. (NFPA 704M): Reactivity - 0 Specific Hazard: _____ ------32222222222 **SECTION II - HAZARDOUS INGREDIENTS** _____ -----Hazardous Component(s) * CAS# PEL TLV Acid Blue 9 3844-45-9 NOT ESTABLISHED NOT ESTABLISHED • Ingredients listed in this section have been determined to be hazardous as defined in 29 CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available as provided in 29 CFR 1910.1200 (i) (1). **SECTION III - PHYSICAL DATA** 212°F (100°C) Boiling Point (F): Specific Gravity (water = 1): 1.0-1.1 Vapor Pressure (mm Hg): NOT DETERMINED % Volatile (by Volume): NOT DETERMINED Vapor Density (air = 1): >1 Evaporation Rate: (Water = 1) <1 32 °F Melting Point (F): pH 6.0-7.0 Solubility in Water: COMPLETE Appearance & Odor: DEEP BLUE LIQUID, WITH NO NOTICEABLE ODOR ______ SECTION IV - FIRE & EXPLOSION DATA Flash Point (F): NON-FLAMMABLE Method: Extinguishing Media: WATER, FOAM, CO2 Special Fire Fighting Procedures: COOL AREA TO PREVENT PRODUCT CONTAINERS FROM BURSTING OR MELTING. FIRE FIGHTERS SHOULD BE EQUIPPED WITH SELF-Unusual Fire & Explosion Hazards: CONTAINED BREATHING APPARATUS. SECTION V - REACTIVITY DATA ______ _____ Stability -Unstable Stable х NONE KNOWN Conditions to Avoid: Incompatibility (Materials to Avoid): UNKNOWN Hazardous Decomposition Products: Will Occur X___Will Not Occur Hazardous Polymerization: NONE

Conditions to Avoid:

Page 2 of 2	AB AQUASHADE OA	_
••••••••••••••••••••••••••••••••••••••	SECTION VI - HEALTH HAZARD DATA	2222
Acute Health Hazards: Chronic Health Hazards: Signs & Symptoms of Exposure:	NONE KNOWN NONE KNOWN MAY CAUSE SLIGHT EYE IRRITATION AND REDNESS. MAY CAUSE SLIGHT SKIN IRRITATION. INHALATION MAY CAUSE SLIGHT NAUSE/ INGESTION MAY RESULT IN GASTRIC DISTURBANCES.	
Medical Conditions Generally Aggravated by Exposure:	NONE KNOWN) }
Chemical Listed as Carcinogen or	r Potential Carcinogen by:	
	al Toxicology Program: Yes: No: C. Monographs:*** Yes: No: A. Yes: No:	
Emergency & First Aid Procedures	s: FOR PRINCIPLE ROUTE OF ENTRY, SEE APPROPRIATE EMERGENCY PROCEDURES BELOW. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.	en an an an an an an an an an an an an an
Inhalation:	REMOVE TO FRESH AIR.	· · · · · ·
Eyes:	FLUSH IMMEDIATELY WITH LARGE VOLUMES OF WATER FOR AT LEAST 15 MINUTES. CALL A DOCTOR.	
Skin:	WASH AREAS THOROUGHLY WITH SOAP & WATER.	 ¹ /2
Ingestion:	INDUCE VOMITING, CALL A PHYSICIAN.	
, , , , , , , , , , , , , , , , , , ,	SECTION VII - SPILL OR LEAK PROCEDURES	
Steps to be Taken in Case Materia	al is Released or Spilled: SOAK UP AND REMOVE TO AN APPROVE DISPOSAL CONTAINER. WASH AREA WITH SOAP AND WATER. CARE SHOULD BE TAKEN IN HANDLING PRODUCT AS IT CAN STAIN.	
Waste Disposal Methods:	DISPOSE OF IN ACCORDANCE WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.	
	/III - SPECIAL PROTECTION AND CONTROL MEASURES	
Respiratory Protection (Specify Typ		
Ventilation - Local Exhaust:: Mechanical Exha	MECHANICAL Special Exhaust: NONE aust: NOT REQUIRED Other Exhaust::NONE	
Protective Equipment - Gloves:	-	
Other Protective Equipment:	NONE	
Work or Hygienic Practices:	USE SAFE CHEMICAL HANDLING PROCEDURES SUITABLE FOR THE HAZARDS PRESENTED BY THIS MATERIAL.	
· · · ·	SECTION IX - SPECIAL PRECAUTIONS	
Precautions to be Taken in Handling	ng and Storage: KEEP AWAY FROM INTENSE HEAT AND OPEN FLAME.	
Other Precautions:	KEEP OUT OF REACH OF CHILDREN	
WARRANTY, EITHER EXPRESSED OR HANDLING PROCEDURES ARE BELIE	OOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION R IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND IEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD RE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THE	SAFE EVIEW
Date of Last Revision: 5/29/98		· ·

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SAMM A-10.29

Page 1 of 2

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MATERIAL SAFETY DATA SHEET



BBJ Environmental Solutions, Inc. 6802 Citicorp Blvd., Suite 500 Tampa, FL 33619 800-889-2251

I. PRODUCT IDENTIFICATION

PRODUCT NAME	PRODUCT CLASS
Power Coil Clean™	Industrial Cleaner

II. INGREDIENTS

INGREDIENT	% BY WT.	CAS REG. NO.
Ammonium Biflouride Balance-Trade Secret (non hazardous)	<4.00	1341-49-7

III. PHYSICAL DATA

BOILING POINT 212°F	SPECIFIC GRAVITY 1.00 – 1.10 at 25°C
FREEZING POINT 0°F	VAPOR PRESSURE (mm Hg) = 17.5
VAPOR DENSITY Not known	APPEARANCE Clear
PH@ 25 [°] C 4.9 – 5.2	SOLUBILITY IN WATER BY WT. Complete
EVAPORATION RATE Not known	ODOR Mild

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not Combustible	FLAMMABLE LIMITS N/A
EXTINGUISHING MEDIA Water, water fog	SPECIAL FIRE HAZARDS None

V. REACTIVITY DATA

MSDS - Power Co	oil Clean™
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STABLE [/] UNSTABLE [] HAZARDOUS POLYMERIZATION	MAY OCCUR []	[]	
INCOMPATIBILITY None known			·. · ·.,
HAZARDOUS DECOMPOSITION PRODUCTS None expected	· · · · · · · · · · · · · · · · · · ·		
CONDITIONS TO AVOID Do not use with any other cleaning agent or househout including ammonia, acids, alkalis, bleaches, or chlorine cleaners	old chemicals,		

VI. SPILL OR LEAK PROCEDURES

1. Or The Control of the State of the Sta

STEPS TO BE TAKEN	IN CASE MATERIAL IS RELEASED OR SPILLED	Flood with water	er an teanget
DISPOSAL METHOD	Flush into sewer or absorb and landfill (non hazard	ous)	

VII. HEALTH HAZARD DATA

		<u></u>
THRESHOLD LIMIT VALUE Oral > 1.9 grams per Kg of body w	veight	
EFFECTS OF OVEREXPOSURE Will irritate eyes. Will dry skin	n if frequent or prolonge	d contact
EYE Flush with water for 15 minutes. Call a physician, if irritation	n persists.	•• •
SKIN Rinse off with water following contact		
INHALATION N/A		
INGESTION Drink large quantities of water. Call a physician, if	irritation persists.	
	•	21. A 1971

VIII. PROTECTIVE EQUIPMENT

VENTILATION Use with adequate ventilation Statis		
RESPIRATORY PROTECTION None required]
PROTECTIVE CLOTHING Protective gloves (plastic or rubber) when exposure will be freq prolonged	uent or	
EYE PROTECTION Safety glasses where splash danger exists	1 	
	1817 U	

IX. OTHER SPECIAL PRECAUTIONS

PRECAUTIONS TO BE	TAKEN IN HANDLI	NG AND STORAGE	Keep from freezing		
SPECIAL COMMENTS	None				

PREPARED BY_Herman Scriven II

DATE August 18,2000

MATERIAL SAFETY DATA SHEET- COIL-RITE

MSDS1050 Ver. No.2 Ver. Date September 8, 1999

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C-10.384.

SECTION 4 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Col-Rae				
PRODUCT CODES: 82612, 1	82614, 82815		• •	
CHEMICAL FANILY: Inorgan	nic/Organic	,		• •
USE: Col Cleaner	*	• • • •		
MANUFACTURE / SUPPLIER	R	-	EMERGENCY TELEPHO	
RectorSeal	•	•	Chemtree 24 hours: (800	
2601 Spenwick		•	RectorSeal: (713) 263-8	
Houston, Texas 77055 USA		· · ·	NON EMERGENCY TEL	EDUONE NITHERE
		.	Technical Service: (800)	
		•		
	SECTION 2 COMPOSITION		NGREDIENTS	.•
	APPROX			•
HAZARDOUS COMPONENT		OSHA PEL ACGIH TLV	OTHER LIMITS ' H	IMIS. NFPA
Glycol Ether EB	111-76-2 1-5	25 ppm 25 ppm		N/D HZ.FZ.RO
	•		•	
	SECTION 3 H	AZARDS IDENTIFICATIO	DN	•
SUMMARY OF ACUTE HAZA		I throat, drowsiness, narcosis, tr	mors, and other CNS effect	at high concentrations.
	Sion initation, dermatitis, a		• • •	
				PREMARY
	SIGNS AND SYMPTOMS		•-	· ROUTE(S)
	Nasal and respiratory irritation, dizzin	ess, narcosis, headache, nause	a, CNS depression,	Yes
	and unconsciousness.	······································	·	v
	Watering, blurred vision, inflammation	n, and irreasion which can result	n comeal sijuly.	- Yes
SKIN CONTACT:	Initation, dermalitis. Nausaa, vomiting; CNS depression; i	attation of an strainteeting i tract	iver and notioned wells	Yes Na
	lung congestion.	rinspoli of Bsznóturszunai Baci'	ater and periodical wait	10
	ZARDS: Skin initation, dermatikis, a	nd defaiting . Possible liver and i	ndnev damane	•
NEDICAL CONDITIONS GEN	ERALLY AGGRAVATED BY EXPO	SURE: Individuals with pre-enist	ing of chanic diseases of b	he eves skin
respiratory system, cardioyas	cular system, gastrointestinal system	Fiver, or kidneys may have incre	ased susceptibility to exce	ssive exposure.
·			• •	•
	SECTION 4	FIRST AID MEASURES		
INHALATION:	If overcome by exposure, remove vic		e oxygen or artificial respira	nion as needed.
	Obtain emergency medical attention.	Prompt action is essential.		•
EYE CONTACT:	Immediately flush with large amounts	of water for at least 15 minutes.	Get prompt medical attent	ion.
	Wash with soap and water. Remove			_
INGESTION:	Give large amounts of water, DO NO	T induce vomiting. Keep at rest.	Get prompt medical attent	ion.
			-	
	<u>SECTION 5 FI</u>	<u>RE FIGHTING MEASURE</u>	<u>S</u>	
	•			· · ·
FLASH POINT: None	•		Mits: Lel: N/D UEL:	ND
EXTINGUISMING MEDIA: Use	e sgents suitable for surrounding fres	I face many breathing an arms	and full hade methodise alo	the Hanadaya
SPECIAL FIRE FROM TING PRO	OCEDURES: Wear self-contained ful sible (see Section 10). Evacuate are	1 ince piece breaking apparatus	and rul body projective cit	Looppression
	SION HAZARDS: Material will not \$4			Contentation,
UNUSUAL FIRE AND EAFLO.				
	SECTION & ACCID	ENTAL RELEASE MEAS		
CTEDO TO DE TAKEN IN CAS	E MATERIAL IS RELEASED OR SE			teriale to prevent
SIEPS IV BE TAKEN IN CAS	. Ventiale area with natural of explo	sing proof forced air ventilation	Avoid fluction into severa	statilita a prevente su si a si a si a si a si a si a si a s
and so? Wear protective slo	thing and respiratory protection durin	a cleanup. Also, if product is su	biect to CERCLA reporting	(see Section 15) notify
the National Response Center		······································	• · · · · · · · · · · · · · · · · · · ·	
	•			
	SECTION 7 ST	ORAGE AND HANDLIN	3	
PRECAUTIONS TO BE TAKEN	N IN HANDLING AND STORING: K	ep container closed and worldh	when not in use. Do not s	store near heat
sparks, or open flames. If the	insferring this material to other contai	ners, ground all containers to av	oid static electricity buildup	and discharge which
may ignite flammable vapors		•	·	
OTHER PRECAUTIONS: Avoi	d prolonged or repeated contact with	skin or clothing. Empty containe	ens may contain residues ar	nd vapors; treat as if 🥂 👘
full and observe all products (precautions. Do not reuse empty cor	tainers. KEEP OUT OF REACI	I OF CHILDREN.	
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MATERIAL SAFET	DATA SHEET-	COIL-RITE			
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	1.8.54 • • • • • •			· · ·	et e trata de la composición de la composicinde la composición de la composición de la composición de
RESPIRATORY PROTECTION		EXPOSURE CONTROLSA			lied air.
respirators.					
VENTILATION - LOCAL EXH. MECHANICAL (GENERAL)	AUST: Acceptable		ecial: N/A THER: N/A	•.	
PROTECTIVE GLOVES: Wea	r non-permeable	Noves,	TION: Chemical splash	goggies (ANSI Z-87,1 or equ	ivalent)
		ENT: Coveralis recommended.		ne estica chialina smolda	or leaving
work area. Launder contami			4 4 1.222 a		
•	SECTIO	N 9 PHYSICAL AND CHE		ct	•
BOILING POINT: 212"F (100"			RAVITY (140 = 1): 0.99		
VAPOR PRESSURE (mm Hg):	17 @ 68 F (201	C) MELTING PO	DINT: NA	•	
VAFOR DENSITY (AIR = 1): N SOLUBILITY IN WATER: Solu			ON RATE (ETHYL ACE CE/ODOR: Green Liquid		*** ***
		· · · · · · · · · · · · · · · · · · ·	· · · · ·	•	
	. <u>S</u>	ECTION 10 STABILITY AN	D REACTIVITY	· · · · ·	
STABILITY: Stable CONDITIONS TO AVOID: Hes	t soants, open fu	mes and along modizers.		· · · · · · · · · · · · · · · · · · ·	
INCOMPATIBILITY (MATERIA	LS TO AVOID:	Oxidizers, acids and bases.			
HAZARDOUS DECOMPOSITION		CO, CO ₂ , and fragmented hydrocal	idons.	· · · · · · · · · · · · · · · · · · ·	· ··· ·
CARCINOGENICITY:	TP: No <u>SE</u>	CTION 11 TOXICOLOGY	INFORMATION OSHA REGULAI		
· · ·			VSNA KEVULA		Contract of the second s
	AS NO.	UDS0 Oral-Rat LDS0;470 mg/kg	LC50 Inhabition-Rat TC		•••
GIVOI EINEI ED		en en en en en en en en en en en en en e		Lozou phason	•• · · • • • •
		CTION 12 ECOLOGICAL	INFORMATION		and and an and a second second second second second second second second second second second second second se
	FOOD CHAIN	WATERFOWL TOXICI	TY BOD AQUAT		in the start the p
	one	NA		om/24 hr/orine shrimp/TLm	· · · · · · · · ·
	ŚA	CTION 13 DISPOSAL CON			na Star in the training the same
WASTE DISPOSAL METHOD:		bed materials and liquid waste in an		state and federal regulations.	
· · · · · · · · ·	SECT	ION 14 TRANSPORTATIO		•	· ········
DOT: Non-Regulated		ION 14 TRANSPORTATIO	NY INFORMATION	••••	
OCEAN (IMDG): Non-Regulate	d		· . ·		
AIR (IATA): Non-Regulated WHMIS (CANADA): Non-Regul	ated				
	• •	a esta de la companya de la companya de la companya de la companya de la companya de la companya de la companya	•		
SUBSTANCE SI	' <u>SEI</u> ARA_313	CTION 15 REGULATORY			سر جور از مرجور در مرجو
	<u>, 13</u>	Yes	<u>RCLA RO</u> RCRA (N/A		
in the second se	• • •			الوالية المركز والمركز المركز	
This document is prepared pursu	ant to the OSHA	SECTION 16 OTHER INFO	<u>DRMA HUN</u>	The information benelo is on	
faith, but no warranty, express of	implied is made.	Consult RectorSeal for further info	mation: (713) 263-8001	atte anorthenort therein to Bu	
y.	• • •	రాజులు - గారాజులు కార్లించింది. రాజులు కి.వి. రావిశోభ ఈ కర్యా ఉద్యాగా			÷.,
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		ACTI-KLE	EAN (revised July 2004)	
			al Safety Data Sheet	-
	· · · _ · · · · · · · · · · · · · · · ·	SECTION I - C	OMPANY IDENTIFICATION	
PRODUCT: ACT	II-KLEAN	·····	CAT. NO.: AK	
MANUFACTURE Virginia KMP Co 4100 Platinum W	ED BY: rporation /ay		TELEPHONE NUME	BERS: 214) 330-7731
Dallas, Texas 75			/•	
		SECTION II - H	AZARDOUS INGREDIENTS	·
OSHA Hazardou	us Components (25	9 CFR 1910.1200)	EXPOSURE LIMITS OSHA PEL	: 8 HR. TWA ACGIH TLV
	nonobutyl ether (CA sulfonic acid (CAS)		25 ppm (skin) NE	25 ppm (skin) NE
		SECTION III - H	AZARDS IDENTIFICATIONS	
POTENTIAL HE/ INHAL EYE C SKIN C INGES CHROI	ALTH EFFECTS: ATION: Inhala ONTACT: Inritatio CONTACT: Inritatio TION: Harmf NIC Effects: Not es	on develops immediately on conta on develops on contact. ful if swallowed. May cause head:	on may cause headache, nausea, vomiting act.	 .
NOTE: CARCI	NOGENICITY: LIST	TED IN NTP? No	IARC? No	OSHA Regulated? No
		SECTION IN		
INHALATION: EYE CONTACT:	emergency medi Flush eyes with v	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica	al attention if symptoms develop and persis	st.
	emergency medi Flush eyes with v Flush with water develop and pers	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist.	nediately begin artificial respiration. Give mediately.	st.
EYE CONTACT: SKIN CONTACT:	emergency medi Flush eyes with v Flush with water develop and pers	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist. omiting. Rinse mouth out with wat	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis tes or until all traces have been removed	st.
EYE CONTACT: SKIN CONTACT: NGESTION: FLASHPOINT (TI FLAMMABLE LI AUTOIGNITION T GENERAL HAZA	emergency medi Flush eyes with v : Flush with water develop and pers Do not induce vo EST METHOD): MITS: NA TEMPERATURE:	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist. pomiting. Rinse mouth out with wat <u>SECTION V - Fi</u> Not fiammable - aqueous solu LOWER: NA NE	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis tes or until all traces have been removed ter. Get immediate medical attention. IRE FIGHTING MEASURES ution.	st. Seek medical attention if symptoms
EYE CONTACT: SKIN CONTACT: NGESTION: FLASHPOINT (TI FLAMMABLE LI AUTOIGNITION T GENERAL HAZA TRE FIGHTING I	emergency medi Flush eyes with v Flush with water develop and pers Do not induce vo EST METHOD): MITS: NA TEMPERATURE: ND: INSTRUCTIONS:	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist. pomiting. Rinse mouth out with wat <u>SECTION V - FI</u> Not flammable - aqueous solu LOWER: NA NE Approach fire from upwind s Firefighters wear protective clo wder, carbon dioxide (CO ₂), water	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis tes or until all traces have been removed ter. Get immediate medical attention. IRE FIGHTING MEASURES ution. UPPER: NA side. Avoid breathing smoke, fumes, mothing and self-contained breathing appara	st. Seek medical attention if symptoms
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EYE CONTACT: SKIN CONTACT: NGESTION: FLASHPOINT (TI FLAMMABLE LI AUTOIGNITION T GENERAL HAZA FIRE FIGHTING I EXTINGUISHING HAZARDOUS CO	emergency medi Flush eyes with v Flush with water develop and pers Do not induce vo EST METHOD): MITS: NA TEMPERATURE: INSTRUCTIONS: MEDIA: Dry por DMBUSTION PROD SMALL SPILLS: LARGE SPILLS:	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist. omiting. Rinse mouth out with wat <u>SECTION V - FI</u> Not flammable - aqueous solu LOWER: NA NE Approach fire from upwind s Firefighters wear protective ck wder, carbon dioxide (CO ₂), water DUCTS: Acrid smoke, irritatin <u>SECTION VI - ACCID</u> Flush to sewer with large amount Pick up with absorbent media, pla horities. Clean up leaks/spills imm	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis- tes or until all traces have been removed ter. Get immediate medical attention. IRE FIGHTING MEASURES rition. UPPER: NA side. Avoid breathing smoke, fumes, mothing and self-contained breathing appara r fog or spray. mg and toxic fumes of SO _x , H ₂ S, PO _x . DENTAL RELEASE MEASURES is of water. 10 parts water to 1 part produc ace in non-leaking containers for proper dis- mediately to prevent soil or water contamina	st. Seek medical attention if symptoms hist, or vapors on the downwind side. htus.
EYE CONTACT: SKIN CONTACT: NGESTION: FLASHPOINT (TI FLAMMABLE LI AUTOIGNITION T GENERAL HAZA FIRE FIGHTING I FAZARDOUS CO LAND SPILL:	emergency medi Flush eyes with vater develop and pers Do not induce vo EST METHOD): MITS: NA TEMPERATURE: RD: INSTRUCTIONS: MEDIA: Dry por DMBUSTION PROD SMALL SPILLS: LARGE SPILLS: Notify proper aut	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minut sist. omiting. Rinse mouth out with water SECTION V - FI Not flammable - aqueous solu LOWER: NA NE Approach fire from upwind s Firefighters wear protective clo wder, carbon dioxide (CO ₂), water DUCTS: Acrid smoke, irritatin SECTION VI - ACCID Flush to sewer with large amount Pick up with absorbent media, pla horities. Clean up leaks/spills imm SECTION VII - H	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis- tes or until all traces have been removed ter. Get immediate medical attention. IRE FIGHTING MEASURES rtion. UPPER: NA side. Avoid breathing smoke, fumes, mothing and self-contained breathing appara r fog or spray. mg and toxic fumes of SO _x , H ₂ S, PO _x . DENTAL RELEASE MEASURES is of water. 10 parts water to 1 part product ace in non-leaking containers for proper dis- nediately to prevent soil or water contamina- IANDLING AND STORAGE	st. Seek medical attention if symptoms hist, or vapors on the downwind side. htus.
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EYE CONTACT: SKIN CONTACT: NGESTION: FLASHPOINT (TI FLAMMABLE LII AUTOIGNITION T GENERAL HAZA TRE FIGHTING I EXTINGUISHING HAZARDOUS CO AND SPILL: WATER SPILL:	emergency medi Flush eyes with vater develop and pers Do not induce vo EST METHOD): MITS: NA TEMPERATURE: RD: INSTRUCTIONS: MEDIA: Dry por OMBUSTION PROD SMALL SPILLS: LARGE SPILLS: Notify proper auth Avoid contact with occurs, remove of	to fresh air and, if needed, imm ical help. Contact a physician imm water for 15 minutes. Get medica r or soap and water for 15 minutes sist. omiting. Rinse mouth out with water SECTION V - Fi Not flammable - aqueous solu LOWER: NA NE Approach fire from upwind s Firefighters wear protective clo wder, carbon dioxide (CO ₂), water DUCTS: Acrid smoke, irritatin <u>SECTION VI - ACCID</u> Flush to sewer with large amount Pick up with absorbent media, pla horities. Clean up leaks/spills imm <u>SECTION VII - H</u> th skin, eyes, and clothing. After I contaminated clothing. If needed, food stuffs.	nediately begin artificial respiration. Give mediately. al attention if symptoms develop and persis- tes or until all traces have been removed ter. Get immediate medical attention. RE FIGHTING MEASURES ntion. UPPER: NA side. Avoid breathing smoke, fumes, mothing and self-contained breathing apparar r fog or spray. Ing and toxic fumes of SO _x , H ₂ S, PO _x . DENTAL RELEASE MEASURES is of water. 10 parts water to 1 part product ace in non-leaking containers for proper dis- nediately to prevent soil or water contaminant IANDLING AND STORAGE handling this product, wash hands before take first aid action shown in section IV.	st. Seek medical attention if symptoms list, or vapors on the downwind side. atus.
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$\infty \sim 10^{-10}$	ACTI-KLEAN (revised July 2004)
VAPOR PRESSURE: ND	VAPOR DENSITY (Air=1): ND
SPECIFIC GRAVITY (H ₂ O=1): 1.02	
SOLUBILITY IN WATER: Complete	VOC (G/L): FREEZING POINT: ND
9H: 11-12 30/LING POINT: 212 F	FREEZING PUINT: ND
APPEARANCE & ODOR: Green liqu	uid.
	SECTION X - STABILITY AND REACTIVITY
STABILITY: Stable.	
	temperatures.
ATERIALS TO AVOID: Oxidiz	
	RODUCTS: SO _x , H ₂ S, PO _x and from combustion - smoke and toxic fumes.
AZARDOUS POLYMERIZATION:	Will not occur.
	SECTION XI - TOXICOLOGICAL INFORMATION
thylene Glycolmonobutylether	TDLo:
	600 mg/kg (oral - wmn)
	TCLo: 195 ppm/8hr (inh - human) GIT
•	TCLo: 100 ppm (inh - human) NOSE, EYE, CNS
n na na na na na na na na na na na na na	LD50: 470 mg/kg (oral - rat) LC50: 2900 mg/m ³ (inh - rat)
odecyl benzene sulfonic acid	LD50: 50-500 mg/kg (intri-ray)
	SECTION XII - ECOLOGICAL INFORMATION
armful to aquatic life in very low cor	ncentrations. Ethylene Glycolmonobutylether 1000 ppm / 24 hr / brine shrimp / TLm Dodecyl benzene suffonic acid 5 - 15 ppm / guppy / lethal conc.
· · · · · · · · · · · · · · · · · · ·	SECTION XIII - DISPOSAL CONSIDERATIONS
ispose as hazardous waste. Classi	ification and documentation is required before disposal. Follow all local, state and federal regulations.
	SECTION XIV - TRANSPORTATION INFORMATION
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ROPER SHIPPING NAME: Non-re	
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	MATERIAL SAFETY	DATA SHEET	· SAN	IM E-10	. 35
	ÓRGANIC	ORANGE		• • •	
SECTION I ~ IDENTIFICA			18,222222 	1323 6 1933 8 1	
COMPANY NAME	O'Neill Indust 5101 Comly St. Phila., Pa. 19 (215) 333-5700 800-255-3924 9-1-02 9-1-02 Orange Distill	ries, Inc. 135 ate			
SECTION II - INGREDIENTS			!		
Components	PERCENT	TLV (Units)	PROD.	Cas ‡	
1,8(9)-p-Methadiene	>95%	Not established Not		27-5	
Nonylphenoxy- polyethoxyethanol	<5%	Not established	- 26027-	-38 - 3	
SBCTION III - PHYSICAL D	╕╛╕╃╊╡═╕┟╞╕╕╄┇┪ <u>入Ţ入</u> ┪┙═╕╡┢╡═╕╴═╕╕╝╽				
BOILING Point(F) SOLUBILITY IN H20 APPEARANCE/ODOR SPECIFIC GRAVITY (H20=1). PH SECTION IV - FIRE AND E	Emulsifiable Clear colorles .85	솔르푸르흔=르크루흐==	trus odo:		
PLASH POINT EXTINGUISH MEDIA FOR FIRE	Use foam, dry	chemical, or hing vapor of not enter of ive clothing	or fumes. confined : , includ: 	fire-spac ing self	es without contained
SECTION V - HEALTH HAZ	ARD DATA			*2522388	
DVER EXPOSURE EFFECTS FIRST AID PROCEDURES	Liquid may be irritating to EYES; Immediat 15 minutes. Se Wash with wate seek medical a air. INGESTION quantities of immediately.	throat and l ely flush ey ek medical a r. If irrita ttention. IN : DO NOT INN	lunga yes with stion devi WHALATION DUCE VOMI	water for immediat lops or ; Remove TING, Giv	at least ely. <u>SKIN</u> persists to fresh
BCTION VI - REACTIVITY	DATA	::::::::::::::::::::::::::::::::::::::			
HEMICAL STABILITY	Stable	To UM Co./Dept. Prone # Phone #	٥L	Ca. DNG/LL	55-6007

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NATERIAL SAFETY DATA SHE	CONCLUTING HAND BOTHE STREET
ORGANIC ORANGE	······································
CONDITIONS TO AVOID Excessive heat and flame agents. INCOMPATIBLE MATERIALS Strong acids, strong ox DECOMPOSITION PRODUCTS Carbon dioxide, carbon r	ldizers nonoxide
HAZARDOUS POLYMERIZATION. Will not occur POLYMERIZATION AVOID	no an an an an an an an an an an an an an
SECTION VII - SPILL OR LEAK PROCEDURE	
FOR SPILL Absorb with inert mater: accordance with applical WASTE DISPOSAL METHOD Dispose of according to regulations.	ial and dispose of in
SECTION VIII - SPECIAL PROTECTION	
RESPIRATORY PROTECTION None needed under normal VENTILATION Local PROTECTIVE GLOVES Rubber EVE PROTECTION Chemical goggles	conditions
OTHER PROTECTIVE EQUIPMENT	NHENTNOT IN USE.
USE WITH ADEQUATE VENT KEEP OUT. OF REACH OF C	
THIS PRODUCT.	D RUBBER GLOVES WHEN HANDLING
SECTION IX - SPECIAL PRECAUTIONS	
DOT SHIPPING NAME Combustible liquid, n.o DOT LABEL REQUIRED None required	RX#ZZ===================================
NA NUMBER	
COMMENTS The information contained herein is fur kind. Employers should use this information only information gathered by them to assure proper use	of these materials and the
safety and health of employees.	Avoio strant: Aziolump
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MATERIAL SAFETY DATA SHEET

Penetone® Corporation, 74 Hudson Ave., Tenafly, NJ 07670.

CITRIKLEEN®

Page: 1 of 4 Date Prepared: July 28, 1994 MSDS No.: 1850-407S

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: CITRIKLEEN

GENERAL USE: Cleaning, degreasing PRODUCT DESCRIPTION: Solvent emulsion

PRODUCT DESURIFICIAL Solvent emuision

GENERIC INGREDIENTS: Water, d'imonene, surfactants, coupling agents, alkanolamine

EMERGENCY TELEPHONE NUMBERS: PEN

PENETONE 201-567-3000 CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT SECTION

This product is hazardous as defined in 29 CFR1910.1200.

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OSHA HAZARD: FLAMMABLE, CORROSIVE

OSHA HAZARDOUS INGREDIENTS

		•	:	EXPOSI	RE LIMITS 8 hrs.	TWA (ppm)
•	•		CAS#	OSHA PEL	ACGIH TLV	Supplier
D'imonene Monoethanolamine	• •		5989-27-5 141-43-5	not established	not established	· <u>–</u>
			111.75		5	_

SECTION 3 HEALTH INFORMATION & PROTECTION

EMERGENCY OVERVIEW:

Clear amber liquid with citrus odor.

. Flammable. Can be corrosive to eyes, skin, and respiratory tract.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT:

May cause initiation or burns to eyes on prolonged contact. High vapor concentrations may be initiating. SKIN CONTACT:

Frequent or prolonged contact may irritate or dry the skin, cause dermatitis or cause burns. Skin contact may aggravate an existing dermatitis condition.

INHALATION:

High vapor/aerosol concentrations are imitating or may cause burns to the respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects.

INGESTION:

Small amounts of this liquid may be drawn into the lungs by either swallowing or vomiting. This may cause severe and delayed health effects such as inflammation of the lungs and infection of the bronchi. Ingestion may cause irritation of or burns to the digestive tract.

CITRIKLEEN

Page: 2 of 4 Date Prepared: July 28, 1994 MSDS No.: 1850-4075

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CHRONIC:

Inflammation of mucous membranes and respiratory tract may occur upon prolonged breathing of mist. Ingestion of large amounts of d'imonene has caused kidney and iver damage in male rats but not in female rats or mice of both species. Ingestion of large amounts of monoethanolamine has caused kidney and liver damage in laboratory animals.

FIRST AID MEASURES:

EYE CONTACT:

Flush eyes with large amounts of water. See physician immediately. SKIN CONTACT:

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Flush skin with large amounts of water. Remove contaminated clothing and launder before reuse. If skin initiation develops or persists, consult physician. INHALATION: and the second second second second second second second second second second second second second second second

Remove person to fresh air. Administer oxygen or artificial respiration as needed. Call a physician immediately.

INGESTION:

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If swallowed, give plenty of milk or water. DO NOT INDUCE VOMITING. Use a stomach pump. Call a physician immediately.

1. 1. 1. 4 WORKPLACE EXPOSURE CONTROLS:

PERSONAL PROTECTION:

Safety glasses are recommended for all workplace conditions. Solvent resistant gloves should be used. Other protective gear, including splash proof goggles or face shield, ubber boots, apron, gauntlets, or rain gear should be worn depending on how the product is used.

VENTILATION:

None needed under normal use conditions. For enclosed areas, or where large amounts of the product are being used, the use of fans or other mechanical ventilation is recommended. An organic vapor mask should be used if the TLV is exceeded and a particle mask if the product is sprayed. DO NOT MIST THIS PRODUCT. Use coarse spray only.

SECTION 4 FIRE & EXPLOSION HAZARDS

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FLASH POINT: 125'F PMCC, 165'F COC FLAMMABLE LIMITS: not determined AUTOIGNITION TEMPERATURE: not determined

GENERAL HAZARD:

Flammable Iquid. Can form flammable mixtures at or above the flash point. Containers can rupture and explode under fire conditions due to pressure and vapor buildup.

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FIRE FIGHTING:

. Either allow fire to burn out under controlled conditions or extinguish with water, foam, or dry chemical. Cool exposed containers with water spray. 11

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, furnes, and oxides of carbon, nitrogen, and sulfur.

SECTION 5 SPILL CONTROL MEASURES

LAND SPILL:

Eliminate sources of ignition. For small spills, use absorbent material such as towels or absorbent powders. Put all material into proper waste disposal container with 1d tightly covered. Solvent soaked materials may spontaneously combust. For larger spills, cike spill, recover free liquid, and use absorbent material to dry area. Rinse area with water. Put al material into appropriate waste containers. 4

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CITRIKLEEN

Page: 3 of 4 Date Prepared: July 28, 1994 MSDS No.: 1850-407S

WATER SPILL:

Remove product from water surface by skimming or with suitable absorbents. This product contains surfactants which will cause it to disperse in water. Localized high concentrations of this product may cause fish kills, but no persistent or long term effects will result. Check with local environmental regulatory agencies for reporting requirements.

SECTION 6 HANDLING & STORAGE

STORAGE TEMPERATURE, "F: ambient, DO NOT STORE ABOVE 120 Deg. F. KEEP FROM FREEZING.

GENERAL: Keep away from heat sources, open flames, and other ignition sources. Do not store near strong oxidants.

SECTION 7 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

BOILING POINT, °F: About 212 EVAPORATION RATE, Acetone = 1: equal to water SOLUBILITY IN WATER: emusifies SPECIFIC GRAVITY at 75°F: 0.98 ODOR AND APPEARANCE: clear amber liquid with citus odor VAPOR PRESSURE, mm Hg at 20°C: equal to water VAPOR DENSITY (Air = 1): equal to water WT% ORGANIC VOLATILES: about 30 pH: 10.2

SECTION 8 REACTIVITY DATA

GENERAL:

This product is stable and hazardous polymerization will not occur,

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong coldizing agents.

SECTION 9 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):

PROPER SHIPPING NAME:

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (contains d'imonene and ethanolamine) HAZARD CLASS: 3 IDENTIFICATION NUMBER: UN 2924 LABEL: FLAMMABLE, CORROSIVE

PACKING GROUP: III

FLASH POINT: 125'F TCC

pH: 10.2

TSCA: The ingredients in this product are listed on the TSCA inventory.

CERCLA:

This product contains no CERCLA reportable materials. Contact local authorities to determine if there may be other local reporting requirements.

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DD1 (pitable hazardous wate DD2 (corresponder hazardous wate SARA TITLE III: 311/312 H2ZARD CATEGORIES: Acta healt, Oroxie healt, Fire 313 REPORTABLE INSTREDENTS: Detrykine glycol monobuly ether: CASH 1124-4 :-5 wt/s NEW JERSEY RIGHT-TO-KOIOW INFORMATION: This product does not contain any obseriated Software (CASH 508-577.6), monochamonium dodes/decase and monochamolexine (CASH 772: 2014)	RCRA HAZARD CLASS:	<u>من محمد من محمد</u> من من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من محمد من م	and a second second second second second second second second second second second second second second second	····	n e Stra
SARA TITLE III: 31312 HAZARD CATEGORIES: Auste heads, for vorise heads, fire 313 REPORTABLE INGREDIENTS: 313 REPORTABLE INGREDIENTS: 313 REPORTABLE INGREDIENTS: Auste heads, for vorise heads, fire segmet (CASE 3132 45 ; <5 wt); NEW JERSEY RIGHT-TO-KNOW INFORMATION: The product down model with (CASE 1124 5 ; <5 wt); CALIFORNIA PROPOSITION 65 INFORMATION: The product down of the constraint way down and the state of California to cause cancer and/or bith defects or regorized with the state of the state of the state of California to cause cancer and/or bith defects or FILE of the state of the constraint way down and the state of California to cause cancer and/or bith defects or SCAQMD INFORMATION: B for a photochemically reactive material present? Yes Wat is the vapor pressure of VOCS? 0.14 mm Hg @ 200 NUMBER WADD ON THE STATEMENT MALE INFORMATION: B for a photochemically reactive material present? Yes Wat is the vapor pressure of VOCS? 0.14 mm Hg @ 200 NUMBER WADD ON THE STATEMENT AUX AND RATING SYSTEMS: MALE INFORMATION STATEMENT REACTION 10 NOTES HAZARD RATING SYSTEMS: MENT 1 2 2 REACTION 10 NOTES HEALTH HINS NEFA KEY REACTION 10 AUX AND STATEMENT REVISION SUMMARY: Change in Section 6 SUPERSEDES ISSUE DATE: Supersedees is Source and the state of california and the state of the s	D001 Ignitable hazardous w	raste	· · · · · · · · · · · · · · · · · · ·	• • • • •	~~
311312 HAZARD CATEGORIES: Anate healty, from should refer CASH 112343 313 REPORTABLE INGREDIENTS: Dethylene glycal monobuly efter (CASH 112343 - <5 wt/s)		課金 受視 (数据)開始	· · ·	· · · · ·	
Adds beach, Chronic Health, Fire S13 REPORTABLE UNSREDIENTS: Dehybere glycol monobuly effer: CASH 112345 :<5 wts NEW JERSEY RIGHT-TO-KNOW INFORMATION: This product contains were (CASH 112345), dimmere (CASH 1012445), dehybere glycol monobuly effort (CASH 112346), and monobuly effort (CASH 114356), dimmere (CASH 10124459), dehybere glycol monobuly effort (CASH 112346), and monobuly effort (CASH 114356), dimmere (CASH 10124459), dehybere glycol monobuly effort (CASH 112346), and monobuly effort (CASH 114356), dimmere (CASH 112346), and monobuly effort (CASH 114356), Counter (CASH 114356), Si bener a photohemically readive material present? Yes Wat is the VC counter of photochemically readive material? about 30 Wat is the VC counter 130 pd Wat is the VC counter 1400 pd Wat is the VC counter 1400 pd Wat is the VC coun		· · · · · · · · · · · · · · · · · · ·		••	f
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Assigned to: ???? FOR INFORMATION ONLY MATERIAL SAFELY DAIA SHEEL 1072 J.D. & E-10.8 Idrof. 644 (Essentially Similar to Form OSHA-20) SECTION I : MSA CLEANER-SANITIZER II RODUCT NAME FORMULA CODE 8599-03 Mine Safety Appliances Company COMPLETED BY L. P. Dewosky 600 Penn Center Boulevard Pittsburgh, PA 15235 JANUFACTURER TITLE *Lyr.Product Safety* Pittsburgh, PA 3-17-81 DATE 412-273-5500 IMERGENCY PHONE NO. SECTION II - INGREDIENTS CAS NUMBER WEIGHT, 54.7 ACTIVE INGREDIENTS: 497-19-8 42.2 SODIUM CARBONATE 7601-54-9 10.0 TRISODIUM PHOSPHATE ALKYL (C14, 50%; C12, 40%; C16, 10%) DIMETHYL BENZYL AMMONIUM CHLORIDES 139-08-2 2.5 45.3 INERT INGREDIENTS: GODIUM TRIPOLYPHOSPHATE 7758-29-4 144-55-8 SODIUM BICARBONATE . 7732-18-5 WATER ISOMERIC LINEAR ALCOHOLS (C11-C15) 68131-40-8* POLYETHOXY ETHANOLS 64-17-5 · ETHANOL 125-12-2 ISOBORNYL ACETATE SECTION UI - PHYSICAL DATA SPECIFIC GRAVITY (H2 O=1) BOILING POINT (* F.) 0.8 NA SYDLATILE BY VOLUME VAPOR PRESSURE (mm Hg.) NA NA EVAPORATION RATE (___ VAPOR DENSITY (AIR=1) NA =1) NA pН SOLUBILITY IN WATER 1% AQUEOUS SOLUTION 9.5 - 10.520% APPEARANCE FRAGRANT BLEND OF WHITE POWDERS AND ODOR SECTION IV - FIRE AND EXPLOSION DATA FLASH POINT [Hethod used] NO FLASH TO 240 F FLAMMABLE LIMITS 1 101 Vel NA NA EXTINGUISHING MEDIA FOAM, DRY CHEMICAL, CARBON DIOXIDE WATER SPRAY (FOG) SPECIAL FIRE BLANKET FIRE WITH EXTINGUISHING MEDIUM FIGHTING PROCEDURES PRODUCT IS NONREACTIVE AND DOES NOT READILY SUPPORT UNUSUAL FIRE AND EXPLOSION HAZARDS COMPTISTION

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MATERIAL SAFETY DATA SHEET

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PRODUCT NAME:	INTRACID RHODAMINE WT	LIQUID	
PRODUCT CODE:	A34517L100		
CHEMICAL FAMILY;	Xanthene dye		

PREPARER:	-	Health & Safety Department
DATE PRINTED:		10/19/1999
REVISION DATE:	· ·	09/20/1999

SUPPLIED BY: Crompton & Knowles Colors Inc. P. O. Box 341 Reading, PA 19603 Phone: 610-582-8765

24 Hr. Emergency Phone:

CHEMTREC 1-800-424-9300

CANUTEC: For chemical emergencies in Canada, call CANUTEC at 1-613-996-66666.

The second states and the second second second second second second second second second second second second s

HAZARDOUS COMPONENTS

		•		•	_	· · ·	
		ACGIH TLV:	ACGIH Short Term Exposure	OSHA PEL:	OSHA Short Term Exposure	NJ Trade Secret]" -
Component	Percent		Limit (STEL)	ļ	Limit (STEL)	Registratio	<i>.</i>
			value:	ł ·	value:	n Number:	l
	[18881400-	
Trimellitic acid 528-44-9	3	N.E. ·	N.E.	N.E.	NE.		-

NON-HAZARDOUS COMPONENTS

					•		
Component	Percent	ACGIH TLV:	ACGIH Short Term Exposure Limit (STEL) value:	OSHA PEL:	OSHA Short Term Exposure Limit (STEL) value:	NJ Trade Secret Registratio n Number: 18881400-	
Sodium chloride 7647-14-5	7	N.E.	N.E.	N.E.	N,E.		
Trade Secret : Dye compound	10 to 20	N.E.	N.E.	N.E.	1	5646P, 5647P	

P.02

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DCT 19 1999 16:50 FR C&K GIB ENVIRML-MILSE10 582 6665 TO 916107747205 P.03

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Water 7732-18-5	70	N.E.	N.E.	N.E	N.E.		
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	-3. II	AS 6745 (16	<u>ISFADIENE</u>	HEALCANE.	OINESSIE		
MERGENCY_OVERVIE	W: Warnin	าส. ใล้บริเ		itition	Manr maile	e skin	• • • •
rritation.		ig. cuus			my chus	C JALI	
				• .•			
FFECTS FROM ACUT	E EXFOSU	<u>E:</u>				.• <i>*</i>	· · ·
YE CONTACT:	Irrita	ting to	the eyes			· ••, · ·	
· · · · · · · · · · · · · · · · · · ·	•	- 15 - 3122			, ,		
KIN CONTACT:	May be	e irritat	ing to th	e ekin.			
NHALATION:	None k	nown.				· . · ·	
					•	•	· · •
NGESTION:	None k	nown	and the second second second second second second second second second second second second second second second	-	·	· · ·	
HRONIC OVEREXPOST	DAAR AN	ምር •	alar yang dari yang dari yang dari yang dari yang dari yang dari yang dari yang dari yang dari yang dari yang d Tang dari yang •		. · ·	×	
ot known,				· ,		یں۔ محمد کے اس	
		• •				, <u>, , , , , , , , , , , , , , , , , , </u>	
ARCINOGENICITY:	: NTP, -	No, IAR	lC - No,	OSHA Regi	ilated -	No	
RINCIPLE ROUTES C	P EXPOSU	RE: None	known.				•
				• • •	•		
edical conditions	B AGGRAVA	TED BY-E	IPOSURE:	Not known.	•		
						· · · · · · · · · · · · · · · · · · ·	
		22315531 2	7499674949	NOLULI NOL			
YES: In case of con	tact, imme	diately fl	ush eves vi	th plenty o	f water f	or at le	. 1. 0. 00 ast 15 - 1
inutes and get medica	al attentio	on if irri	tation pers	ists.		11 .	
CIN: In case of cont			Nazio della della della della della della della della della della della della della della della della della della		91731 F		
ast 15 minutes. Get	medical at	tention.	USH BRIN WI	cu biench o	r soap an	1 water	LOL AL
		•	من المراجع	#	•	•	2 a 1 a 1 a 1
WALATION: If inhat opiration, preferabl	led, remove	to fresh	air. If n f broathing	ot breathin	g give ar	ificial	••••••••••••••••••••••••••••••••••••••
tention.	.y		r preating	19 dicitch	rr give of	yyen. G	it medical
	· · ·	ې د و <u>د د د م</u> رد د م				• • • • • • • • • •	
GESTION: If swall d sticking fingers d	lown throat	ce vomiti	ng immediat	ely by givi to an unco	ng two gla macions r	isses of	Water
dical attention.		,					
orcar accention.							

OCT 19 1999 16:50 FR C&K GIB ENVIRML-MILS610 582 6665 TO 916107747205 P.04

PRODUCT:

INTRACID RHODAMINE WT LIQUID A34517L100 FLASH POINT: N.A. METHOD: N.A. IGNITION TEMP: N.D. FLAMMABLE LIMITS IN AIR - LOWER (%): N.A. FLAMMABLE LIMITS IN AIR - UPPER (%): N.A. EXTINGUISHING MEDIA: FIRE FIGHTING PROCEDURES: after extingushing fire. UNUSUAL HAZARDS: ADDITIONAL FIRE AND EXPLOSION DATA: As in any fire, wear self-contained breathing

apparatus and full protective equipment.

Carbon Dioxide, Dry Chemical, Water Fog Cool exposed containers with Water spray

None known.

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wear appropriate safety equipment. Contain and clean up spill immediately. Prevent from entering floor drains. Sweep powders carefully minimizing dusting. Shovel all spill materials into disposal drums" and follow disposal instructions. Scrub spill area with detergent and flush with copious amounts of water.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE; Keep container closed when not in use. In accord with good industrial

OTHER STORAGE AND HANDLING DATA: practice, handle with care and avoid personal contact.

EXPOSURE CONTROLS: Local exhaust ventilation may be necessary to control air contaminants during the use of this product.

RESPIRATORY PROTECTION: If exposure to dust, mist, and/or vapors is likely, a NIOSH approved respirator with a protection factor of 10 is recommended. See MSDS section 2 for information on the hazardous ingredients.

PROTECTIVE GLOVES: Wear chemical resistant rubber gloves and long sleeved clothing. EYES: Wear safety glasses or goggles to protect against exposure.

CLOTHING: Wear overalls, apron, or other protective clothing to minimize skin contact.

OTHER PERSONAL PROTECTION DATA: None known.

HYGIENIC PRACTICES: Avoid contact with eyes and skin. Avoid inhalation of dusts and vapors. Wash thoroughly after handling. Keep containers closed when not in use.

Ter de la statement de la service de la service de la service de la service de la service de la service de la s

PHYSICAL STATE:LIQUID COLOR: RED ODOR: __ NONE SOLUBILITY IN WATER (20°C): __MISCIBLE

. OCT 19 1999 16:51 FR C&K GIB ENVIRMIL-MILS610 582 6665 TO 916107747205 P. 95 PRODUCT: A34517L100 INTRACID RHODAMINE WT LIQUID SPECIFIC GRAVITY: _____1.13 J Ì ' pH:_____10.5 @ 1.0t NELTING POINT: ______N.D. BOILING POINT: ______N.A. FREEZING POINT: ______N.D. VAPOR DENSITY (AIR=1): _____IS HEAVIER THAN AIR VOC CONTENT (%): ______N.D. VAPOR PRESSURE (mm/Hg @ 20°C): _____N.D. HE REAL STRATEGY OF THE REAL PROPERTY OF THE PARTY OF T STABILITY DATA: STABLE POLYMERIZATION: Will not occur HAZARDOUS DECOMPOSITION PRODUCTS: Burning will produce oxides of carbon, nitrogen and/or sulfur. INCOMPATIBILITY (MATERIALS TO AVOID): None known. CONDITIONS/HAZARDS TO AVOID: None known. THE REPORT OF THE REPORT OF THE PROPERTY OF TH · ... and on Early 1 ACUTE ORAL LD50 (mg/kg): _____ No Data ACUTE DERMAL LD50 (mg/kg): _____No Information میں ہے۔ دیکھی میں دیکھی . ACUTE INHALATION LC50 (mg/L): ... _No Data ? ; ^{*} ; IRRITATION TO (skin, eyes, respiratory): None. Salara Tana Ka . . ADDITIONAL TOXICOLOGY INFORMATION: None known. IN STATISTICS IN STATISTICS IN THE REAL PROPERTY INTERPOPERTY IN THE REAL PROPERTY INTERPOPERTY INTE ECOTOXICOLOGICAL INFORMATION: No data is available at this time. EN DE LE RESERVE DE L RESERVE DE LE RESER DISPOSAL OF WASTE METHOD: Bury or incinerate according to federal, state, and local regulations. CONTAINER DISPOSAL: Containers should be triple rinsed, according to federal regulations and/or good waste management practice. DOT Proper Shipping Name: Not DOT Regulated DOT Technical Name: _____N.A. DOT Primary Hazard Class: _____ N.A.

Page 4 Of 6

OCT 19 1999 16:51 FR C&K GIB ENVIRML-MILS610 582	2 6665 TD 916107747205 P.06
UCI 13 1333 19:21 FK CK GIB ENVIRING-THESEIG SC	
PRODUCT:	
A34517L100 INTRACID RHODAMINE WT LIQU	UID
DOT Secondary Hazard Class:	· · · · · · · · · · · · · · · · · · ·
UN/NA NUMBER:	<u>مد -</u>
DOT EMERGENCY RESPONSE INFORMATION:	Keep unnecessary people away. Isolate
area and deny entry. Stay upwind. Keep out of low for emergency assistance.	
IOF Emergency assistance.	· · ·
	al emergencies in Canada, call CANUTEC .
SARA SECTION 302: None Found	د.
· · · · · · · · · · · · · · · · · · ·	· · · · · ·
SARA (311, 312) HAZARD CLASS:	
IMMEDIATE HEALTH HAZARD	•
SARA (313) CHEMICALS: THIS PRODUCT DOES NO	
ROUTINE ANNUAL 'TOXIC CHEMICAL RELEASE REP	ORTING' UNDER SECTION 313 (40 CFR
372)	
Amount of Sara (313) Reportable Chemical (%): No SARA (313) Reportable
Chemicals.	· · · · · · · · · · · · · · · · · · ·
METAL CONTENT: This product is not a me	:
TSCA INVENTORY STATUS:	All components of this
product are included on the TSCA Section 8	Inventory.
CALIFORNIA FROPOSITION 65 CHEMICALS:	None
· · · · · · · · · · ·	
ISCA SECTION 12 (B) EXPORT REGULATIONS:	This product is not subject
to TSCA 12(b) Export Regulations.	•
FERMAN AMINES/EUROPEAN UNION AMINES:	This product does not contain
any compounds that would be prohibited und	er the current German/European
Inion regulations regarding cleavable amin	e compounds.
	MARINON CONTRACTOR
AZARD RATING SYSTEMS	
MIS: FLAMMABILITY 1, REACTIVITY 0, HEALTH 2	
DDTTTAWNT. THTODAY MTONE	
DDITIONAL INFORMATION: NONE	
	_
Page 5 Of 6	5
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PRODUCT:

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A34517L100 INTRACID RHODAMINE WT LIQUID REASON FOR UPDATE:

Product review. and the second

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DISCLAIMER:

. Crompton & Knowles warrants that this product conforms to the chemical description on the label and is reasonably fit for the specific purposes referred to in its directions for use, subject to inherent risks referred to in the Material Safety Data Sheet for this product. Crompton & Knowles makes no other express or implied warranty. In no case shall Crompton & knowles be liable for consequential, special, or indirect damages resulting from the use or handling of this product.

Page 6 Of 6

Assigned to: ????	FOR INFORMATION ONLY				Expires	
•						
				1. 1.0.	# C-10.1 nf 522 of 2	-6-
• .	SPARTAN CHEMICAL CO., INC.			Ide.	nt 522	
•	MATERIAL SAFETY DATA SHEET		:		. 1 3	
• •	•	_	÷.,	· · · · · ·	of L	
1	SECTION I			-		
	PRODUCT IDENTIFICATION				. 1	
FRODUCT NAME OR NUMBER (as it appears	on label)			·		
SD-20 (BLK)			••		•	•
		•				
WHIFACTLER'S NHE		0.0	~~~~ ~		n	
Spartan Chemical Co., Inc.	4			ELEPHONE N	Ne -	
Sparcall Chemical Co., Inc.		(41)) 531-5	221		•
					-	•
ADDRESS (NUMBER, STREET, CITY, STATE		•		R'S D-U-N-S	S NU.	
110 N. Westwood Ave., Toledo, OH 436	07	00-5	03-6728			
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	SECTION II		· ·			! .
<u> </u>	HAZARDOUS INCREDIENTS				l	Ļ
			ble Z-l		1 1	Ι.
ICAS RECLISTRY NO I SON I CHE	ICAL NHE(S)				I CARCINOCEN	
Į Į		1 mg/H ³	mg/HP	1 mg/H3	<u> </u>	Ŀ.
	•	•	•			•
1	SECTION III .			•	i	
1	PHYSICAL DATA				i	•••
BOILING POINT SP	ECIFIC GRAVITY (H20 = 1)				_	
	074 .					•
VAPOR PRESSURE - 18	•	PERCE	NT SOLII	D BY		•-
9 75 °F °C X mn Hg psi	` .	WEIGH				
	APORATION RATE (but. ace. = 1)	15-17				•
Unknown <1						
	PEARANCE AND ODOR					••
Complete Bl	ue, citrus odor		· ·			
pH		IS NAT	TERIAL:	(LIQUI	id) solid	•
Concentrate 11.0-11.5		CAS	PA	ISTE	PONDER	•
	· · · · · · · · · · · · · · · · · · ·				<u> </u>	• ·
	SECTION IV				1	
	FIRE AND EXPLOSION HAZARD DATA	·			<u> </u>	
FLASH POINT - None HETHOD USED -	- ASTM - 092 FLANNABLE LIN	IIS - n/a	3	•		• •
		•				
EXTINGUISHING MEDIA						•
n/a	·					
						•
SPECIAL FIRE FIGHTING PROCEDURES			•	•		
n/a			•			:
· · · · · · · · · · · · · · · · · · ·			•			
UNUSUAL FIRE AND EXPLOSION HAZARDS			•			۰.
n/a						
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			- HEALTH HAZARD	DATA		2 of 2
EFFECTS OF OVEREXPOS	URE - CONDITION			DATA NILLE - N	t established	
Avoid eye contact;						•
			11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
PRIMARY ROUTES OF EN	TRY INHALATIC	и ``soo	CONTACT	OTHER (SPEC	IFY)	
CONDITIONS ACCRAVATE	d by use					
Unknown			•	• •	•	
		1	•	•		-
DERCENCY AND FIRST	AID PROCEDURES -	In case of con	tact immediate:	ly flush eyes w	ith plenty of	• •
water for at least 1						• • •
before reuse. If an				st juice. Cal	1 a physician	
imediately.		1. 1. 1. 1999 6.00	l vtr.1 ≞t. (e.		•
·		<u> </u>			· ·	
		SECTION VI	- REACTIVITY	DATA		
STABILITY: UNSTABLE		• :			•	
STABLE				•		
INCOMPATIBILITY" (NATE	ERIALS TO AVOID)	1.55				• • • • •
None			•			
HAZARDOUS DECOMPOSITI	un muulis			e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de l	•	
None Mar	OCCUR		· · · · · ·	· · · · · · · · · · · · · · · · · · ·		
HAZARDOUS HAY FOLYMERIZATION: MILL		•		•		•
PULTNERIZATION: MILL		en an the farments and	•		•	•
		SECTION VII - S			<u> </u>	
STEPS TO BE TAKEN IN				auenukes .		
Flush with water to s						
	and of the states of the state			· · ·		
MASTE DISPOSAL HETHOD				•		t for estat
WOLF ON OUT LINE	•					
Sono oc ohovo						
Sage as above.		-				
Same as above.	65M	TON NTTI - CON		TAEODVATION	· · · · · · · · · · · · · · · · · · ·	
	والمحاجب والمتكاف فالتكري والمتحد والمتحد	ION VIII - SPEI	LIAL PROTECTION	INFORMATION		
RESPIRATORY PROTECTIO	والمحاجب والمتكاف فالتكري والمتحد والمتحد	ويوادا والمتحدين أكفاه معرافك المحديد فا	LIAL PROTECTION	INFORMATION		
	والمحاجب والمتكاف فالتكري والمتحد والمتحد	······································	LIAL PROTECTION	INFORMATION		
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RESPIRATORY PROTECTIO Nothing special VENTILATION - Cood get	N (SPECIFY TYPE) neral ventilatio	n should be suf	ficient for mo	•		
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SynTech Products Corporation 520 E. Woodruff Avenue Toledo, Ohio 43624 SAMM

Material Safety Data Sheet 24 Hour - Call INFOTRAC 1-800-535-5053 HMIS Rating H-1 F-0 R-0

(419) 241-1215

E-10.4

Section I - Product Identification

Product Name: Effective Date:

Touch It Up[®] De-Contaminant* 02.02 * Do NOT use this product as a skin de-contaminant

Section II - Hazardous Ingredients

Chemical Name	CAS#	WT%	PEL	TLV	CARCIG
2 Butoxy Ethanol	111-76-2	1% +	50ppm	50 Skin contact	No
Other ingredients - Trade Sec	ret				
Propane/Butane	74-98-6/106-97-8	6-10%	1000ppm	1000ppm	No
*All constituents are listed of	on the TSCA invento	ory			

Section III - Physical Data

Boiling Range:	N.D.
Vapor Pressure (psig) in Can @ 75°F:	65
Solubility in Water of Concentrate:	Complete
Specific Gravity of Concentrate:	1.036
% Volatile:	7.49
Flash Point of Spray:	None to 150°F, Tag Open Cup
Appearance and Odor of Spray:	White foam, perfume odor
pH:	11-12

Section IV - Fire and Explosion Hazard Data

Flammability as per CPSC Flame Ex	tension Test:	Non-Flammable	
Flammable Limits:	LEL: N/A	UEL: N/A	
Extinguishing Media:	Foam, dry cher	mical, carbon dioxide.	
Special Fire Fighting Procedures:	Keep container	rs cool. Use equipment to protect	personnel against
rupturing, or venting containers.	_		
Fire and Explosion Hazards:	Above 120°F,	containers may vent, rupture, or burst.	

Section V - Reactivity Data

Chemical Stability:	Stable	•	
Conditions to Avoid:	Do not expose to temperatures above 120°F.		
Incompatibility (Materials to Avoid):	Strong oxidizers, acids or bases, selected amines.	•	
Hazardous Decomposition Products:	Thermal decomposition may produce carbon		monoxide and/or
carbon dioxide.			
Hazardous Polymerization:	Will NOT occur		

1.14

Section VI - Health Hazard Data

Effects of Overexposure

Eyes:	Minor irritation
Skin:	No evidence of adverse effect from available information
Ingestion:	Can cause gastrointestinal irritation, vomiting, and diarrhea.
Inhalation:	Product exists as foam. Inhalation of the foam could cause asphyxiation.

Emergency and First Aid Procedures*

	*Caution!	Do NOT use this product as a skin de-contaminant	•	.• :	• •	
	Eyes:	Flush with water for at least 15 minutes.				
ĸ	Skin:	Wash exposed area with water and soap.		• .	•	••
;	Ingestion:	Do not induce vomiting. Get medical attention.				-
;	Inhalation:	Treat for asphyxiation.				

Section VII - Spill or Leak Procedures

Steps to be taken in case container is punctured and material is released: Clean up area by mopping or with absorbent materials and place in closed containers for disposal. Consult federal, state, or local disposal authorities for approved disposal procedures.

Waste Disposal Method:

When used properly aerosol products do not generate hazardous waste. Empty de-pressurized containers can not be reused and should be wrapped an put in trash collection. Cans which are pressurized or contain liquid must be disposed of in a permitted waste management facility. Consult federal, state, and local disposal authorities for approved procedures.

Section VIII - Special Protection Information

Specific Personal Protective Equipment

Respiratory Protection:	Under normal conditions no respiratory protection is required.				
Ventilation:	Normal venitlation adequate.	-	1 1 1	• •	
Protective Gloves:	None required, protective gloves may be worn.		•	• `	
Eye Protection:	None required, chemical splash goggles may be worn.	<u>ن</u>	·· :	•	

Section IX - Special Precautions

Keep from freezing

Keep away from children

Special precautionary statement: Please read and follow the directions on the product label. They are you best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

Pro An the Contract

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition. We make no warranties, express or implied, and assume no liability in connection with any use of the information.

Prepared by J. Rose MSDS -Touch It Up[®] Signature_

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SAMM C	-10.74	1000	-527-		•
NAMICO, Inc.			-527- - 722	ILAL SAFE	TY DATA SHEET
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NAMICO Proprietary Name: Chemical Name:	501 Nami-lo Non- Na	PHUSPHAIL		1 Health	1 2 1
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DOT Proper Shipping Name: DOT Hazard 1.D. No:	Compound, Clean	ing, Selid		Flannabi	lity D.
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Chemical/Common Name		CRS No.	Height S	ACG1H_TLU (mg/m3)	OSHA PEL (ag/n3)
Sodium carbonate		497-19-8	10-50	NE	NE 1
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JUL 28 '95 10:11AM HARRISBURG PAPER CO

NAMICO, Inc. 4601 Flat Rock Road 50092 Tracy Road Halbridge, DH 43465 419-656-8510 C-10-74 MATERIAL SAFETY DATA SHEET P.D. Box 4584 Philodelphia, PR 19127 501 NANI-LO NON-PHOSPHATE Page 2 -PQ.20F3 ----------1995 Section U - HEALTH HAZARD DATA 46 1.12 Threshold Limit Value Routes of Exposure Eye or skin contact, ingestion. Effects of Dverexposure Contact with eyes or skin can cause severe Irritation. This product is not considered to be a carcinogen by the. Corcinogenicity EMERGENCY FIRST RID FROCEDURES a constant constant. • • • Thoroughly irrigate at once with running water for at least Eyes 15 minutes. Get inhediate medical attention. Flush with plenty of water. Skin Have victim drink large quantities of water or milk to dilute the product. DO NOT INDUCE VOMITING. Get IMMEDIATE Ingestion medical attention. NOTE: Never give anything by mouth to an unconscious or convulsing victim. Inhalation NR NR Other Section VI - REACTIVITY DATA Stability Conditions to Avoid Incompatible Materials None known Hazardous Decomposition None known Froducts Hazardous Polymerization Hill not occur Conditions to Avoid None known -continued on additional page(s)-

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P.O. Box 4694	Halbridge, DH 43465	501 NAMI-LO NON-PHOSPH
Philodelphia, PA 19127	419-666-8610	Page
	6-10-74	PG-30F
1995	Section Ull - SPILL OR LEAK PROC	EDURES 461
	· · · · · · · · · · · · · · · · · · ·	• .
Steps to be taken in case material is released or spilled	Sweep up. Rinse spill area w	ell with water.
Haste Oisposal Nethod	DISPOSER MUST COMPLY WITH AL DISPOSEL AND DISCHARGE LAWS.	L FEDERRL, STATE, AND LOCAL
•		
	ion UIII - SPECIAL PROTECTION IN	
		Nakesteressan nation () () () () () () () () () (
	•	•
Respiratory Protection Ventilation	None required Adequate	•
Gloves	Rubber or neoprene	
Eye Protection Other Protective Equipment	Safety goggles None required	•
	Section IX - SPECIAL PRECAUTIO	
Precautions in Handling	Store in a tightly closed co	ntainer.
and Storage		
· - ·	KEEP OUT OF REACH OF CHILDRED	۲.
Other Precautions		
Other Precautions NA = Not Applicable, NE = N The information herein is g Sheets furnished by our sup Enguse of this information	iot Established, ND = Not Determ liven in good faith and is compl pliers. No warranty, express or must be determined by the user	ined for this product led from Naterial Safety Data implied, is made or intended
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BETZDEARBORN MATE SAFETY DATA SHEET	RIAL		Betz	Dearborn
EFFECTIVE DATE: 22-AUG-19 PRINTED DATE: 19-OCT-199		2.90		
1) CHEMICAL PRODUCT	AND COMPANY I	DENTIFICA	TION	
PRODUCT NAME : PO	WERLINE INHIBIT	ORPPL1	0 ~	
PRODUCT APPLICATIO	ON AREA: WATER-	BASED CC	RROSION IN	IHIBIŢOR.
COMPANY ADDRESS: BetzDearborn 4636 Somerton Road Information phone nu	I , Trevose , PA 190 mber: 215 355-330	53 0		
EMERGENCY TELEPH	ONE (HEALTH/AC	CIDENT): (800)-877-194	0 (USA)
2) COMPOSITION / INFOF	RMATION ON INGR	EDIENTS		
Information for specific produ U.S. OSHA HAZARD COMM additional sections of this MS hazards of this formulation.	DS for our assessment	t of the potent	lefer to ial	
HAZARDOUS INGREDI	ENTS:			
CAS#	CHEMI	CAL NAM	E statistica	
7632-00-0	SODIUM NITRIT Oxidizer; tox toxin () () ()	ic (by ing	gestion); po	tential blood
No component is conside Program, the Internationa Occupational Safety and carcinogens.	ered to be a carcino al Agency for Resea Health Administrati	gen by the arch on Can on at OSH/	National Toxi cer, or the thresholds f	cology or
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PRODUCT NAME : POWERLINE INHIBITOR- PPL10 EFFECTIVE DATE: 22-AUG-1995

3) HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING

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

DOT hazard: ORS (when container > RQ) Emergency Response Guide #31 Odor: Mild; Appearance: Light Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: Flood with water. Use of CO2 or foam may not be effective.

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:

Severe irritant to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols cause irritation to the upper respiratory tract.

INGESTION EFFECTS:

May cause gastrointestinal irritation with possible nausea, vomiting, diarrhea, incoordination, mental confusion, dizziness and lethargy.

TARGET ORGANS:

Prolonged or repeated exposures may cause CNS depression and/or toxicity to the blood.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

Causes irritation of the skin, eyes, and/or respiratory system.

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EFFECTIVE DATE: 22-AUG-1995

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4) FIRST AID MEASURES

SKIN CONTACT:

Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.

EYE CONTACT:

Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.

INHALATION:

Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS: Fire fighters should wear positive pressure cold Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type). **EXTINGUISHING MEDIA:**

Flood with water. Use of CO2 or foam may not be effective.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

> 200F > 93C P-M(CC)

MISCELLANEOUS:

ORS (when container > RQ)

NA3082; Emergency Response Guide #31

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:

Contains an oxidizer. Avoid all contact with reducing agents, oils, greases, organics and acids. Do not allow to dry.

STORAGE:

Keep containers closed when not in use. Do not freeze. If frozen, thaw and mix completely prior to use. CONTINUED

PAGE 3

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EFFECTIVE DATE: 22-AUG-1995	· ·
8) EXPOSURE CONTROLS/PERSONAL PROTECTION	·
EXPOSURE LIMITS CHEMICAL NAME	•
SODIUM NITRITE PEL (OSHA): NOT DETERMINED TLV (ACGIH): NOT DETERMINED	
 ENGINEERING CONTROLS: adequate ventilation PERSONAL PROTECTIVE EQUIPMENT: Use protective equipment in accordance with 29CFR 1910 Subpart I RESPIRATORY PROTECTION: A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE. USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS. If air-purifying respirator use is appropriate, use a respirator with dust/mist filters. SKIN PROTECTION: rubber gloves Wash off after each use. Replace as necessary. EYE PROTECTION: splash proof chemical goggles 	

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C) 1.107	Vapor Pressure (mmHG) ~ 18.0	
Freeze Point (F) 19	Vapor Density (air=1) < 1.00	
Freeze Point (C) -7		
Viscosity(cps 70F,21C) 8	<pre>% Solubility (water) 100.0</pre>	
0-dem	x:1.4	
Odor	Mild	
Appearance	Light Yellow	
Physical State	Liquid	
Flash Point P-M(CC)	> 200F > 93C	
pH As Is (approx.)	9.0 .	
Evaporation Rate (Ether=1)	< 1.00	

NA = not applicable ND = not determined

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CONTINUED

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]	PRODUCT NAME : POWERLINE INHIBITOR- PPL10 EFFECTIVE DATE: 22-AUG-1995
ן י	10) STABILITY AND REACTIVITY
	STABILITY: Stable under normal storage conditions. HAZARDOUS POLYMERIZATION: Will not occur. INCOMPATIBILITIES: May react with strong oxidizers. DECOMPOSITION PRODUCTS: Thermal decomposition (destructive fires) yields elemental oxides. BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES: "B"
1	11) TOXICOLOGICAL INFORMATION
	Oral LD50 RAT: 570 mg/kg NOTE - Estimated value Dermal LD50 RABBIT: >5,000 mg/kg NOTE - Estimated value
	12) ECOLOGICAL INFORMATION
	AQUATIC TOXICOLOGY No Data Available.
	BIODEGRADATION COD (mg/gm): 42 Calculated TOC (mg/gm): Inorganic, N/A BOD-5 (mg/gm): Inorganic, N/A BOD-28 (mg/gm): Inorganic, N/A
<u>ו</u> ק	13) DISPOSAL CONSIDERATIONS
	If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is : Not applicable.
- 	Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.
	14) TRANSPORT INFORMATION
	DOT HAZARD: UN / NA NUMBER: DOT EMERGENCY RESPONSE GUIDE #: 31 ORS (when container > RQ) NA3082
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<u> </u>]	PAGE 5 CONTINUED
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1	173

EFFECTIVE DATE: 22-AUG-1995			
15) REGULATORY INFORMATIO	N .	· · ·	
TSCA: All components of this product are CERCLA AND/OR SARA REPORTAL 72 gallons due to SODIUM NITRIT SARA SECTION 312 HAZARD CLAS Immediate(acute);Delayed(Chronic SARA SECTION 302 CHEMICALS: No regulated constituent present a SARA SECTION 313 CHEMICALS: CAS# 7632-00-0	BLE QUANTITY (RQ): [E; SS: c)	• •	 RANGE 11.0-15.0%

CALIFORNIA REGULATORY INFORMATION

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

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

Health Fire Reactivity Special (1) Protective Equipment Moderate Hazard Slight Hazard Minimal Hazard No special Hazard Goggles,Gloves

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

CHANGE LOG

EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
~		
MSDS status: 22-AUG-1995	REVISED FORMAT	** NEW **

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NONE

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•	MATERIAL SAFETY DATA	SHEET	COBRATEC [®] TT-50S PRODUCT CODE: X18WT7440 Page I of 7	
	• • 3	287	August 16, 1999	
•			•	
•	· · · · · · · · · · · · · · · · · · ·	<u> </u>	· · · · · · · · · · · · · · · · · · ·	-
	SECTION 1 CHEMICAL I		MPANY IDENTIFICATION	
	SPECIFICALI		MEANT DENTIFICATION	
				_
		a tha calumning in		
	MANUFACTURER: ADDRESS:		PMC SPECIALTIES GROUP, INC	•
	ADDRESS:		501 Murray Road Cincinnati, OH 45217	
	EMERGENCY TELEPHONE:		(513) 242-3300 (USA)	
	FOR TRANSPORTATION EMER	GENCY:	(800) 424-9300 (USA)	
				٠
	CHEMICAL NAME AND SYNON	TYMS:	Sodium Tolyltriazole, 50% Water Solution	
	TRADE NAMES AND SYNONYM	IS:	COBRATEC® TT-50S	
	CHEMICAL FAMILY:	المعرسية مراجعهم	Triazole	
	FORMULA:		C ₇ H ₄ N ₃ Na	

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS No.	Wt%	,
Sodium Tolyltriazole	64665-57-2	49.5-51.0	• • •
Water	• • • •	•	
Sodium Hydroxide	1310-73-2	<0.5	;

Please request a copy of Technical Bulletin #: COR4333 for additional information.

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COBRATEC[®] TT-50S PRODUCT CODE: X18WT7440 Page 2 of 7 August 16, 1999 2003

SECTION 3 HAZARDS IDENTIFICATION

PMA PG

POTENTIAL HEALTH EFFECTS:

ROUTES OF ENTRY

Eye contact, skin contact/absorption, ingestion and inhalation.

(ACUTE)

EYES

Material is corrosive. Contact with the eyes may severely damage delicate eye tissue.

<u>SKIN</u>

Material is corrosive. Prolonged contact can be destructive to tissue.

INGESTION

Material is corrosive. Harmful if swallowed.

INHALATION

Material is corrosive. Harmful if inhaled.

CHRONIC EFFECTS/CARCINOGENICITY

CARCINOGENICITY: None of the components in this material are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

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COBRATEC® TT-50S PRODUCT CODE: X18WT7440 Page 3 of 7 August 16, 1999

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SECTION 4 FIRST AID MEASURES

IF INHALED

If affected, remove from exposure. Restore breathing. Keep warm and quiet. Get medical attention.

IF ON SKIN

Wash affected area thoroughly with soap and water. Remove contaminated clothing, jewelry, etc. Get medical attention.

IF IN EYES

Flush eyes with large amounts of water for 15 minutes. Get medical attention.

IF SWALLOWED

Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give large amounts of water. Get medical attention.

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT:	Not Applicable	
AUTOIGNITION TEMPERATURE:	Not Applicable	
FLAMMABLE LIMITS IN AIR:	Not Applicable	•
extinguishing media;	Not Applicable	· · ·

SPECIAL FIRE FIGHTING PROCEDURES: Full protective equipment including selfcontained breathing apparatus should be used. During emergency conditions overexposure to decomposition products may cause a health lazard. Symptoms may not be immediately apparent. Get medical attention. Water may be used to cool and protect closed containers exposed to extreme heat.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may explode (due to the build-up of pressure) when exposed to extreme heat.

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MATERIAL SAFETY DATA SHEET

COBRATEC® TT-50S PRODUCT CODE: X18WT7440 Page 4 of 7 August 16, 1999

SECTION 6 ACCIDENTAL RELEASE MEASURERS

PMA PG

Use proper personal protective equipment. Isolate and secure the area and follow the appropriate emergency guidelines. Collect the material with inert absorbent and place in a covered waste disposal container.

SECTION 7 HANDLING AND STORAGE

STORAGE INFORMATION

CORROSIVE MATERIAL Avoid contact with skin, eyes and clothing. DO NOT TAKE INTERNALLY. Clean up spills immediately.

Keep containers tightly closed when not in use. Store only in containers which are resistant to caustic solutions.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Health: 3, Flammability: 0, Reactivity: 0 NFPA BASED RATINGS: Health: 3, Flammability: 0, Reactivity: 0, PPE: F HMIS RATINGS: WHMIS CLASSIFICATION: D-2-(B),E

RESPIRATORY PROTECTION: If personal exposure cannot be controlled below applicable exposure limits by ventilation, wear respiratory devices approved by NIOSH/MSHA for protection against mists and vapors.

VENTILATION: Local exhaust is recommended.

PROTECTIVE GLOVES: Rubber, vinyl or other impervious material if skin contact can not be avoided.

EYE PROTECTION: Use safety glasses with unperforated side shields, or full face shield when danger of splashing is great.

OTHER PROTECTIVE EQUIPMENT: Rubber apron or similar protective clothing to prevent contact with skin or clothes.

EXPOSURE GUIDELINES

Sedium Ilydroxide $TWA = 2 mg/m^3$

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SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

.: .	-
BOILING POINT:	100°C
FREEZING POINT:	-8°C
SPECIFIC GRAVITY:	1.19 @ 24°C
BULK DENSITY:	Not Applicable
VAPOR PRESSURE AT 20° C:	0.04 mm Hg
VAPOR DENSITY (air=1):	Not Applicable
SOLUBILITY IN WATER % BY W	T at 20° C: Miscible in all proportions
% VOLATILES BY VOLUME:	
EVAPORATION RATE:	Not Applicable
APPEARANCE AND ODOR:	Clear yellow to amber solution,
and the second	characteristic odor. pH=13.5

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable

INCOMPATIBILITY: Strong Oxidizing Agents, Strong Acids. HAZARDOUS DECOMPOSITION PRODUCTS: BY FIRE: Carbon Dioxide, Carbon Monoxide, Nitrogen oxides, HCN possible in reducing atmospheres. HAZARDOUS POLYMERIZATION: Will not occur.

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SECTION 11 TOXICOLOGICAL INFORMATION

and the second second second second second second second second second second second second second second second

Oral LD₅₀ (rat)

920 mg/kg (Malc) 640 mg/kg (Female) Can cause severe irritation

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Eye and Skin Irritant.

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MATERIAL SAFETY DATA SHEET

COBRATEC® TT-50S PRODUCT CODE: X18WT7440 Page 6 of 7 August 16, 1999 Ø 007

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SECTION 12 ECOLOGICAL INFORMATION

Bluegill Sunfish (96 hr. LC₅₀) Daphnia Magna (48 hr. LC₅₀) Rainbow Trout (96 hr. LC₅₀) 191.2 mg/l 245.7 mg/l 23.7 mg/l

SECTION 13 DISFUSAL CONSIDERATIONS

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

SECTION 14 TRANSPORT INFORMATION

D.O.T. SHIPPING NAME: D.O.T. HAZARD CLASS: U.N. NUMBER: PACKAGING GROUP: PRODUCT RQ (LBS): D.O.T. LABEL: D.O.T. PLACARD: Caustic Alkali Liquids, n.o.s. (Sodium Hydroxide) 8 UN1719 PGII 1,000 lbs as Sodium Hydroxide Corrosive Corrosive

SECTION 15 REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Sodium Tolyltriazole (CAS No. 64665-57-2) is contained on the following chemical lists:

1. TSCA Inventory List

COBRATEC® TT-50S PRODUCT CODE: X18WT7440 Page 7 of 7 August 16, 1999

SECTION 15 REGULATORY INFORMATION (CONT.)

Sodium Hydroxide (CAS No. 1310-73-2) is contained on the following chemical lists:

- 1. Clean Water Act Section 311 Hazardous Substances (ref.: Suspect Chemicals Sourcebook 1997)
- 2. CERCLA Hazardous Substances (ref.: Suspect Chemicals Sourcebook 1997)
- 3. OSHA Air Contaminants (ref.: Suspect Chemicals Sourcebook 1997)
- 4. American Council of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value Chemicals (ref.: Suspect Chemicals Sourcebook 1997)
- 5. OSHA Table Z-1-A [revoked] (ref.: Suspect Chemicals Sourcebook 1997)
- 6. DOT Hazardous Materials (ref.: Suspect Chemicals Sourcebook 1997)
- 7. DOT Hazardous Substances Other Than Radionuclides; and Radionuclides (ref.: Suspect Chemicals Sourcebook 1997)
- 8. Massachusetts Substance List (ref.: Suspect Chemicals Sourcebook 1997)
- 9. New Jersey Right To Know Hazardous Substance List (ref.: Suspect Chemicals Sourcebook 1997)
 - NJ1S = Special Health Hazard (ref.: Suspect Chemicals Sourcebook 1997)
 - 10. Pennsylvania Hazardous Substance List (ref.: Suspect Chemicals Sourcebook 1997) PA1E=Environmental Hazard

INTERNATIONAL REGULATIONS:

SodjumTolyltriazole (CAS No. 64665-57-2) is contained on the following chemical lists:

1. Canadian Domestic Substance List

Sodjum Hydroxide (CAS No. 1310-73-2) is contained on the following chemical lists:

- Canadian Workplace Hazardous Materials Information System (WHMIS) CN1 = Ingredient must be disclosed at concentration of 1% (ref.: Suspect Chemicals Sourcebook 1997)
- 2. Canadian Domestic Substance List

SECTION 16 OTHER INFORMATION

REASON FOR ISSUE: MSDS NUMBER: PREPARED: SUPERSEDES: New format and verification of information. X18WT7440 August 16, 1999 March 3, 1998

The information contained herein is based on the data available to us and is believed to be correct as of the data prepared; however, PMC SPECIALTHIS GROUP, INC, makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof

SAMM 32.42

BRIGHT DYES™ MATERIAL SAFETY DATA SHEET FLT YELLOW/GREEN™ LIQUID CONCENTRATE PAGE 1 OF 3

MSDS PREPARATION INFORMATION

T. P. MULDOON

PREPARED BY:

DATE PREPARED:

(937) 886-9100 1/01/02

PRODUCT INFORMATION

MAUNFACTURED BY:

KINGSCOTE CHEMICALS 3334 S. TECH BLVD. MIAMISBURG, OHIO 45342

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CHEMICAL NAME ______NOT APPLICABLE CHEMICAL FORMULA ______NOT APPLICABLE . CHEMICAL FAMILY ______AQUEOUS DYE PRODUCT

HAZARDOUS INGREDIENTS

NONE PER 29 CFR 1910.1200

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PHYSICAL DATA

PHYSICAL STATE	LIQUID
	YELLOW/GREEN, WITH NO APPARENT ODOR
SPECIFIC GRAVITY	APPROXIMATELY 1.05
VAPOR DENSITY (mm Hg @ 25° C)	~23.75
VAPOR DENSITY (AIR =1)	
EVAPORATION RATE (Butyl Acetate = 1)	~1.8
BOILING POINT	100 degrees C (212 degrees F)
FREEZING POINT	0 degrees C (32 degrees F)
pH	8.0 OR ABOVE
SOLUBILITY IN WATER	HIGHLY SOLUBLE

FIRE HAZARD

CONDITION OF FLAMMABILITY	NON-FLAMABLE
MEANS OF EXTINCTION	WATER FOG, CARBON DIOXIDE, OR DRY CHEMICAL
FLASH POINT AND METHOD	
UPPER FLAMABLE LIMIT	NOT APPLICABLE
LOWER FLAMABLE LIMIT	NOT APPLICABLE
AUTO-IGNITION TEMPERATURE	NOT APPLICABLE
HAZARDOUS COMBUSTION PRODUCTS	NOT APPLICABLE
UNUSUAL FIRE HAZARD	NOT APPLICABLE

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BRIGHT DYESTM MATERIAL SAFETY DATA SHEET FLT YELLOW/GREENTM LIQUID CONCENTRATE PAGE 2 OF 3

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· · · · · · · · · · · · · · · · · · ·	EXPLOSION HAZARD	······································
SENSITIVITY TO STATIC DISCHARGE	NOT APPLICABLE	••• • • • • • • • • •
SENSITIVITY TO MECHANICAL IMPACT	NOT APPLICABLE	· · · · ·
	REACTIVITY DATA	
PRODUCT STABILITY		
PRODUCT INCOMPATIBILITY	NONE KNOUDI	
CONDITIONS OF PEACTIVITY	NOT ADDI ICADI E	· ·
CONDITIONS OF REACTIVITY	NONE KNOWN	
TOXIC	COLOGICAL PROPERTIES	
	OTENTIAL ROUTE OF ENTRY:	TED.
INHALLATION, ACUTE	NO HARMFUL EFFECTS EXPE	TED.
INHALLATION, ACUTE INHALATION, CHRONIC SKIN CONTACT	NO HARMFUL EFFECTS EXPECTION IN THARMFUL EFFECTS EXPECTION IN TEMPORARILY GIVE SK	IN A YELLOW/GREEN COLOR.
INHALLATION, ACUTE	NO HARMFUL EFFECTS EXPECTION IN THARMFUL EFFECTS EXPECTION IN TEMPORARILY GIVE SK	IN A YELLOW/GREEN COLOR.
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USE NISOH APPROVED DUST MASK IF DUSTY CONDITIONS EXIST. PROTECTIVE CLOTHING SHOULD BE WORN WHERE CONTACT IS UNAVOIDABLE. HAVE ACCESS TO EMERGENCY EYEWASH. . . . CLOTHING OTHER.

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BRIGHT DYESTM MATERIAL SAFETY DATA SHEET FLT YELLOW/GREENTM LIQUID CONCENTRATE PAGE 3 OF 3

PREVENTATIVE MEASURES (CONT.)

ENGINEERING CONTROLS	NOT NECESSARY UNDER NORMAL CONDITIONS, USE LOCAL
	VENTILATION IF DUSTY CONDITIONS EXIST. CLEAN UP SPILLS IMMEDIATELY, PREVENT FROM
SPILL OR LEAK RESPONSE	ENTERING DRAIN. USE ABSORBANTS AND PLACE ALL
	SPILL MATERIALS IN WASTE DISPOSAL CONTAINER. FLUSH
·	AFFECTED AREA WITH WATER.
WASTE DISPOSAL	INCINERATE OR REMOVE TO A SUITABLE SOLID WASTE
	DISPOSAL SITE, DISPOSE OF ALL WASTES IN ACCORDANCE
	WITH FEDERAL, STATE AND LOCAL REGULATIONS.
HANDELING PROCEDURES AND EQUIPMENT	
STORAGE REQUIREMENTS	STORE AT ROOM TEMPERATURE BUT ABOVE THE FREEZING
•	POINT OF WATER.
SHIPPING INFORMATION	KEEP FROM FREEZING

FIRST AID MEASURES

FIRST AID EMERGENGY PROCEDURES

EYE CONTACT	FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES. GET
	MEDICAL ATTENTION IF IRRITATION PERSISTS.
SKIN CONTACT	WASH SKIN THOROUGHLY WITH SOAP AND WATER. GET
	MEDICAL ATTENTION IF IRRITATION DEVELOPS.
INHALATION	IF DUST IS INHALED, MOVE TO FRESH AIR. IF BREATHING IS
	DIFFICULT GIVE OXYGEN AND GET IMMEDIATE MEDICAL
	ATTENTION.
INGESTION	DRINK PLENTY OF WATER AND INDUCE VOMITING. GET
	MEDICAL ATTENTION IF LARGE QUANTITIES WERE
	INGESTED OR IF NAUSEA OCCURS. NEVER GIVE FLUIDS OR
	INDUCE VOMITING IF THE PERSON IS UNCONSCIOUS OR
	HAS CONVULSIONS.

SPECIAL NOTICE

ALL INFORMATION, RECOMMENDATIONS AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, KINGSCOTE CHEMICALS MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING, AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY KINGSCOTE CHEMICALS AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES KINGSCOTE CHEMICALS ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THE MSDS RELATES ONLY TO SPECIFIC MATERIAL DESIGNATED HEREIN AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

END OF MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET POLYPURE INC. 1. 10 Clarifloc® C-9490 Polymer One Gatehall Drive Parsippany, New Jersey 07054 Phone Number: (201) 292-2900 32,109 **EMERGENCY CONTACTS:** CHEMTREC (800) 424-9300 Date Issued January 25, 1995 Supersedes MSDS Dated July 15, 1991 HMIS Health 1 Fire 2 Reactivity 0 NFPA Health 1 Fire 2 Reactivity 0 Vapor Pressure at 20" C Not determined I. Identification and Physical Data Vapor Density Heavier than air Product Name C-9490 Polymer Volatile Org. Compounds Not determined Product Class Cationic Polyacrylamide % Volatile By Volume 50-70% Bolling Range 100° C and above DOT Hazard Class Combustible Liquid for bulk shipments only; see Sec. XIV Specific Gravity 1.0 (approximately) ID Number NA 1993 Solubility in Water -10% (forms gel) Shipping Name Combustible Liquid, n.o.s., NA 1993, PG Evaporation Rate Not determined III. (Contains Petroleum Distillate)

Melting Point Not applicable

Appearance and Odor White liquid emulsion with slight organic odor

II. Hazardous Ingredients		• • •	•• ••
Chemical Name Light Hydrotrested Petroleum Distiliate	CAS Number 54742-47-8	TWA TLV	OSHAPEL STELTLV
Ethosyisted Nonysphenol, Branched	68412-54-4		and the second second second second second second second second second second second second second second second
Not Eslabeshed			
as TWA TLV for similar materials is about 100 ppm.			
• • •			: •
			14 1
· · ·	1993, 81, 27, 19 1927 - 1967 1977 - 19	an an an an an an an an an an an an an a	

III. Fire and Explosion Data LEL 0.9% (estimate) Flashpoint > 65 °C (Setatlash Closed Cup) Extinguishing Media

Use carbon dioxide or dry chemical for small fires and fog or foam for large fires.

Unusual Fire and Explosion Hazards

When exposed to extreme heat, closed containers may rupture due to buildup of pressure and release ignitable vapors. Water ca cause extremely slippery floor surfaces.

Special Fire Fighting Procedures

Wear self-contained breathing apparatus and complete personal protective equipment when eritering confined areas where there potential for exposure to vapors or combustion products.

To the best of our providede, the information concluded harain is accurate. However no flability whethoever is assumed for the accuracy or completeness of the information concluded haran. Final dotermination of substity of any material is the sole resconsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herdin, we cannot guarantee that these are the only luzards that exist.

Page 1 of 4

APR 26 '95 03:02PM POLYPURE INC 201292	5295 P.3/5
· · ··	
. Reactivity Data Stable ves	Hazardous Polymerization? no
onditions To Avoid	
void open flames, hot surfaces or other ignition source:	S.
Mariata Ta Augid	~
aterials To Avoid rong oxidizing agents	
izardous Decomposition Products	
ormally stable. Combustion products may include amm	onia and oxides of carbon and nitrogen.
Health Hazard Data	
Effects of Overexposure Ingestion	
Contains materials that may be slightly toxic. May cause imitat ingestion or vomiting, may cause putmonary injury and possibly	ion of gastrointestinal tract. Contains materials that, it aspirated into the lungs during y death.
Inhalation Breathing vapors or mists may imitate respiratory system and o	ause breathing difficulties. Effects on the central nervous system may include
haadaches, weakness, dizziness and drowsiness,	
Skin Absorption	
externities.	isure to liquid or dried product may cause numbress, singling or weekness in
Skin Contact	
Contains materials that may cause moderate skin initiation. Pro	longed exposure may cause drying or detailing and cracking at the side.
Eye Contact	· · ·
Product contains materials which can cause severe eye imitato	n. Permanant damage is possible if contact is prolonged.
Chronic Effects Breathing vapors or mist may appravate pre-existing symptoms	: of estima or other lung disorders. Repeated exposure to trace amounts of acrylamic
in liquid or dried product may cause development of neuropoid	•
Emergency and First Aid Procedu	res
Eye Contact Immediately flush with water for 15 minutes or longer. Lift uppe	r and lower eye lids to ensure removal of chemical. Get medical attention.
Skin Contact Wash skin with scap and water. Remove and launder contami	nated clothing before reuse. Get medical attention if initation persists.
	• • • • • • • • • • • • • • • • • • • •
Ingestion DO NOT INDUCE VOMITING. If victim is conscious and alert,	give 2 - 3 glasses of water to drink. GET IMMEDIATE MEDICAL ATTENTION.
inhalation Move subject to tresh air. Administer antificial respiration If req	uired. Get medical assistance.
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a 2 of 4 Castloods C-6400 Polymer Data insuet .	
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VI. Spill Or Leak Procedures

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Steps to Be Taken In Case Material is Released or Spilled Vendate area and remove ignition sources. Dice spill and collect for disposal or reuse. Absorb residues with ment material and collect for disposal. Fur

OFILONE TIM CRITCH

area with water. Prevent polymer and washings from entering surface waters. Wet polymer may cause very suppery conditions.

Waste Disposal Method

Incherate or place in chemical landfill in accordance with federal, state and local regulations. The material, as sold, is not a hazardous waste under currer RCRA regulations.

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VII. Special Protection Information

Respiratory Protection

If misting conditions exist, wear NtOSH approved mist respirator.

Ventilation

Natural or general ventilation is adequate for normal conditions.

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Local ventilation is recommended to control exposure from operations that can generate serosols, mists or vapors.

Protective Gloves

Necprene, polyvinyl, butyl rubber or nitrile rubber gloves are recommended.

Eye Protection Chamical splash goggles.

Other Protective Equipment

For operations where contact can occur, coveralls, apron and rubber foot coverings are recommended. A safety shower and eye wash facility should be available.

VIII. Special Precautions

Spits of product or solutions may cause slippery foor surfaces. Sione at temperatures between 0 and 40°C. Keep container closed when not in Use.

IX. State R-T-K Information

Chemical Name	CAS Number	Comment		
Light Hydrotressed Potroleum Distillate	64742-47-8			
Ethoxytazed Nonyiphenol, Branched	68412-54-4			
Cationic Polyacrylamide	69418-25-4			
Nonionic Surfactant	1338-43-8		•	
Water	7732-18-5	••		
Acrylamide	79-06-1	< 0.1 %		

Sadboold C-0400 Polymer Detailanunt Juramy 25, 1985

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K. SARA Title III Section 313 Information			•	
Not Applicable	•			:
•				i.
(I. RCRA Information Not regulated as a hazardous waste.	Disposal	Code	None	
(II. CERCLA Information			•	
		· :	•	•••
(III. California Proposition 65 Information	•			 ,
Product contains detectable amounts of acrylamide (CAS# 79-06-1) which is known	own to the State o	r California	i to be a carcino	
KIV. Other Information All components of this product are listed in the TSCA inventory.	· · · · · · · · · · · · · · · · · · ·			, ,
carcinogen by the International Agency for Research on Cancer (IARC). The D.O.T. defines Combustible Liquid as a hazard class only for bulk packaging capacity greater than 450 L (119 gallons).	gs, i.e. when a sing	jle packagi	ing has a minim	un "
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	MATERIAL SAFETY DATA SHEET
NALCO	PRODUCT
	OPTIMER® 9905
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	EMERGENCY TELEPHONE NUMBER(S) (800) 424-9300 (24 Hours) CHEMTREC
1. CHEMICAL PRODUCT AND CO	
PRODUCT NAME :	
	OPTIMER® 9905
APPLICATION :	FLOCCULANT
COMPANY IDENTIFICATION :	Nalco Company 1601 W. Diehl Road
	Naperville, Illinois 60563-1198
EMERGENCY TELEPHONE NUMBER(S) :	(800) 424-9300 (24 Hours) CHEMTREC
NFPA 704M/HMIS RATING	n na sana an an an an an an an an an an an an
HEALTH: 0/1 FLAMMABILITY: 1/1 0 = Insignificant 1 = Slight 2 = Moderate 3 =	
2. COMPOSITION/INFORMATION	ON INGREDIENTS
Based on our hazard evaluation, none of the sub	
Dased off our hazard evaluation, none of the sub-	
3. HAZARDS IDENTIFICATION	
**EME CAUTION May cause irritation with prolonged contact. Toxi Do not get in eyes, on skin, on clothing. Do not ta product will cause slippery floor conditions. Weat immediately with plenty of water and seek medica soap and water.	c to aquatic organisms. ake internally. Do not breathe dust. Water in contact with the r suitable protective clothing. In case of contact with eyes, rinse al advice. After contact with skin, wash immediately with plenty of
**EME CAUTION May cause irritation with prolonged contact. Toxi Do not get in eyes, on skin, on clothing. Do not ta product will cause slippery floor conditions. Wear immediately with plenty of water and seek medica soap and water.	c to aquatic organisms. ake internally. Do not breathe dust. Water in contact with the r suitable protective clothing. In case of contact with eyes, rinse al advice. After contact with skin, wash immediately with plenty of inditions. May evolve oxides of nitrogen (NOx) under fire
**EME CAUTION May cause irritation with prolonged contact. Toxi Do not get in eyes, on skin, on clothing. Do not to product will cause slippery floor conditions. Wear immediately with plenty of water and seek medical soap and water. May evolve oxides of carbon (COx) under fire cor conditions. Water in contact with the product will PRIMARY ROUTES OF EXPOSURE : Eve. Skin	c to aquatic organisms. ake internally. Do not breathe dust. Water in contact with the r suitable protective clothing. In case of contact with eyes, rinse al advice. After contact with skin, wash immediately with plenty of nditions. May evolve oxides of nitrogen (NOx) under fire cause slippery floor conditions.
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PRODUCT

OPTIMER® 9905

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

INHALATION:

Repeated or prolonged exposure may irritate the 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.

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4.	FIRST AID MEASURES	, ··	

EYE CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Remove contaminated clothing. Wash off affected area immediately with plenty of water. If symptoms develop, seek medical advice.

INGESTION:

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION:

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

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 :

Not applicable

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. Water in contact with the product will cause slippery floor conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000

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MATERIAL SAFETY DATA SHEET

PRODUCT

OPTIMER® 9905

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ACCIDENTAL RELEASE MEASURES 6.

PERSONAL PRECAUTIONS:

: 1.00 Notify appropriate government, occupational health and safety and environmental authorities. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP:

Remove as much as possible with broom, scoop or vacuum, as the addition of water causes slippery floor conditions. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS:

This product is toxic to fish. It should not be directly discharged into lakes, ponds, streams, waterways or public water supplies.

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HANDLING :

Do not take internally. Ensure all containers are labelled. Avoid eye and skin contact. Avoid generating dusts.

STORAGE CONDITIONS:

Store separately from oxidizers. Keep in dry place.

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 :		en la construction d'attained attained attained attained attained attained attained attained attained attained	•	
Substance(s) Respirable Nuisance	TWA: 3 mg/m3	n an an an an an an an an an an an an an		· · · · · ·
Failloulates		the distant of a contract of a		*
Inhalable (Total) Nuisance	TWA: 10 mg/m3			ĩ., ·
Particulates	•		· · · · · · · ·	
OSHA/PEL :				
Substance(s) Respirable Nuisance	TWA: 5 mg/m3			
Particulates	i i i i i i i i i i i i i i i i i i i		• • •	·
Inhalable (Total)	TWA: 15 mg/m3	(total dust)	, 	
Nuisance Particulates	·	• . •		ŕ

ENGINEERING MEASURES:

General ventilation is recommended. Local exhaust ventilation may be necessary when dusts or mists are generated.

RESPIRATORY PROTECTION:

Respiratory protection is not normally needed. An approved respirator must be worn if the occupational exposure limit is likely to be exceeded. A dust respirator may be used.

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

SKIN PROTECTION : Wear standard protective clothing.

EYE PROTECTION : Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS : 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 Granular, Solid

APPEARANCE White

ODOR Slight, Ammoniacal SOLUBILITY IN WATER Partial

SOLUBILITY IN WATER pH (5 %)

Note: These physical properties are typical values for this product and are subject to change.

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10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.

HAZARDOUS POLYMERIZATION : Hazardous polymerization will not occur.

CONDITIONS TO AVOID : Moisture

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.

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

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The following result			a statistica stran			
·		F				
	_D50 > 5,000 mg/k	(g	Test Descripto Product	aa		
SENSITIZATION : The results of testin	g on guinea	pigs showed	this material to be I	non-sensitizing	J	an shekara An Shekara An Shekara
CARCINOGENICIT None of the substar Cancer (IARC), the Hygienists (ACGIH)	nces in this p National Tox	product are lis xicology Prog	ted as carcinogens ram (NTP) or the A	by the Internal merican Confe	tional Agency for Res rence of Government	earch on al Industrial
IUMAN HAZARD C			and a second second second second second second second second second second second second second second second	به به ۱۹۹۹ م ۱۹۹۹ م		
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2. ECOLOG COTOXICOLOGIC he following results CUTE FISH RESU pecies ainbow Trout ating : Very toxic	GICAL INF CAL EFFECT s are for the JLTS :	FORMATIO IS: product and a Exposure 96 hrs	a similar product.	Test Des		
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PRODUCT

OPTIMER® 9905

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

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

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

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 as follows.

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, none of the substances in this product are hazardous.

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

> Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 (630)305-1000 6 / 9



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MATERIAL SAFETY DATA SHEET

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PRODUCT

OPTIMER® 9905

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

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 that this product is not hazardous under 29 CFR 1910.1200.
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 substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)
FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act: When use situations necessitate compliance with FDA regulations, this product is acceptable under: 21 CFR 176.170 Components of paper and paperboard in contact with aqueous and fatty foods and 21 CFR 176.180 Components of paper and paperboard in contact with dry foods.
It is limited to use as a retention aid and flocculant employed prior to the sheet forming operation in the manufacture of paper and paperboard in amounts no greater than those required to produce its intended technical effect.
FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / 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 : Substances known to the State of California to cause cancer are present as an impurity or residue.
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.
NATIONAL REGULATIONS, CANADA:
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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 : Not considered a WHMIS controlled product.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substances in this preparation 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: Low

....

* 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.

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PRODUCT

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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.

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> > 197

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: 02/22/2004 Version Number: 1.8

Ass	igned to: ????		FOR INFORMA	TION ONLY		res On:		
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	BOILING/MELTING POI VAPOR PRESSURE an H	NT 9750 mm Hg: 330°F/	<u>/ N/A</u>	pH: 10.	0-11.0	. 1		
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:	FLAMMABILITY LINITS		LOWER: N/A		UPPER: N/A			
	EXTINGUISHING MEDIUM Use water fog, slophol foam, CO2 or dry chemical extinguishing madia. NFPA: 1/1/0							
	Special Firefighting Procedures	Firefighters should breathing apparatus vapors of heated or	and turnout ge	Bar. Ávo resze.	id breathing			
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TOXICOLOGICAL TEST			RESULT:		
241-7 Antifre Ethylens G Rat, Dra	Deze Formulation lycol LD50 ported Lethal Dose		5.8 g/kg. 100 c.c. Eye and ski Noderately ingestion	toxic by	
Inhalation of Ingestion of which is char system depres Prolonged inh lymphocyte of Chronic overe Animal studie	this product causes e vapors or mists may about 100 ml. of ethy racterized by severe ssion and possible real slation of the vapors	be irritating to 4 viene glycol may re- bdominal disturban piratory or renal may cause unconst iver degeneration ene glycol may be	the respirato suit in sout ces, central failure, clousness and and severe 'r	e poisoning, nervous increased enal damage.	
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PRODUCT NUMBER: 581770 241-7 Anti	Freeze Formulati	on			
SECTION VIII - E	NVIRONMEN	ITAL DATA			
ENVIRONMENTAL TOXICITY DATA:	· ·		•		•
Aquatic toxicity rating: TLm96	1000-100 рра.				
		•	······		•
SPILL AND LEAK PROCEDURES: Spills should be contained, sol for disposal. This material is (not reculated un	der RCRA or CERCL	A "		
("Superfund"). Clean up quickly			•		
HAZARDOUS SUBSTANCE SUPERFUND: M WASTE DISPOSAL METHOD:	, RO	(lbs):	·		
Incinerate or bury in a licensed Do not discharge into waterways prior approvals is acceptable.	i facility. Discharge to s	wer systems with	· · · • ·		
HAZARDOUS WASTE 40CFR261: No	HA:		NUMBER:	· ·	•
CONTAINER DISPOSAL:					
Dispose of in licensed facility. Recommend crushing or other mean	to prevent up	uthonized neuro			
			÷		
SECTION IX -	Shipping D	ATA			1
D.O.T. PROPER SHIPPING NAME (49CFR172	.101-102) HAZ	ARDOUS SUBST	ANCE		
None	No	orn othoth tig	• •		
•					
D.O.T. HAZARD CLASSIFICATION (CFR172.1) PRIMARY None	D1-102)	ONDARY			
D.O.T. LABELS REQUIRED (49CFR172.101-1 None	D2) D.O.T. PLA REQUIRED	CARDS (CFR 172.504) (4	DISON CONS 9CFR172.203		
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BILL OF LADING DESCRIPTION Antifreze Preparations, Proprie (Ethylene Glycol Base)	tary		<u></u>		
BILL OF LADING DESCRIPTION Antifrenze Preparations, Proprie (Ethylene Glycol Base)		I.			,
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THEREID AND EXPRESSLY DISCLAIMS ALL LIABILITY FOR RELIANCE THEREDN. SUCH DATA ARE OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION.

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FOR INFORMATION ONLY

Expires On: \

Ident. 1698 H of H PRODUCT NUMBER: 581770 241-7 Antifracze Forgulation SECTION X = PRODUCT LABEL 241-7 Antifreeze Formulation WARNING: WARNING: CONTAINS ETHYLENE GLYCOL (CAS NO.: 107-21-1). CONTACT MAY CAUSE TEMPORARY EYE AND EKIN IRRITATION. INGESTION MAY RESULT IN ACUTE POISONING, CHARACTERIZED BY SEVERE ABDOMINAL DISTURBANCES. CENTRAL NERVOUS SYSTEM DEPRESSION AND POSSIBLE RESPIRATORY OR RENAL FAILURE. PROLONGED INHALATION OF VAPORS MAY RESULT IN IRRITATION OR UNCONSCIOUSNESS. CHRONIC DVEREXPOSURE MAY LEAD TO LIVER AND KIDNEY DAMAGE. ETHYLENE GLYCOL WAS TERATOGENIC IN LABORATORY ANIMAL STUDIES. FIRST AID: Eyes-Immodiately wash ayes with running water for 15 minutes. If irritation develops, consult a physician. Skin-Wash affected areas with soap and water, Remove and launder contaminated clothing before reuse. If irritation develops, consult a physician. Ingestion-If svallowed, dilute with water and immediately induce vomiting. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Set immediate medical - attention. Inhalation-Nove to fresh air. Aid in breathing, if necessary, and get immediate medical attention. HANDLING AND STORAGE: Keep containers closed. In case of spill, clean up quickly as product is slippery. Mash away small amounts with cool water. Absorb large amounts with absorbent material or dike and pump into drums for proper disposal. Incinerate or bury in an approved landfill under guidance of local EPA. Prevent run-off onto public land or into waterways. IN CASE OF FIRE: Use water fog, alcohol foam, CO2 or dry chemical extinguishing modia. Firefighters should be equipped with self-contained breathing apparatus and turnout gear. Vapors from heated product can travel to source of ignition and flash back. Moderate explosion hazard when exposed. to flame. to flame. EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned. DISPOSAL: Spill material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions. IN CASE OF CHENICAL EXERGENCY: Call CHENTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents. B00-424-9300. ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, Usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information, CAS No.: 107-21-1. Nade in U.S.A. Industrial and Performance Chemicals 0289 an ta' na banda ann an Anna an Anna. An ann a' thatairte an gcràine ann an Anna and the second second second second second second second second second second second second second second second 5 -. · ; arthur a construction of the DP105 8/87 PAGE 4 OF 4 201

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MATERIAL SAFETY DATA SHEET

24 HR. EMERGENCY PHONE NO: CHEM-TREC 1-800-424-9300

Manufacturer: ProChem, Inc. 826 Roosevelt Road Rockford, IL 61109 Phone: (815) 398-1788 Fax: (815) 398-1810 E-Mail: Prochem1@aol.com

SECTION 1 Product Identification

CHEMICAL NAME: fron (III) Oxalate; 20% Solution CAS REGISTRY NUMBER: Not assigned

SECTION 2	Composition and information on ingredients					
INGREDIENT:	CAS#	%	ACGIH (TWA)	OSHA (PEL)		
Title Compound	None assigned	100	No data	No data		
			<u></u>			

SECTION 3 Hazards Identification

EMERGENCY OVERVIEW: Causes respiratory tract initiation. Harmful if inhaled. Causes eye irritation. Harmful if swallowed.

PRIMARY ROUTEB OF EXPOSURE: Ingeston, inhalation, skin, eyes.

EYE CONTACT: Dust may cause severe initation of the eyes and could cause permanent damage to cornea. SKIN CONTACT: Causes initation of the skin.

INHALATION: Inhalation of vapor/mist can lead to irritation of the respiratory tract. May be harmful inhaled. INGESTION: Moderately toxic if ingested.

ACUTE HEALTH EFFECTS: Severely irritating to eyes. Moderately toxic by ingestion. Causes skin irritation. irritating to respiratory system.

CHRONIC HEALTH EFFECTS: Damage to kidneys, nerves.

SECTION 4 First Aid Measures

EYE EXPOSURE: Immediately flush the eyes with coplous amounts of water (lukewarm if possible) for at least 15 minutes. Assure flushing under eyelids. A victim may need assistance in kaeping their eyelids open, Get immediate medical attention.

SKIN EXPOSURE: Wash affected area with water. Remove contaminated clothes if necessary. Seek medical assistance if irritation or redness persists.

INHALATION: Remove victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. In such cases seek immediate medical assistance.

INGESTION: Seek medical assistance immediately. Keep the victim calm. Induce vomiting only if directed by medical personnel.

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SECTION 5 Firefighting Measures

FLASH POINT: not applicable AUTOIGNITION TEMPERATURE: no data EXPLOSION LIMITS: no data EXTINGUISHING MEDIUM: Water spray or carbon dioxide. SPECIAL FIREFIGHTING PROCEDURES: If this product is involved in a fire, fire fighters should be equiped with a NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing. HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: If involved in a fire this material may emit toxic and initiating fumes. UNUSUAL FIRE OR EXPLOSTION HAZARDS: None known

SECTION 6 Accidental Release Measures

SPILL AND LEAD PROCEDURES: In the case of a spill, recover and place in a well-marked container for disposal. Use all safety precautions for clean up. After removal flush contaminated area with water. Collect wash waterfor approved disposal. Keep form entering water or ground water. DISPOSAL: Dispose of in accordance with all waste disposal regulations.

SECTION 7 Handling and Storage

HANDLING AND STORAGE: Store in a tightiysealed container.

SECTION 8 Exposure Controls and Personal Protection

EYE PROTECTION: Always wear approved safety glasses w/side shields, or safety goggles or face shiels, when handling a chemical substance in the laboratory. SKIN PROTECTION: pvc, rubber chemical resistane VENTILATION: If possible, handle the material in a local exhaust hood. RESPIRATOR: If ventilation if not available, a respirator should be worn. The use of respirators requires a Respirator Protection Program to be in compliance with 29CFR 1910.34. ADDITIONAL PROTECTION: Protection to avoid contact with clothing, shoes.

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SECTION 9 Physical and Chemical Properties

COLOR AND FORM: Brownish-yellowish fiquid pH: acidic MOLECULAR WEIGHT: No Data MELTING POINT (DEG. C.): No Data SPECIFIC GRAVITY (WATER = 1): 1.12 - 1.14 @ 20 deg. C. BOILING POINT: Not applicable VAPOR PRESSURE: Not applicable VAPOR DENBITY (AIR = 1): Not applicable % VOLATILE BY VOLUME: Non volatile SOLUBILITY IN WATER: Boluble

Page 2

SECTION 10 Stability and Reactivity

STABILITY: Stable HAZARDOUS POLYNERIZATION: Will not occur CONDITIONS TO AVOID: No Data INCOMPATIBILITY: Strong oxidizing agents DECOMPOSITION PRODUCTS: May product toxic fumes of Carbon monoxide, carbon dioxide.

SECTION 11 Toxicological Information

CARCINOGENIC EFFECTS: No Data MUTAGENIC EFFECTS: No Data TETRATOGENIC EFFECTS: no Data

To the best of our knowledge the textcological effects of this compound have not been fully invastigated.

SECTION 12 Ecological Information

ECOLOGICAL INFORMATION: No information available

SECTION 13 Disposal Considerations

DISPOSAL: Dispose of in according to local state and federal regulations.

SECTION 14 Transportation Information

Corrosive Iquid, acidic, Inorganic, n.o.s. Class 8, UN3264, PG III, Corrosive label

SECTION 15 Other Information

DISCLAIMER: The Information herein is believed to be accurate and reliable as of the date compiled. However, ProChem, Inc. makes no representation, warranty, or guarantee of any kind with respect to the information in this document or any use of the product based on the information. DATE PREPARED: 04/04

Page 3

Material Safety Data Sheet

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ProChem, Inc. 826 Rocsevelt Rd. Rockford, IL 61109		IHEM-TREC: 1-800-424-9 EMERGENCY: 1-815-398-	
SECTION I IDENTIFICA	TION	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	
Product Name: IRON (I Formula: Fe2(C2O4).6H2O CAS #19469-07-9		· · · · · · · · · · · ·	en de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La companya de la comp La companya de la comp
SECTION II HAZARDO	US INGREDIENTS		
HAZARDOUS INGREDIEN			A ACGIH TLV:
IRON (III) OXALATE	100	Not Established	Not Established
SECTION III PHYSICAL	DATA		
Boiling Point: No Data Specific Gravity (Water=1 Vapor Pressure (mm Hg): Precent Volatile by Volum Vapor Density (Air=1): N Molecular Weight: 483.85 Melting Point (C [*]): 100 deg Solubility in Water: Solu Appearance, Odor, and Of SECTION IV FIRE AND): No Data Not Applicable ie: Not Applicable tot Applicable C. (decomposes) ble in hot water her: Light green powde EXPLOSION HAZARD		
Flash point Non -combustible	Autoignition Temp. Not applicable	Flammablie limits Not applicable	ter de la companya de la companya de la companya de la companya de la companya de la companya de la companya d En la companya de la companya de la companya de la companya de la companya de la companya de la companya de la c
EXTINGUISHING METHO FIRE/EXPLOSION HAZA No special firefighting pro- include wearing NIOSH/N flame and chemical resista risk remove material from SPECIAL FIREFIGHTING: UNUSUAL FIRE AND EX Upon decomposition toxic f Combustible when exposed	ARDS: cedures needed. Use not MSHA approved self-co nt clothing; hats, boots fire area. None Known PLOSION HAZARDS; umes of Carbon monoxid	mal conditions which ntained breathing appar and gloves. If without de and Carbon dioxide car	atus,

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SECTION V HEALTH DATA

TOXICITY: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

EFFECTS OF OVEREXPOSUE: Irritant via inhalation and ingestion, has a caustic effect on the mouth esophagus and stomach. May cause severe damage to kidneys.

EYE CONTACT: This material causes a severe irritant /burns to eyes.

SKIN CONTACT: Causes irritation to skin. May be harmful is absorbed thru skin.

INHALATION: Causes irritation/caustic effect to nose, throat and respiratory tract.

INGESTION: Results in Irritation and/or burns of the mouth and gastro intestinal tract.

EMERGENCY AND FIRST AID PROCEDURES: Remove from exposure.

EYES: Flush with copious amounts of water for at least 15 minutes while removing any contaminated clothing and shoes. Assure adequate flushing of the eyes by separating eyelids with fingers. Get medical attention by physician immediately. SKIN: Remove any contaminated clothing. Wash skin with soap and water. If redness or irritation persists, seek medical attention. INHALATION: Move patient to fresh air. If not breathing give CPR. Administer oxygen is breathing is difficult and seek medical attention immediately. INGESTION : Seek immediate competent medical attention. Never give anything by mouth to an unconscious person. Do not induce vomiting.

SECTION VI REACTIVITY DATA

GENERAL REACTIVITY: Stable INCOMPATIBILITY: Oxidizing Agents CONDITIONS TO AVOID: None Known HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Carbon monoxide and Carbon Dioxide HAZARDOUS POLYMERIZATION: Will not occur

Page 2 IRON (III) OXALATE

SECTION VII SPILL PROCEDURES, DISPOSAL REQUIREMENTS

T To real

Wear appropriate respiratory and protective equipment.

Try not to raise dust. Absorb spill with inert material, then place in applicable chemical waste container tightly sealed. Label drum for disposal. Clean up spills immediately, observing all precautions. Retain all contaminated soilage for removal and treatment. WASTE DISPOSAL: Consult waste disposal facility capable of handling this type of chemical.

SECTION VIII SPECIAL PROTECTION INFORMATION

PROTECTIVE EOUIPMENT SUMMARY:

RESPIRATORY PROTECTION: NIOSH/MSHA approved dust respirator. when proper ventilation is not available.

VENTILATION: Chemical Fume Hood designed to have an average face velocity of at least 100 ft. perminute. Atoms of spins

PROTECTIVE GLOVES: Rubber

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EYE PROTECTION: ANSI approved safety goggles, glasses with side shields, or face shield. OTHER: Protective gear suitable to prevent contamination and contact with material.

WORK/HYGIENE/MAINTENANCE PRACTICES: Safety shower/eye bath should be readily available. Use in a controlled environment. Maintain good housekeeping and sanitation practices to avoid contact and contamination of area. Do not eat or drink in work area. Wash thoroughly after using. Do not smoke in area. Reference and the

STORAGE: Make sure lid is tightly on bottle after use. Store in a cool, dry well ventilated area. Store away from oxidizing agents.

1. A.

PRECAUTIONS: IRRITANT. Causes severe irritation to eyes. Irritant to skin and respiratory system. Wear adequate protection to avoid contact with skin, eyes, clothing. Use with adequate ventilation (chemical fume hood), or if adequate ventilation is not available use with approved dust respirator to keep below TLV limits. Use in a controlled environment.

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Date Prepared: 09/31/03 Safety Dept.

Employers/employees should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this informatin to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product or process, is the responsibility of the user.

Page 3 IRON (III) OXALATE

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JAMM 32.130



GE Betz

GE Betz, Inc. 4636 Somerton Road Trevose, PA 19053 Business telephone: (215) 355-3300 Material Safety Data Sheet

Issue Date: 24-AUG-2000

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

POLYFLOC CP1160

PRODUCT APPLICATION AREA:

FLOCCULANT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation. This product is subject to the Pennsylvania and New Jersey Worker and Community Right to Know Law.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

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

NON-HAZARDOUS INGREDIENTS:

CAS#

CHEMICAL NAME

7732-18-5	WATER
69418-26-4	ETHANAMINIUM, N, N, N-TRIMETHYL-2-[(1-0X0-2- PROPENYL)OXY] - CHLORIDE, POLYMER WITH
	2-PROPENAMIDE

3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. Potential eye irritant due

to mechanical action only. Dusts may cause irritation to the upper respiratory tract. . . 1

. DOT hazard is not applicable Emergency Response Guide is not applicable Odor: None; Appearance: White, Powder Odor: None; Appearance: White, Powder 19 1. A.

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

POTENTIAL HEALTH EFFECTS

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ACUTE SKIN EFFECTS: 0. 2001 MUCh 100 M da . . M. T. D. BATAN Primary route of exposure; May cause slight irritation to the skin.

Potential eye irritant due to mechanical action only. Strugger and the strugger with the strugger 1 21

ACUTE RESPIRATORY EFFECTS: A Description of the Dusts may cause irritation to the upper respiratory tract.

INGESTION EFFECTS:

May cause slight gastrointestinal irritation.

TARGET ORGANS: No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

把帮助了了我们的问题。

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

4 FIRST AID MEASURES

SKIN CONTACT:

and the second second second second second second second second second second second second second second second Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. EYE CONTACT:

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the second second second

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if irritation persists after flushing. . INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water. NOTES TO PHYSICIANS:

No special instructions

5 FIRE FIGHTING MEASURES

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

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit. DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

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HANDLING:
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Normal chemical handling. STORAGE: Keep containers closed when not in use. Keep dry.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

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ENGINEERING CONTROLS:
   Adequate ventilation to maintain dust concentrations below the
   exposure limit of 10 mg/m3(PEL/TLV) for nuisance dusts.
PERSONAL PROTECTIVE EQUIPMENT:
   Use protective equipment in accordance with 29CFR 1910 Subpart I
      RESPIRATORY PROTECTION:
        A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR
         1910.134 AND ANSI 288.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER
         WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
        USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED
        WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
         If air-purifying respirator use is appropriate, use a
         respirator with dust/mist filters.
      SKIN PROTECTION:
        rubber gloves -- Wash off after each use. Replace as
        necessary.
     EYE PROTECTION:
        airtight chemical goggles
```

9 PHYSICAL & CHEMICAL PROPERTIES

Density 43.200 lb/cu. Vapor Pressure (mmHG) < 0.1 Freeze Point (F)NAVapor Density (air=1) < 1.00</th>Freeze Point (C)NA Viscosity(cps 70F,21C) NA % Solubility (water) - 2.0 Odor Appearance Physical State None White Powder ۰. nnice Powder Flash PointP-M(CC)> 200F > 93CpH 0.5% Sol. (approx.)4.2Evaporation Rate (Ether=1)< 1.00</td> NA = not applicable ND = not determined · Construction . **10 STABILITY & REACTIVITY ,** · STABILITY: Stable under normal storage conditions. HAZARDOUS POLYMERIZATION: Will not occur. INCOMPATIBILITIES: . . . May react with strong oxidizers. : •: DECOMPOSITION PRODUCTS: Thermal decomposition (destructive fires) yields elemental oxides. . . . INTERNAL PUMPOUT/CLEANOUT CATEGORIES: · · · · · "A" しょうえん 直上 たいし * 13 15 11 TOXICOLOGICAL INFORMATION 1 >5,000 mg/kg ·Oral LD50 RAT: Carcinogenicity DOG: NEGATIVE NOTE - One year dog study had no adverse effects. Carcinogenicity RAT: NEGATIVE NOTE - Two year rat study had no adverse effects. >2,000_mg/kg Dermal LD50 RABBIT: NOTE - Non-toxic even at high dose levels · · · · · · Eye Irritation Score RABBIT: NOTE - Mechanical irritation • : Skin Sensitization G.PIG: NEGATIVE **12 ECOLOGICAL INFORMATION** AQUATIC TOXICOLOGY Daphnia magna 48 Hour Static Renewal Bioassay

LC50= 158; No Effect Level= 15 mg/L Fathead Minnow 96 Hour Static Renewal Bioassay LC50= 5.9; No Effect Level= 2.3 mg/L

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13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

DOT HAZARD:Not ApplicableUN / NA NUMBER:Not applicableDOT EMERGENCY RESPONSE GUIDE #: Not applicable

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory. CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ): No regulated constituent present at OSHA thresholds FOOD AND DRUG ADMINISTRATION: 21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods) SARA SECTION 312 HAZARD CLASS: Product is non-hazardous under Section 311/312 SARA SECTION 302 CHEMICALS: No regulated constituent present at OSHA thresholds SARA SECTION 313 CHEMICALS: No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

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

No regulated constituent present at OSHA thresholds MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

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Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	в	Goggles,Gloves

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

CHANGE LOG

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MSDS status:	11-FEB-1998		** NEW **	

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SAMM 32.131



GE Betz

GE Betz, Inc. 4636 Somerton Road Trevose, PA 19053 Business telephone: (215) 355-3300 Material Safety Data Sheet

Issue Date: 24-AUG-2000

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

POLYFLOC AP1100

PRODUCT APPLICATION AREA:

FLOCCULANT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation. This product is subject to the Pennsylvania and New Jersey Worker and Community Right to Know Law.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

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

NON-HAZARDOUS INGREDIENTS:

CAS#

CHEMICAL NAME

7732-18-5	WATER
25085-02-3	ACRYLAMIDE/SODIUM ACRYLATE COPOLYMER

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Dusts may cause irritation to the upper respiratory tract.

DOT hazard is not applicable Emergency Response Guide is not applicable Odor: None; Appearance: White, Powder

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

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POTENTIAL HEALTH EFFECTS

• ; . . ACUTE SKIN EFFECTS: Primary route of exposure; May cause slight irritation to the skin. ACUTE EYE EFFECTS: May cause moderate irritation to the eyes. ACUTE RESPIRATORY EFFECTS: ÷ Dusts may cause irritation to the upper respiratory tract. 5.3 INGESTION EFFECTS:

May cause slight gastrointestinal irritation with possible nausea, vomiting, abdominal discomfort and diarrhea.

TARGET ORGANS: No evidence of potential chronic effects. · · · · MEDICAL CONDITIONS AGGRAVATED: 4 21.1 B. C. C. F. Not known.

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

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4 FIRST AID MEASURES

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. . . . Get medical attention if irritation develops or persists. EYE CONTACT: · . . Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

1 1 If nasal, throat or lung irritation develops - remove to fresh air and get medical attention. mESTION:

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water. NOTES TO PHYSICIANS:

No special instructions

5 FIRE FIGHTING MEASURES

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

> 200F > 93C P-M(CC)

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit. DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:

Normal chemical handling. **STORAGE:** Keep containers closed when not in use. Reasonable and safe chemical storage. Keep dry.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

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ENGINEERING CONTROLS:
                                 • . .
   adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
  Use protective equipment in accordance with 29CFR 1910 Subpart I
      RESPIRATORY PROTECTION:
        A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR
         1910.134 AND ANSI 288.2 REOUIREMENTS MUST BE FOLLOWED WHENEVER
         WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
         USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED
         WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
         If air-purifying respirator use is appropriate, use a
         respirator with dust/mist filters.
      SKIN PROTECTION:
        neoprene gloves -- Wash off after each use. Replace as
        necessary.
     EYE PROTECTION:
        airtight chemical goggles
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9 PHYSICAL & CHEMICAL PROPERTIES

Density	42.000 lb/cu. Vapor Pressu	re(mmHG) < 0.1
Freeze Point (F)	NA Vapor Densit	y (air=1) < 1.00
Freeze Point (C)		
Viscosity(cps 70F,21C)	NA % Solubility	(water) 1.0
0.1	17	
Odor .	None	
Appearance	White	
Physical State	Powder	
pH 5% Sol. (approx.)	M(CC) > 200F > 93C 7.0	
Evaporation Rate (Ether=		
Evaporation Rate (Ether=	=1) < 1.00	
NA = not applicable B	ND = not determined	· · · ·
	المحمد في - التي ألي المريد ال	
10 STABILITY & REA	ACTIVITY	
STABILITY:		
	mal storage conditions.	
HAZARDOUS POLYMERIZA		
Will not occur.		· · · · · · · · · · · · · · · · · · ·
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May react with st	trong oxidizers.	and the second second second second second second second second second second second second second second second
DECOMPOSITION PRODUC	TS:	
	ition (destructive fires) yie	
INTERNAL PUMPOUT/CLE	LANOUT CATEGORIES:	
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11 TOXICOLOGICAL	INFORMATION	
Oral LD50 RAT:	>5,000 mg/kg	
28 Day Oral RAT/DOG:		(1, 1, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3,
NOTE - Rat two-ye	ear feed: no adverse effects.	Dog one-year feed:
	S. states	
Dermal LD50 RABBIT:	>2,000 mg/kg	
	at high dose levels	
		the second the second second second second second second second second second second second second second second
Eye Irritation Score RA		
Skin Sensitization G.PI	G: NEGATIVE	
		$(1, \dots, n_{1}, n_{1}, \dots, n_{n}) \in \mathbb{N}^{n} \to \mathbb{N}^{n} \to \mathbb{N}^{n}$
2 ECOLOGICAL INF	ORMATION	
AQUATIC TOXICOLOGY		
	sh 96 Hour Static Screen	• .
0% Mortalit	y= 300 mg/L	
Ceriodaphnia 4	8 Hour Static Acute Bioassay	
LC50= 5; No	Effect Level= 1.6 mg/L	
Daphnia magna	48 Hour Static Screen	
-	y= 500 mg/L	
0% Mortalit;	y= 500 mg/L 96 Hour Static Screen	
0% Mortalit Fathead Minnow		
0% Mortalit; Fathead Minnow 0% Mortalit;	96 Hour Static Screen	
0% Mortalit; Fathead Minnow 0% Mortalit; Rainbow Trout	96 Hour Static Screen y= 500 mg/L	
0% Mortalit; Fathead Minnow 0% Mortalit; Rainbow Trout	96 Hour Static Screen y= 500 mg/L 72 Hour Static Screen	
0% Mortalit; Fathead Minnow 0% Mortalit; Rainbow Trout	y= 500 mg/L y= 500 mg/L 72 Hour Static Screen y= 100 mg/L	· · · · · · · · · · · · · · · · · · ·
0% Mortalit; Fathead Minnow 0% Mortalit; Rainbow Trout 0% Mortalit;	y= 500 mg/L y= 100 mg/L Screen = 100 y= 100 mg/L Screen = 100 Screen = 1000 Screen = 100 Screen = 1000 Screen = 1000 Screen = 1000 Scr	
0% Mortality Fathead Minnow 0% Mortality Rainbow Trout 0% Mortality BIODEGRADATION	y 96 Hour Static Screen y 500 mg/L 72 Hour Static Screen y 100 mg/L 22 1	
0% Mortalit; Fathead Minnow 0% Mortalit; Rainbow Trout 0% Mortalit; BIODEGRADATION BOD-28 (mg/g);	y 96 Hour Static Screen y 500 mg/L 72 Hour Static Screen y 100 mg/L 22 1	
0% Mortality Fathead Minnow 0% Mortality Rainbow Trout 0% Mortality BIODEGRADATION BOD-28 (mg/g): BOD-5 (mg/g):	y= 500 mg/L 72 Hour Static Screen y= 100 mg/L 22 22 1 970	

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13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

DOT HAZARD:Not ApplicableUN / NA NUMBER:Not applicableDOT EMERGENCY RESPONSE GUIDE #: Not applicable

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory. CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ): No regulated constituent present at OSHA thresholds FOOD AND DRUG ADMINISTRATION: 21 CFR 176.110 (acrylamide - acrylic acid resins) All ingredients comprising this product are authorized by FDA for the manufacture of paper and paperboard that may contact aqueous and fatty foods as per 21 CFR 176.170(a) (4). USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS: SEC.G6,L1 SARA SECTION 312 HAZARD CLASS: Product is non-hazardous under Section 311/312 SARA SECTION 302 CHEMICALS: No regulated constituent present at OSHA thresholds SARA SECTION 313 CHEMICALS: No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

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

No regulated constituent present at OSHA thresholds MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	В	Goggles, Gloves

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

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	EFFECTIVE DATE	REVISIONS TO SEC	TION:	SUPERCEDES	
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Jan 16.36

PHONE No. : 4822895386

Assigned to: ????

CARCINOGENICITY: n/z

Section V. Fire and Explosion Hazard Data

Flash Point (deg F): 211

Flammable or Explosive Limits (approximate % by volume in air) LEL: 2.4 UEL: 17.4

EXTINGUISHING MEDIA: carbon dioxide, dry chemical, alcohol type foam, water spray, water fog

SPECIAL FIRE FIGHTING PROCEDURES: Wear positive pressure, self contained breathing apparatus and other protective apparatus as warranted. Fight fire from distance or protected location - heat may build up pressure and rupture closed containers. Liquid may form slippery film. Use water spray or for for cooling, solid stream may spread fire as burning liquid will float on water. Avoid frothing/steam explosion. Notify authorities if liquid enters sewers/poblic waters.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined, Vapors may be heavier than air and travel long distances along ground before igniting and flashing back. Fine sprays and mists may be combustible at temperatures below normal flash point.

Section VI-Accidental Release Measurer

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Prevent flow to sewers and public waters as it may contaminate said water. Restrict water usage to prevent slip/fall hazard. Souk up small spills with inert solids. Dike and recover large land spills. Notify appropriate authorities if product enters any waterway.

Section VII - Handling and Slorage

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in tightly closed and properly vented containers, away from heat, sparks, open flame, and strong oxidizing agents.

Section VIII Exposure Controls/Personal Protection

RESPIRATORY PROTECTION: No special respiratory protection equipment is recommended under normal conditions of anticipated use with adequate ventilation.

Apr. 25 1995 7:41AM P02

· VENTILATION: Adequate general ventilation is required, local exhaust is recommended if possible.

PROTECTIVE GLOVES: not required

EYE FROTECTION: 'Chemical splash goggles or full face shield must be worn when possibility exists for eye contact due to splathing or spraying liquid, sirborne particles, or vapor. Contact lenses should Dot be worn.

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OTHER PROTECTIVE EQUIPMENT: DODO

والمراجع المحال المتقدم فيتكون المعيد وتسار · · · · · · WORK PRACTICES/ENGINEERING CONTROLS: Keep containers closed when not in and the second second 2158.

PERSONAL HYGIENE: If product handling results in skin contact, wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before reuse.

Section IX-Physical/Chemical Characteristics:

Boiling Point (deg F): 365 Specific Gravity (II2O-1): 1.04

Vapor Pressure (mm Hg): <0.1

a rel 1

Melting Point (deg F): -76 Vapor Density (Air=1): 2.6 Solubility in Water : complete Evaporation Rate (n-butyl Acctate-1): slight

APPEARANCE AND ODOR: dark green, slightly viscous almost pionless liquid

Section X = Rearing Data

STABILITY: stable

Vapors

CONDITIONS TO AVOID: heat, sparks, open flame 🦾

INCOMPATIBILITY (MATERIALS TO AVOID): strong alkalis, strong oxidizing agents

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: canbon monoxide and other toxic :7

HAZARDOUS POLYMERIZATION: not expected . 10 OCCUT

PG. 2 47 3

FOR INFORMATION ONLY

From : WARREN DIST.

PHONE No. : 4022895306

Apr. 25 1995 7:41AM P03

PG. 343

2584

Expires On:

1995.

16.36

CONDITIONS TO AVOID: n/a

Section XI - Toxicological Information

See Section JV

Section XIE + Ecological Information

No chemicals in this product are subject to the reporting requirements of CERCI.A.

Section XIII - Disposal Considerations

• WASTE DISPOSAL METHOD: Landfill solids at permitted sites using registered transporters. Burn concentrated liquids, avoiding flameouts, and assuring emissions comply with applicable regulations. Dilute aqueous waste may blodegrade, but avoid overloading plant biomass and assuring offluent complies with applicable regulations.

Section XIV ... Transport Information

This product is not regulated by DOT

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Section XV-Regulatory Information

WHMIS classification for product: n/a

This product has been classified in accordance with the hazard criteria of the CFR and the MSDS contains all the information required by the CFR.

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in the data sheet which we received from sources outside our company and we believe that information to be correct, but cannot guarantee its accuracy . or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either expressed or implied.

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HAZARDOUS POLYMERIZATION		ne Known			
112ARDOUS		ne Known			
ILZARDOUS		né Known		· ·.	

		YI - HEALTH HAZA	RD DATA		· ·
ROUTE(S) OF ENTRY:	NHALATION? Unlikely	SKINT	Possible	INGESTION?	Unlikely
HEALTH HAZARDS (ACUT				•	
Product has low conditions.	vapor pressure and	should not	present a ha	izard under nors	al working
-	•	•		•	
SIGNS AND SYMPTOMS C	FEXPOSURE Product		sefe under r		
nowever, may re	sult in the followi	ing: INHALATI	ION: Dizzines	s; SKIN/EYES: I	rritation;
INCESTION: Cast	ro-intestinal irrit	ation.			• • •
-	· · · · · · · · · · · · · · · · · · ·	· ·		······	
CARCINOGINICITY.	NTP? No	LARC MONOGRAP	HSI NO -	OSHA REQULATED? ,	No
MEDICAL CONDITIONS GENERALLY AGGRAYATE	D BY EXPOSURE None	Known		· · · · ·	N
	AD PROCEDURES INH S: Flush with water on. INGESTION: Do	for 15 minut	es. If irri		, seek
steps to be taken we spills should b waste Disposal Metho bixed with norm or reclaimed.	S: Flush with water ion. INGESTION: Do <u>VU-PREC</u> ASE MATERIAL IS RELEASED OR the collected and dis DO: EPA 2000 has a hal waste oil for bu	for 15 minut not induce v CAUTIONS FOR SAFE SPALED. Allow posed of pro high BTU va rning ss ind	es. If irri miting, get <u>HANDLWGANDUSE</u> small spill perly in acc lue. Waste	tation persists medical attent s to evaporate. ordanoo with ro product can, th	, seek ion. Larger gulations. erefore, be
medical attents STEPS TO BE TAKEN IN C apilla alcould b WASTE DISPOSAL METHO mixed with norm or reclaimed. PRECAUTIONS TO BE TAI	VII-PREC VII-PREC CASE MATERIAL IS RELEASED OR the collected and die CO: EPA 2000 has a tal waste oil for bu KEN IN HANDLING AND STORING: dry area away from	for 15 minut not induce v CAUTIONS FOR SAFE SPALED. Allow posed of pro high BTU va rning ss ind	es. If irri miting, get HANDLWGANDUSE small spill perly in acc lue. Waste ustrial fuel	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also	, seek ion. Larger gulations. erefore, be be recycled
medical sttents STEPS TO BE TAKEN HC Spills should b WASTE DISPOSAL METHO mixed with norm or reclaimed. PRECAUTIONS TO BE TAIL Store in cool,	VII-PREC VII-PREC CASE MATERIAL IS RELEASED OR the collected and die CO: EPA 2000 has a tal waste oil for bu KEN IN HANDLING AND STORING: dry area away from	for 15 minut not induce v CAUTIONS FOR SAFE SPALED. Allow posed of pro high BTU va rning ss ind	es. If irri miting, get HANDLWO AND USE small spill perly in acc lue. Waste ustrial fuel container ti	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also	, seek ion. Larger gulations. erefore, be be recycled
steps to be taken we spille should b waste Disposal Metho dixed with norm or reclaimed. PRECAUTIONS TO BE TAK Store in cool, is not being us	VII-PREC VII-PREC ASE MATERIAL IS RELEASED OR the collected and die CON EPA 2000 has a tal waste oil for bu KEN IN HANDLING AND STORING: dry area away from 1 ed.	for 15 minut not induce v CAUTIONS FOR SAFE SPALED. Allow posed of pro high BTU va rning as ind heat. Keep VII-CONTAOL ME	es. If irri miting, get HANDLWO AND USE small spill perly in acc lue. Waste ustrial fuel container ti	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also ghtly closed wh	, seek ion. Larger gulations. erefore, be be recycled en product
steps to be taken in of the strength of the st	VII-PREC VII-PREC CASE MATERIAL IS RELEASED OR the collected and die collected and die DO: EPA 2000 has a val waste oil for bu KEN IN HANDLING AND STORING: dry area away from 1 ed. Not ro	for 15 minut not induce v CAUTIONS FOR SAFE SPALED. Allow posed of pro high BTU va rning as ind heat. Keep VIII-CONTAOL ME	es. If irri omiting, get <u>HANDLWO AND USE</u> small spill perly in acc lue. Waste ustrial fuel container ti <u>ASURES</u> LV kept belo	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also ghtly closed wh	, seek ion. Larger gulations. erefore, be be recycled en product
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steps to be taken in constrained is a strent in the should be taken in constrained. PRECAUTIONS TO BE TAIL Store in cool, is not being us RESPIRATORY PROTECTION	VII-PREC VII-PREC CASE MATERIAL IS RELEASED OR the collected and die COI EPA 2000 has a vaste oil for bu KEN IN HANDLING AND STORING: dry area away from 1 ed. Not re LOCAL EXHAUST	for 15 minut not induce v AUTIONS FOR SAFE SPALED Allow posed of pro high BTU va rning as ind heat. Keep VIN-CONTAGL ME equired if T Adequate Adequate	es. If irri miting, get HANDLWO AND USE small spill perly in acc lue. Waste ustrial fuel container ti ASURES LV kept below SPECIAL N OTHER N	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also ghtly closed who w PPM one	, seek ion. Larger gulations. erefore, be be recycled en product
steps to be taken in of the strength of the st	S: Flush with water Ion. INGESTION: Do VII-PREC CASE MATERIAL IS RELEASED OR Se collected and dis DO: EPA 2000 has a vaste oil for bu KEN IN HANDLING AND STORING: dry area away from 1 ed. Not re LOCAL EXHAUST MECHANICAL (GENERAL) Nitrile / PVC	for 15 minut not induce v AUTIONS FOR SAFE SPALED Allow posed of pro high BTU va rning as ind heat. Keep VIN-CONTAGL ME equired if T Adequate Adequate	es. If irri miting, get HANDLWO AND USE small spill perly in acc lue. Waste ustrial fuel container ti ASURES LV kept below SPECIAL N OTHER N	tation persists medical attent s to evaporate. ordanoo with ro product can, th . It can also ghtly closed whe w PPM one	, seek ion. Larger gulations. erefore, be be recycled en product

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				Harred Cede Paramability 4 - Estrume	
	- C	AVOG		2 - High 2 - Mederate	Reactivity
		P.O. Box 130, Norwo		D - Insignificant Health 2	
ד	. Emo	rgency Telephone: (6		· · · · · · · · · · · · · · · · · · ·	9 - <u></u>
- -					
			ERIAL SAFETY DATA		*142
	CHENICAL NA	lE: Nixture C.A.I	h trisoduim phospheto . No.: Not Applicable L'Cleaning Compound - Not	Closs: DITERGENT	pounda
7	, •	SECTION 2	HAZARDOUS INGREDIE	NTS .	
	يري . موجود مرجود م			HE X EXDOOUTO	<u><u><u>Ruidelines</u></u></u>
1		ohate, Tribasic, cry licarbonate, crystal	stalline 10101-89-0	>80 Not est	nblfuhed nblished
		ental phesphorous c per cup of powder.	ontent 7.3% in the form	of phosphates. Equival	lent -
1		SECTION 3	PRYSICAL DATA	· · · · · · · · · · · · · · · · · · ·	
Ľ	soiling Poin	t: > \$00°C	X Volstile: NA		•
ļ	Melting Poin	t: WA	Evaporation Rat Bolubility in a		· · ·
1:	Vapor Pressu Specific Sra	VITYS NA	2	11.• 12	
]	Density: 60	• 75 lbs/ft ⁻	Appearance: Wh	ite crystalline solid	
4		BECTION &	FIRE AND EXPLOSION D	ATA	
<u> </u> 1	FLASH POINT:			••	•
_!	EXTINOUISHING	<u>HITR</u> : Not opplicabl <u>MEDIA</u> : Nonfimmaat	ole the second contraction of the		
<u></u>	carbon monox!	OWPOSITION PRODUCTS	d to high temperature.		
		IGHTING PROCEOURES: tective clothing.	Solutions in Mater are	moderately to strong	alkaline.
-	UNVERAL PIRE	AND EXPLOSION WAZAR	DS: Not applicable		2 4 *
ī		RECTION 5			1 1 1
	THRESHOLD LIN	IT VALUE: . Bee Sect	ion 2		
<u>}</u>	EFFECTS OF EX	POSURE . Boutes of	Entry - ACUTE (Immediate) tion and burning and trai)	
ļ	skfn: Irri	tating, may cause c	hemical burns and dermati	itis.	
L	- <u>Inhalation</u> : Systicving:	. Inhalation of dus May pause irritat	t con cause nesel and rea ion and chamical burns to	piratory irritation.	tract.
]	FFFECTS OF EXI	POSURE - CHRONIC (de	etayed): None known		- 51 ⁵ N - N
	FIRST_AID:		こち 素を料す したい 海棠 目的テレビ しょうよう		
1	<u>Eyes</u> : Flush apart to ens) wyse with plenty (ure complete frig)	of running water for at l stion of all tissue. Get	east 15 minutes. Nole medical attention pre	s eyslids amptly.
1			thing and wash skin thoro comptly: Thoroughly wash		
1	Inheletion:	If Illness occurs,	Fremove patient: to fresh	air. If breathing is	i'difficult.
1	give oxygen. Attention pr	-	stopped, start srtificia	I respiration. Get me	dicel
	Systleving:	Rever give anythin	g by mouth to an unconsc antities of water (if av		
!	mllk), lf v	seiting occurs spon	taneously keep airway cl	ear and give more wate	rty: Get
		ntion promptly. If kall substance.	symptoms indicate, appl	y treatment as appropr	1814 107
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Al others. (#00) 421 6002

From Western Rogion, Alaska, Ancone, California, Hawar, Isalis: New Mesco: Orogon, Uavy, and Washington, write to: P. D. Box 23400. 1 DE Argens, CA 90023

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KSDS SAYDGAAN TBP

SECTION 6

REACTIVITY DATA

TAPILITY: Stable HAZARDOUS POLYMERIZATION: Will not occur. INCOMPATIBILITY (materials to evoid): "KSolutions in water are highly alkaline and may produce hydrogen ges when in contact with pluminum. Will react with acids to form carbon diaxide. Neterial is hygroscopic and tends to cake.

CONDITIONS TO AVOID: See "SECTION 4 - UNUSUAL FIRE AND EXPLOSICN MAZARDS."

SECTION 7 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE NATERIAL IS RELEASED OR SPILLED: Review "SECTION 6 - UNUSUAL FIRE AND EXPLOSION NAZARDS."

SHALL SPILLS: Sweep up material and transfer to containers. Thoroughly sweep area to clean up residue. Remaining residue may be washed away with water.

LARGE SPILLS: Some as for small spills.

pisposal of waste: Small quantities may be deposited in general trash and residue flushed down drain with water. Large spills - Deposit containers in posted taxic substances land-fill in accordance with local, state and federal regulations. Trisodium phosphete has a reportable quantity (RQ) of 5000 lbs.

SECTION & SPECIAL PROTECTION INFORMATION

VENTILATION: Use local exhaust to control dust formation RESPIRATORY PROTECTION: Vear NIDSN/NSNA approved dust respirator, if dust is formed GLOYES: Industrial quality cotton lined naoprene gloves with close fitting wristlats. EYE PROTECTION: Chemical goggles or safety glasses with side shield. OTHER PROTECTIVE EQUIPMENT: No special protective clothing needed; however, wear long sleaved shirts with long pants to protect skin against splashes and spills.

SECTION 9 SPECIAL PRECAUTIONS

EMPTIED CONTAINERS: Empty containers may be inclnerated or discarded with general trach. Large containers should be completely emptied before disposal. Because empty containers may contain residues which are hezardous, all precautions given on this sheet should be observed.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry place. Molature can cause caking. Reep away from acids of all types. Water solutions can be corrosive to sluminum and gamerate hydrogen,

gole: Judgement of potential hazards of this mixture is based on information available about individual components listed under SECTION 2 - NAZARDOUS INGREDIERTS. Direct testing of mixture has not been one.

. Information given herein is believed to be accurate and is given in good faith; however, no warranty either expressed or implied is made. It is strongly suggested that users confirm in advance of need that the information is current and applicable to their situations.

-<u>Hote</u>: The sale or use of cleaners containing Phosphates is prohibited in some states end localities.

ned to: ????	FOR INFORMATION ONLY Expires
•	OxyChem 32.59 Identia
	MATERIAL SAFETY DATA SHEET
•••	MSDS NUMBER : M5389
· · · · · · · · · · · · · · · · · · ·	MSDS DATE : 04-09-90 PRODUCT NAME : 50% CAUSTIC SODA SOLUTION
· · · ·	- 24 HOUR EMERGENCY PHONE: (7.16) 278-7021
	I. PRODUCT IDENTIFICATION
	HMIS HAZARD RATINGS HEALTH HAZARD 3 FIRE HAZARD 0 REACTIVITY 2 Based on the National Paint & Coatings Association HMIS rating system.
	SARA/TITLE III HAZARD CATEGORIES (See Section X)
	Immodiate (ACUTE) Health: YES Reactive Hazard: YES Delayed (Chronic) Health: NO Sudden Release of Pressure: NO Fire Hazard: NO
	MANUFACTURER'S: Occidental Chemical Corporation NAME AND : Customer Service. Occidental Tower. Telephone ADDRESS : P D Box 809050, Dallas, Texas 75380 (1-800-752-5151)
	CHEMICAL NAME: Sodium Hydroxide CAS NUMBER: 1310-73-2
	SYNONYMS/COMMON NAMES: Sodium Hydroxide; NaDH
•	CHEMICAL FORMULA: NOOH
	DOT PROPER SHIPPING NAME: Sodium Hydroxide, Liquid
	DOT HAZARD CLASS: Corrosive Material
	DOT I.D. NUMBER: UN1824 DOT HAZARDOUS SUBSTANCE: RO 1000#
	II. HEALTH HAZARD INFORMATION
	EMERGENCY AND FIRST AID PROCEDURES EVES: OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL
	ATTENTION, IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes forcibly holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL ATTENTION IMMEDIATELY.
÷ ¥	(a) A set of the se
•	CAS & Chemital Abstract Service Bumber BD & No relevant information found or not evaluable pd; = Stat formissible Suppose Limit EGRP < Component Stratum Limit I and A Not appliable Tiv = Addit Transhold Limit Value, Current - B = Soc Enronet Stratum Limit A + Not appliable JupgstAUT: The information prosented morein , while not guaranted, was prepared by compotent technical personnal and is prove and accurate to the best of our Environment of the Nathautr, Bas Budalatt, Carles PER Limit B HADE REGARDLES prove and accurate to the best of our Environment of the Nathautr, Bas Budalatt, Carles PER Limits B HADE REGARDLES AND AND prove and accurate to the best of our Environment of the Internation of a second and compared by competent technical personnal and is prove and accurate to the best of our Environment of the Nathautr, Bas Budalatt, Carles PER Limits B HADE REGARDLES prove the best of our Environment of the Internation of and internation of a second of the Additions of us, Nondling and discope. State for the Additions repering set the Addition of the Additions of the heat the Additions of the Addition of the Addition of the Additions of the Addition of the Addition of the Addition of the Additions of the Addition of the Addition of the Additions of the Addition of the Addition of the Addition of the Additions of the Addition

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CCIDENTAL CHE SDS NUMBER: RODUCT NAME:	M5389	Page 2 of 99 JENE 727
II. HEALTH HA	ZARD INFORMATION (Continued)	
reuse and	ELY wash with plenty of water for at least taminated clothing and footwear. Wash clot discard footwear which cannot be decontamin TENTION IMMEDIATELY.	15 minutes. hing before ated. SEEK
Derson 2	o fresh air; if breathing is difficult h administer oxygen. If respiration st outh resuscitation. GET MEDICAL ATTENTION.	ave trained ops, give
swallowed. water. If	ve anything by mouth to an unconscious DO NOT INDUCE VOMITING. Give large qu available, give several glasses of milk. ntaneously, keep airway clear. SEEK MEDICA Y.	antities of If vomiting
proper white	ROUTES OF EXPOSURE concentrations of dust, mist, or spray of the damage to the upper respiratory tract and ch could produce chemical pneumonia, dep f exposure.	lung tissue
SKIN: This proc severe burn sense of in	duct is destructive to tissue contacted a ns. A latent period may exist between e rritation.	nd produces xposure and
EYE CONTACT: This proc cause sever blindness.	duct is destructive to eye tissues on con- re burns that result in damage to the eye	tact. Will as and even
tissue parf	duct. 1f swallowed, can cause severe burns ar foration of mucous membranes of the mout and stomach.	nd complete th. throat,

. · · EFFECTS OF OVEREXPOSURE

ACUTE:

READING ·· . . .

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Corrosive to all body tissues with which it comes in contact. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness. These effects occur only when the TLV is exceeded. •• **、** .

CHRONIC:

No known chronic effects.

TOXICOLOGY DATA:

Caustic soda is a corrosive material. Acute Dral LD50 = 140-340 mg/kg (rat) Acute Dermal LD50 = 1350 mg/kg (rabbit)

Human Dermal Exposure Regardless of concentrations, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with even dilute sodium hydroxide solution can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4 - 4% solution to 3 minutes with 25 - 50% solution.

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· · -:.	OCCIDENTAL CHEMICAL MSDS NUMBER: M5389 PRODUCT NAME: 50% CAUSTIC SODA SOLUTION	Page 3 of 9 04-09-90
		Tdent7
• • • • • • • • • • • • • • • • • • • •	III. IMPORTANT_COMPONENTS	
an an an an an an an an an an an an an a	CAS NUHBER / NAME 1310732 Socium hydroxide (Na(OH)) EXPOSURE LIMITS	PERCENTAGE
	PEL=2 mg/m3,.Coiling to the state of the second state	VOL ND WT 48.50-51
	COMMON NAMES:	
	Listed On(List Legend Below): 13 18 21	
• •	7647145 Sodium chloride (NaCl)	· · · · · · · · · · · · · · · · · · ·
	EXPOSURE LIMITS PEL-None established	PERCENTAGE Vol WT 0.80-1.30
• ·	COMMON NAMES: SALT	W1 0.00-1.30
	Listed On{List Legend Below):	en angelen en
	.7732185 Water	
	EXPOSURE LIMITS PEL=Not Established TLV=Not Established	PERCENTAGE Vol ND WT 49-51,50
		#1
	Listed On (List Legend Below):	
	See Section II All components of this product that are r Inventory are listed on the inventory. Not listed as carcinogen - IAR	RC, NTP. OSHA
	LIST LEGEND 13 PA ENVIROMENTAL HAZ SUBSTANCE 19 PA REQUIREMENT- 3% OR GREATER 23 NJ REQUIREMENT- 1% OR GREATER	
	IV. FIRE AND EXPLOSION DATA	an an an an an an an an an an an an an a
	FLASH POINT: NA AUTOIGNITION TEN	PERATURE: Nonflammable
	FLAMMABLE LIMITS IN AIR. % BY VOLUME- UPPER: LOWER:	
	EXTINGUISHING MEDIA: This product is not combustible. W diaxide or dry chemical may be used when	Ater spray, foam, carbon e this product is stored.
•	SPECIAL FIRE FIGHTING PROCEDURES: Wear full protective clothing. Avoi	
	UNUSUAL FIRE AND EXPLOSION HAZARD: None. See Reactivity (Section VII).	
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	OCCIDENTAL CHEMICAL Pag MSDS NUMBER: M5389	04-09-90
	PRODUCT NAME: 50% CAUSTIC SODA SOLUTION	· · ·
	V. SPECIAL PROTECTION	:
		in
	VENTILATION REQUIREMENTS:	• n
	Special ventilation is not required funder normal u	ise. Use · · · · · · · · · · · · · · · · · · ·
	local exhaust ventilation where dust. mist, or spray	may ba
	"generated. NOTE: "Where carbon monoxide or other products may be generated, special ventilation may be reg	reaction -
	SPECIFIC PERSONAL PROTECTIVE EQUIPMENT	I L
	RESPIRATORY:	. .
	Respiratory protection is not required under normal u	se. Use : n
	NIOSH/MSHA approved resp1rators where dust. m1st. or spra	y may be
	generated.	, _Щ
	EYE:	·
	Wear chemical safety goggles plus full face shield to	protect n
	against splashing.	
	GLOVES:	L
	Chemical, resistant ploves should be worn. Gloves	
	decontaminated by washing with mild soap and water. Nat butyl rubber have been suggested.	
	· · · · · · · · · · · · · · · · · · ·	
	OTHER CLOTHING AND EQUIPMENT:	
•	Impervious protective clothing and chemically resistan shoes should be worn to minimize contact. Wash cont	aminated
	shoes should be worn to minimize contact. Wash cont clothing with soap and water and dry before reuse. Sho	wers and
-	eyewash facilities should be accessible.	
	MONITORING EXPOSURE	لللہ
	BIOLOGICAL:	
	NA	· - 11
•		
	PERSONAL/AREA: Use NIOSH Analytical Method No. 7401.	H
	Use RIUSH ANALYLICAL MELIOU NO. 7401.	
•		
	VI. PHYSICAL DATA	ll ll
		· ····································
· .	BOILING POINT @ 760 mm Hg: 143°C (289°F)	•
		- 11
	FREEZING POINT: 12.1°C (54°F)	
	VAPOR PRESSURE: 13 mm Hg @ 60°C	
	SPECIFIC GRAVITY (H20=1): 1.54 @ 15.6°C	· []
	SOLUBILITY IN H20 % BY WT: Completely soluble	. 📕
• •	•	··· ·· ·· ··
-	VAPOR DENSITY (A1r=1): NA	:
	APPEARANCE AND ODOR: Clear liquid with no distinct odor.	· · · · · · · · · · · · · · · · · · ·
, _		
-	pH: 7.5% solution has pH 14.0	۳
	DENSITY: 12.8 15/gal	
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FOR INFORMATION ONLY OCCIDENTAL CHEMICAL Page 5 of 9 04-09-90 M5389 PRODUCT NAME: 50% CAUSTIC SODA SOLUTION • • • Ent. 72 VII. REACTIVITY DATA 70010 50 CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, this product is stable. INCOMPATIBILITY: ASS TO LADIG CO NCOMPATIBILITY: And Storage (Section VIII). Avoid direct contact with water. This product may be added slowly to water or acids with dilution and agitation to avoid a violent exothermic reaction. When handling this product, avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather, wool, acids, organic halogen compounds and organic nitro compounds. HAZARDOUS: DECOMPOSITION : PRODUCTS: None known CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize. VIII. HANDLING AND STORAGE HANDLING AND STORAGE PRECAUTIONS: Do not get into eyes, on skin, on clothing. Avoid breathing dust, mists, or spray. Do not take internally. Use with adequate 'ventilation' and employ respiratory protection when exposure to dust, mist or spray is possible. When handling, wear chemical splash goggles; face shield, rubber gloves and protective clothing. Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible. Neep container closed. Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using. Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form. Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death, Follow appropriate tank entry procedures (ANSI Z117.1-1977). SPECIAL MIXING AND HANDLING INSTRUCTIONS Product can react violently with water. Considerable heat generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps: 16 "Therefore, when ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring -slowly to surface of lukewarm (80-100°F) water. to assure product is being completely dissolved as it is added. NEVER add If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic and a possible solution.

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FOR INFORMATION ONLY

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	OCCIDENTAL CHEMICAL Page 6 c MSDS NUMBER: M5389 04-09 PRODUCT NAME: 50% CAUSTIC SODA SOLUTION	1 7 9 1-90 ·
	TAENTIE JOUR CAUSTIC JOLA JOLOTION IN TAENTIE	\mathbf{r}
		LL .
	VIII. HANDLING AND STORAGE (Continued)	:
	SPECIAL MIXING AND HANDLING INSTRUCTIONS (Continued)	•
	NOTE: Never add more product than can be absorbed by solut while maintaining temperature below 200°F (@ sea level) prevent boiling and spattering.	1on - to
	Product can react EXPLOSIVELY with acids, aldehydes, and m other organic chemicals - when mixing product with soluti containing such chemicals, follow all of above mix instructions, and add product <u>very</u> gradually, while stirr constantly.	005
	ALWAYS empty and clean containers of all residues before add product, to avoid possible EXPLOSIVE reaction between product unknown residue.	ing and
	Returnable containers should be shipped in accordance w supplier's recommendations. Return shipments should comply w all federal. state, and DOT regulations. All residual caus soda should be removed from containers prior to disposal.	1th . 1th tic
	IX. ENVIRONMENTAL PROCEDURES	•
	STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Leaks should be stopped. Spills should be contained. cleaned up immediately. Spills should be removed by using vacuum truck. Neutralize remaining traces of material with dilute inorganic acid such as hydrochloric, sulfuric, nitr phosphoric, and acetic acid. The spill area should then flushed with water followed by liberal covering of sod bicarbonate. All clean-up material should be removed and plac in approved containers, labeled and stored in a safe place await proper treatment or disposal. Spills on areas other the pavement, e.g., dirt or sand, may be handled by removing affected soils and placing in approved containers. Person performing clean-up work should wear adequate personal protect equipment and clothing. Spills or releases should be reported if required, to the appropriate local, state and feder regulatory agencies.	D B Bny 1C, be 1Um Ced to han the bns
	CAUTION: Caustic soda may react violently with acids and water.	•
÷	WASTE DISPOSAL METHOD: The materials resulting from clean-up operations may hazardous wastes and, therefore, subject to specific regulation Package, store, transport, and dispose of all clean-up materia and any contaminated equipment in accordance with all applicat federal, state, and local health and environmental regulation Shipments of waste materials may be subject to manifest requirements per applicable regulations. Appropriate dispos will depend on the nature of each waste material and should performed by competent and properly permitted contractor Ensure that all responsible federal, state, and local agence receive proper notification of spill and disposal methods.	ns. 11s 510 1s. ing 5a1 bo
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FOR INFORMATION ONLY Assigned to: 7777 Expires On: \ Page 7 of 9 04-09-90 OCCIDENTAL CHEMICAL MSDS NUMBER: M5389 PRODUCT NAME: 50% CAUSTIC SODA SOLUTION .787 PU4 - - -. X. ADDITIONAL INFORMATION OSHA Standard 29CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees. employees. To aid our customers in complying with regulatory requirements, SARA Title III hazard categories for this product are indicated in Section I. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40 CFR Part 370. Please consult those regulations for details. 1.1 -----. . . . 1. . . . XI. PREPARATION INFORMATION For additional Non-Emergency health, safety, or environmental information telephone (716) 286-3081, or write to: Occidental Chemical Corporation Product Stewardship Department Suite 400 360 Rainbow Boulevard South Niagara Falls, NY 14302 For Emergencies: 24 HOUR EMERGENCY PHONE: (716) 278-7021 This MSDS replaces MSDS Number M5389 dated 07-14-89. an li si Cana Tinta Angol Aliantia Aliantia $\tau_{i} = \frac{1}{2} \tau_{i}$ - r ~ ·· · · ÷ ۰... : .: 2. * · • • • en de la composition de la composition de la composition de la composition de la composition de la composition La composition de la composition de la composition de la composition de la composition de la composition de la c • • • •, . P . 110 ひこく At a second 31 6 100 -1 31 E 233

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WARNING LA	BEL INFORMATION	•	
SIGNAL WORD:	DANGER!	· · · ·	•.
CONTACT WIT	HAZARDS: RE BURNS TO SKIN, EY H EYES CAN CAUSE PER OF DUST, MIST, OR SP IOLENTLY WITH WATER.	MANENT EYE DAMAG RAY CAN CAUSE SE	E. Vere lung damage.
Avoid breat Do not take Use with when sxpo When handli gloves an Wash thoro burns whi Keep contail Product can	into eyes, on skin, hing dust, mist, or internally, adequate ventilation sure to dust, mist, ng, wear chemical sp d protective clothin uphly after handlin ch are not immediate ner closed. react violently with	spray. and employ res or spray 1s poss lash goggles, fi or contact - ly painful or vi n water, acids, a	ible. ace shield. rubbe exposure can caus sible. and other substance
Product 1s these me powder fo Hazardous ci beverage j	ndling and Storage in corrosive to tin, all tals, and will read m. arbon monoxide gas products in enclosed te tank entry procedu	minum. zinc. at t violently with can form upon co spaces and can (nd alloys containin n these metals i ontact with food an cause death. Follo
FIRST AID: IN CASE OF (CONTACT:	· · · ·	
ATTENTION at least flushing is essent	IS TO FLUSH MATERIA IMMEDIATELY flush of 15 minutes forcit of entire surface. ial to achieve ma IMMEDIATELY.	oyes with large a bly holding lid Washing eyes wit	amounts of water fo ds apart to ensur
' rouse and	TELY wash with plenty ntaminated clothing a discard footwear whi TENTION IMMEDIATELY.	ich cannot be de	: least 15 minutes ish clothing befor icontaminated. SEE
person	o fresh air. If b administer oxygen. Nouth resuscitation.	. If respirat	ton stops, giv
swallowed. .water. If	DO NOT INDUCE VO available, give se intaneously, keep at	MITING . Give veral glasses of	large quantities o milk. If vomitin
waste are area with bicarbonat	K: por removed by vacu a. Neutralize resid water followed b e. Dispose of wa to federal, state, a	ue with dilute y liberal cov sh water and	acid, flush spil ering of sodiu spill by-product
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	CCIDENTAL CHEMICAL SDS NUMBER: M5389			Page 9 of 9 04-09-90
	RODUCT NAME: 50% CAL	ISTIC SODA SOLUTION		TAEN1727
• Et is wither	WARNING LABEL INFOR	the second second second second second second second second second second second second second second second s		
· - 3	ANDLING AND STORAGE:	· · ·		
· · · · · · · · · · · · · · · · · · ·	Considerable hea	to is generated w when making solut	hen product 11 lons always care	s mixed with sfully follow
	water to product. slowly to surface	L prescribed prote ALWAYS add product of lukewarm (80-100 y dissolved as it i	 with constar *F) water, to as 	NEVER add at stirring - sure product
	becomes concentrat	dded too rapidly, ed at bottom of m resulting in DANGE EDIATE AND VIOLENT	ixing vessel, ex	cessive heat
	NOTE: Never add while maintaining prevent boiling an	more product than temperature below d spattering.	can be absorbed 200°F (@ sea	by solution to the solution to the solution of
	other croanic che	ct EXPLOSIVELY wit nicals when mi chemicals, follo add product very	xing broduct wi	thisplutions
•		clean containers o possible EXPLOSIVE		
· .	all federal, state	iners should be a ndations. Return a b, and DOT regula byed from containers	shipments should tions. All resi	comply with dual caustic
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	hazardous wastes ar Package, store, tra and any contaminate federal, state, a Shipments of wast requirements per will depend on the performed by comp	resulting from cli ad, therefore, subj ansport, and dispose ad equipment in acco and, local health te materials, may b applicable regulat nature of each was betent and proper sponsible federal, s ification of dispose	ect to specific of all clean- ordance with al environmental be subject to lons. Appropria te material and by permitted	regulations. up materials l applicable regulations. manifesting te disposal should be contractors. al agencies
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II	FORMATION REQUIRED BY	FEDERAL, STATE OR	LOCAL REGULATION	
	CAS# NAME 1310732 Sod 1um	hydrox1de (Na(OH))	• •	
	7647145 Soci ium			
	7732185 Water			
· · · · ·	HMIS RATING SYSTEM:	1753 * MU 19 C 200 THT 330/3		CM THT MY 3
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Material Safety Data Sheet Sodium Nitrite

ACC# 21410

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium Nitrite Catalog Numbers: S80187, NC9757363, S338-3, S347-10, S347-250, S347-3, S347-500, WESS347500 Synonyms: Nitrous acid, sodium salt. Company Identification: Fisher Scientific 1 Reagent Lane Fair Lawn, NJ 07410 For information, call: 201-796-7100 Emergency Number: 201-796-7100 For CHEMTREC assistance, call: 800-424-9300 For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

•				
CAS#	· Ch	emical Name	Percent	EINECS/ELINCS
7632-00-0	Sodium nitrite	2.5	>97	231-555-9

Hazard Symbols: T O N Risk Phrases: 25 8 50

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white to light yellow crystals. May cause methemoglobinemia. **Danger!** May be fatal if inhaled. Strong oxidizer. Contact with other material may cause a fire. Hygroscopic. Harmful if swallowed. Causes eye and skin irritation. This substance has caused adverse reproductive and fetal effects in animals. Air sensitive. Causes respiratory tract irritation.

Target Organs: Blood, cardiovascular system, smooth muscle.

Potential Health Effects

Eye: Causes eye irritation. May cause conjunctivitis. May cause permanent corneal opacification.

Skin: Causes skin irritation. May be absorbed through the skin.

Ingestion: Harmful If swallowed. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, and death. Causes digestive tract irritation. Ingestion may cause weakness, muscular incoordination, fine tremors, loss of reflexes, convulsions and possible death from circulatory collapse. Ingestion may cause a decrease in blood pressure, rapid pulse and visual disturbances. **Inhalation:** May be fatal if inhaled. May cause methemoglobinemia, cyanosis, convulsions, tachycardia, dyspnea (labored breathing), and death. May cause acute pulmonary edema, asphyxia, chemical pneumonitis, and upper alrway obstruction caused by edema.

Chronic: May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Sodium nitrate may react with secondary or tertiary amines to form nitrosamines (certain nitrosamines are cancer suspect agents).

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Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. SPEED IS ESSENTIAL, OBTAIN MEDICAL AID IMMEDIATELY. **Notes to Physician:** Absorption of this product into the body may cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). Moderate degrees of cyanosis need to be treated only by supportive measures: bed rest and oxygen inhalation. If cyanosis is severe, intravenous injection of Methylene blue, 1mg/kg of body weight may be of value.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with combustible materials may cause a fire. Use water with caution and in flooding amounts. May explode from heat or contamination. May accelerate burning if involved in a fire.

Extinguishing Media: Use water only! Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out. For large fires, flood fire area with water from a distance. Do NOT use dry chemicals, CO2, Halon or foams.

Flash Point: Not applicable.

Autoignition Temperature: Not available.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 1; Special Hazard: OX

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8. **Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Handle under an inert atmosphere. Store protected from air. Use only in a chemical fume hood.

Storage: Do not store near combustible materials. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air. Store protected from moisture. Store under an inert atmosphere.

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Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Chemical Name	ACGIH	t grade		NIOSH	Se OSHA - Final PELs
Sodium nitrite	none listed	in tight		none listed	none listed

OSHA Vacated PELs: Sodium nitrite: No OSHA Vacated PELs are listed for this chemical. Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

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Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Unstable if heated, may explode at temperatures greater than 533°C.

Conditions to Avoid: Unstable if heated, may explode at temperatures greater than 533°C., incompatible materials, ignition sources, dust generation, exposure to alr, combustible materials, reducing agents, exposure to moist air or water, temperatures above 320°C.

Incompatibilities with Other Materials: Reducing agents, acids, amines, chlorates, permanganates, cyanides (e.g. potassium cyanide, sodium cyanide), metals as powders (e.g. hafnium, raney nickel), hypophosphites, sulfites, tannic acid, organic matter, antipyrine, ammonium salts, acetanilide, iodides, mercury salts, molsture, air, activated carbon, vegetable astringents.

Hazardous Decomposition Products: Oxides of nitrogen, Irritating and toxic fumes and gases. Hazardous Polymerization: Will not occur.

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Section 11 - Toxicological Information

RTECS#: CA5# 7632-00-0: RA1225000 LD50/LC50; CAS# 7632-00-0: Draize test, rabbit, eye: 500 mg/24H Mild; Inhalation, rat: LC50 = 5500 ug/m3/4H;Oral, mouse: LD50 = 175 mg/kg; Oral, rabbit: LD50 = 186 mg/kg;Oral, rat: LD50 = 180 mg/kg; **Carcinogenicity:** CAS# 7632-00-0: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. Epidemiology: Oral, rat: TDLo = 2190 gm/kg/2Y-C (Tumorigenic - Carcinogeni c by RTECS criteria -GastroIntestinal - tumors); Ora I, rat: TD = 91 gm/kg/2Y-C (Tumorigenic - equivocal tumo rigenic agent by RTECS criteria - Skin and Appendage s - tumors and Reproductive - Tumorigenic effects - testicular tumors).; Oral, rat: TD = 40 gm/kg/56W- C - (Tumorigenic - neoplastic by RTECS criteria - Liver - tumors). **Teratogenicity:** Oral, rat: TDLo = 660 mg/kg (female 1-22 day(s) after conception) Effects on Embryo or Fetus - fetal death and Effects on Newborn - growth statistics (e.g.%, reduced weight galn).; Oral, rat: TDLo = 10280 mg/kg (female 1-22 day(s) after conception and lactating female 20 day(s) post-birth) Effects on Newborn - weaning or lactation index (e.g., # alive at weaning per # alive at day 4).; Oral, mouse: TDLo = 280 mg/kg (female 1-14 day(s) after conception) Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow). Reproductive Effects: Oral, mouse: TDLo = 1200 mg/kg (female 6-15 day(s) after conception) Fertility - pre-

implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea).; Oral, mouse: TDLo = 1680 mg/kg (male 14 day(s) pre-mating) Fertility - male fertility index (e.g. # males impregnating females per # males exposed to fertile nonpregnant females).; Oral, mouse: TDLo = 840 mg/kg (male 14 day(s) pre-mating) Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count).

Neurotoxicity: No information available.

Mutagenicity: Unscheduled DNA Synthesis: Human, HeLa cell = 6 mmol/L.; DNA Inhibition: Human, Fibroblast = 2000 ppm.; DNA Inhibition: Human Cells - not otherwise specified = 725 umol/L.

Other Studies: Standard Draize Test: Administration into the eye (rabbit) = 500 mg/24H (Mild).

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 0.19-0.39 mg/L; 96 Hr; Flow-through bioassay Mosquito Fish: TLm =8.1 ppm; 24 Hr; Highly turbld water Creek chub: Critical range = 400-2000 ppm; 24 Hr; Detroit River No data available.

Environmental: In water sodium nitrite dissociates completely and under aerobic conditions the nitrite ions are oxidized to nitrates.

Physical: No information available.

Other: Harmful to aquatic life in very low concentrations.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed. RCRA U-Series: None listed.

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	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	SODIUM NITRITE				SODIUM NITRITE
Hazard Class:	5.1				5.1(6.1)
UN Number:	UN1500				UN1500
Packing Group:	III				III

US FEDERAL	· · · · · · · · · · · · · · · · · · ·	
TSCA		
CAS# 7632-00-0 is listed on the TSCA inventory	•	
Health & Safety Reporting List		. ·
None of the chemicals are on the Health & Safety	/ Reporting List.	
Chemical Test Rules		
None of the chemicals in this product are under a		
Section 12b		
CAS# 7632-00-0: 5a2/12b		
TSCA Significant New Use Rule		
None of the chemicals in this material have a SN	UR under TSCA.	
SARA		
CERCLA Hazardous Substances and correspondences		
CAS# 7632-00-0: 100 lb final RQ; 45.4 kg final l		
SARA Section 302 Extremely Hazardous Sub		•
None of the chemicals in this product have a TPC	2. []	
SARA Codes	1 · · ·	

CAS # 7632-00-0: acute, chronic, flammable.

Section 313

This material contains Sodium nitrite (CAS# 7632-00-0, 97%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act: CAS# 7632-00-0 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7632-00-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives Hazard Symbols:

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Risk Phrases:

R 25 Toxic if swallowed.

R 8 Contact with combustible material may cause

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fire.

R 50 Very toxic to aquatic organisms.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S 61 Avoid release to the environment. Refer to

special instructions/Safety data sheets.

WGK (Water Danger/Protection) CAS# 7632-00-0: 2 Canada - DSL/NDSL CAS# 7632-00-0 is listed on Canada's DSL List. Canada - WHMIS This product has a WHMIS classification of C, D1B, D2B. Canadian Ingredient Disclosure List CAS# 7632-00-0 is listed on the Canadian Ingredient Disclosure List. Exposure Limits CAS# 7632-00-0: OEL-CZECHOSLOVAKIA:TWA 1 mg/m3;STEL 5 mg/m3 OEL-HUN GARY:STEL 1 mg/m3;Skin

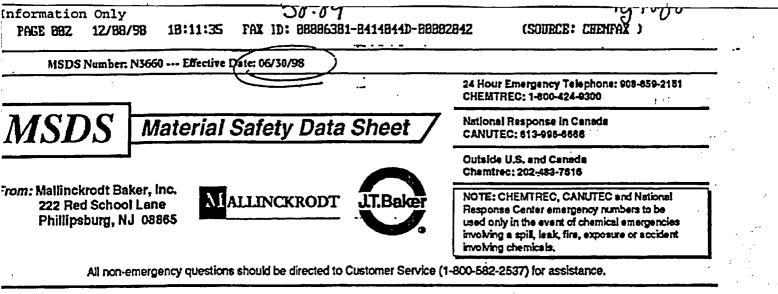
Section 16 - Additional Information

MSDS Creation Date: 7/02/1999 Revision #5 Date: 12/03/2002

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no ilability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

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P. 07



NITRIC ACID, 50-70%

MSDS Number: N3660 -- Effective Date: 06/30/98

1. Product Identification

Synonyms: Aqua Fortis; Azotic Acid; Nitric Acid 50%; Nitric Acid 65%; nitric acid 69-70% CAS No.: 7697-37-2 Molecular Weight: 63.00 Chemical Formula: HNO3 Product Codes: J.T. Baker: 5371, 5555, 5801, 5876, 9597, 9598, 9500, 9601, 9602, 9604, 9606, 9607, 9616 Mallinckrodt: 1409, 2703, 2704, 6623, V069, V077, V336, V561

2. Composition/Information on Ingredients

Ingredient	· · ·	CAS No	Percent	Hazardous
Nitric Acid		7697-37-2	50 - 70%	Yes
Water		7732-18-5	30 - 50%	No

3. Hazards Identification

Emergency Overview

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MSDS Number, N3660 --- Effective Date: 06/30/98

POISONI DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE CORROSIVE LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BOD TISSUE MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

I.T. Baker SAF-T-DATA (tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison) Flammability Rating: 0 - None Reactivity Rating: 3 - Severe (Oxidizer) Contact Rating: 4 - Extreme (Corrosive) Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES Storage Color Code: Yellow (Reactive)

Potential Health Effects

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

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and the factor of the state

Inhalation:

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract. Ingestion:

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. Age backles and a state

Skin Contact: Control and the former to the former of the second states of

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

Eye Contact:

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage. and the second second second second second second second second second second second second second second second

Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid. Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

4. First Aid Measures

renter en las las Maximum das APRImas (2003) de la Immediate first aid treatment reduces the health effects of this substance. Inhalation:

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Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

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MSDS Number: N3660 --- Effective Date: 06/30/98

Ingestion:

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention 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. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

Explosion:

Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air. Fire Extinguishing Media:

Water spray may be used to keep fire exposed containers cool. Do not get water inside container.

Special Information:

Increases the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB(tm) or TEAM(tm) 'Low Na+' acid neutralizers are recommended for spills of this product.

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1998-12-08 at 10:18

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MSDS Number: N3660 --- Effective Date: 06/30/98

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits: -OSHA Permissible Exposure Limit (PEL): 2 ppm (TWA), 4 ppm (STEL) -ACGIH Threshold Limit Value (TLV): 2 ppm (TWA); 4 ppm (STEL)

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation*, A Manual of Recommended Practices, most recent edition, for details. Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Nitric acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective. Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical salety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Colorless to yellowish liquid.				
Odor: Suffocating, acrid.		• • • •	an an th	

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MSDS Number: N3660 --- Effective Date: 06/30/98

Solubility: Infinitely soluble. Specific Gravity: 1.41 DH: 1.0 (0.1M solution) % Volatiles by volume @ 21C (70F): 100 (as water and acid) Boiling Point: 122C (252F) Melting Point: -42C (-44F) Vapor Density (Air=1): 2-3 . . Vapor Pressure (mm Hg): 48 @ 20C (68F) Evaporation Rate (BuAc=1): No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Containers may burst when heated.
Hazardous Decomposition Products:
When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.
Conditions to Avoid:
Light and heat.

11. Toxicological Information

Nitric acid: Inhalation rat LC50: 244 ppm (NO2)/30M; Investigated as a mutagen, reproductive effector. Oral (human) LDLo: 430 mg/kg.

-----\Cancer Lists\-----

---NTP Carcinogen---·

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12. Ecological	I Informatio	on				• •*. * ,	•
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Information reported for product/size: 150LB

15. Regulatory Information

Ingredient	- Part	1\		EC	Japan	Australia
Nitric Acid (7697-37-2) Water (7732-18-5)				Yes	Yes	Yes
\Chemical Inventory Status	- Part	2\		1-11 ar ar 74 a.,		
Ingredient			Korea	-	anada NDSL	Phil.
Nitric Acid (7697-37-2)			Yes	Yes	No	Yes
Water (7732-18-5)			Yes		No	Yes
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: No SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 2PE Poison Schedule: S6 WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16.	Other Information	· .	. *-		
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	NFPA Ratings: Health: 3 Flammability:	0 Reactivity: 0 Other: O	odizer		
	Label Hazard Warning:		· · ·		
٠	POISON! DANGER! STRONG OXIDIZ				•
	CAUSE FIRE CORROSIVE LIQUID A TISSUE MAY BE FATAL IF SWALLO				
	LUNG AND TOOTH DAMAGE.	WED OK INNALED. IN	INTUTION MAT	CUDSE	
•	Label Precautions:		· -	•	
	Do not get in eyes, on skin, or on clotl	hing.	· · ·		
	Do not breathe vapor or mist.	U			
	Use only with adequate ventilation.	e e e e e e e e e e e e e e e e e e e	· · · · · · · ·		
,	Wash thoroughly after handling.				
•	Keep from contact with clothing and oth				
	Do not store near combustible materials.			· · · · · ·	. ر
	Store in a tightly closed container. Remove and wash contaminated clothing	man maths	•		
1	Label First Aid:	prompuy.		the state of the state of the	
,	In case of contact, immediately flush eye	a an alsin writh mlanter of	motor for at loast	16	
	minutes while removing contaminated ck swallowed, DO NOT INDUCE VOMITI	NG. Give large quantities	clothing before reus	ive	
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	swallowed, DO NOT INDUCE VOMITH anything by mouth to an unconscious po- breathing, give artificial respiration. If bre medical attention immediately. Product Use: Laboratory Reagent. Revision Information: MSDS Section(s) changed since last revis Disclaimer: Mallinckrodt Baker, Inc. provides the in- makes no representation as to its comp- intended only as a guide to the approp properly trained person using this prod exercise their independent judgment in purpose. MALLINCKRODT BAKER, IN- WARRANTIES, EITHER EXPRESS OR ANY WARRANTIES OF MERCHANTAE WITH RESPECT TO THE INFORMATION WHICH THE INFORMATION REFERS. INC. WILL NOT BE RESPONSIBLE FO RELIANCE UPON THIS INFORMATION	NG. Give large quantities erson. If inhaled, remove eathing is difficult, give of sion of document include normation contained he prehensiveness or accura- riate precautionary han uct. Individuals receivin determining its appropri C. MAKES NO REPRES IMPLIED, INCLUDING SILITY, FITNESS FOR ON SET FORTH HERE ACCORDINGLY, MAI DR DAMAGES RESULT N.	of water. Never g to fresh air, 11 no xygen. In all cases rcin in good faith cy. This document dling of the mater g the information jateness for a par SENTATIONS OR WITHOUT LIMIT A PARTICULAR 1 IN OR THE PROI LINCKRODT BAI ING FROM USE (ive get but is ial by a must ticular ATION PURPOSE DUCT TO KER, DF OR	

Information Only		•	. /	LU# 32.62
U.S.BORAX	Meeting C CAL OS			Ident: 731
SE	CTION I PRO	DUCT IDENTIF	ICATION	
PRODUCT TRADE NAME: Borax			TSCA NO.: 1303-96-4	
CHEMICAL NAME AND SYNONY Sodium tetraborate of		•	CAS NO.: 1303-96-4	
CHEMICAL FAMILY: Borate	· ·		FORMULA: Na B 0.10	a_0
PHYSICAL HAZARD RATING: NA As	itional Fire Pr sociation	otection	•	
Fl	alth ammability activity	0 0 0	• • •	
SEC	TION II — HAZA	RDOUS INGRI	EDIENTS	
MATERIAL OR COMPONENT %: Sodium tetraborate of Appears on CAL OSHA Does not appear on a WARNING: This product to the State of Cali	Directors' Lis ny EPA List of t contains tra	t of Hazardous Hazardous Sub ce amounts of	Substances: ostances. arsenic, a chemical k	:nown
	SECTION III		· · · · ·	
APPEARANCE: WIN SPECIFIC GRAVITY: 1. MELTING POINT: 62 VAPOR PRESSURE: Neg. SOLUBILITY IN WATER:	°C ligible 20°C	Crystalline s 5.8% 65.6%	olid	
HEAT OFSOLUTION: - 2	22 BTU/16.	· .		
FORMULA WEIGHT: 381.	37	÷		
pH 3% SOLUTION: 9.25				
			ER: (714) 774-2673	
CONTACT: P.L. Strong; Manage The Information and recommendations con warranty of any kind expressed or implied i	tained herein are base	ed upon data believe	d to be correct. However, no gua tained herein.	arantee or
UNITED STATES BORAX & CHEMICAL COR	PORATION + 3075 WILS	HIRE BLVD., LOS ANG	SELES, CA 90010-1294	RUBAY
Page 1 25.80.1911		**	******	עווחק

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Information Only	2 of 5
SECTION IV - HEALTH HAZARD INFORMATION	
EFFECTS OF ACUTE EXPOSURE	
INGESTION:	
ACUTE ORAL LD50 : 4.5-5.0 gram/kg of body weight (Sprague-Dawle	y rats).
	· Takang tangan sa karang sa karang sa karang sa karang sa karang sa karang sa karang sa karang sa karang sa kar
HUMAN ACCIDENTAL EXPOSURE: Anticipated symptons: nausea, vomiti 24 hours, erythema; macular skin ras	ng, diarrhea. After h, and dizziness may
OCCUR.	
- EYE: Irritant (rabbits - per 16 CFR \$1500.42). Probable human eye i	rritant. The terminate
DERMAL:	
ACUTE DERMAL LD50 Greater than 10 gram/kg of body weight (rabbits - per 16 CFR \$1500.40)	
PRIMARY SKIN IRRITATION INDEX: 0 - no effect (rabbits - per 16 CFR	\$1500.41)
SKIN: No known adverse effects to humans with intact skin. May damaged skin.	be absorbed through
CORROSIVE: This product is non-corrosive.	
INHALATION: May cause sneezing and coughing if exposed to high concest (>10 mg/m ³ .).	ntrations of the state of the second
	and the second second second second second second second second second second second second second second second
INGESTION: Animal testing for carcinogenicity of boric acid has been	negative.
Animal studies show that ingestion of large amounts of bo periods of time causes a decrease in sperm production and in male laboratory animals and developmental effects in fo female laboratory animals. No evidence of such effects in	testicle size etuses of pregnant
EYE: Possible irritant to human eye.	
DERMAL: No evidence of effect from exposure on intact human skin.	
INHALATION: As with any nuisance dusts, may aggravate chronic respira as asthma, bronchitis, etc.	tory ailments such
UNITED STATES BORAX & CHEMICAL CORPORATION - 3075 WILSHIRE BLVD., LOS ANGELES, CA 90010-1	USBORAX
Page 2	Borax
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HEALTH HAZARD INFORMATION (cont. from page 2)

REGULATORY INFORMATION

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): 10 mg/m³

29CFR§1910 SUBPART Z

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3 of 5

ACGIH RECOMMENDED THRESHOLD LIMIT VALUE: 5 mg/m³

CAL OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m³

NOT LISTED IN THE NATIONAL TOXICOLOGY PROGRAM ANNUAL REPORT ON CARCINOGENS (1989)

NOT LISTED IN THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) MONOGRAPH

NOT LISTED ON THE OSHA CARCINOGENS LIST

EMERGENCY AND FIRST AID PROCEDURES:

EYES: Flush with tepid water for 15 minutes. Consult a physician.

SKIN: Rinse with water.

INHALATION: Remove to fresh air.

INGESTION: Drink large amounts of water or milk. Consult a physician.

NOTE TO PHYSICIAN:

Gastric lavage with 5% sodium bicarbonate is suggested. This should be followed by saline catharsis. Assure adequate hydration. Borax is not considered an acute poiaon. After ingestion or absorption into the bloodstream of large amounts (15 grams or more), symptoms may appear after 24-72 hours. Borates are readily dissipated through the urine (70% in the first 24 hours). Complimentary blood analysis is available for physicians and emergency rooms. Medical consultation is also available. Call (714) 774-2673.

UNITED STATES BORAX & CHEMICAL CORPORATION • 3075 WILSHIRE BLVD., LOS ANGELES, CA 90010-1294	USBORAX	
Page 3	Borax	

SECTION V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): N/A

FLAMMABLE LIMITS:N/A

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- 4 of 5

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EXTINGUISHING MEDIA: None required. Product is an inherent fire retardant.

SPECIAL FIREFIGHTING PROCEDURES: None are required. No potential for fire or explosion hazard. Product is an inherent fire retardant.

SECTION VI - REACTIVITY DATA

STABILITY: Borax is a stable product.

Information Only

INCOMPATIBILITY (MATERIALS TO AVOID): Elemental Zirconium (hot)

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Contact with elemental zirconium (mixture explodes when heated).

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep or vacuum followed by water rinse.

-VASTE DISPOSAL METHOD: Refer to local disposal requirements and regulations for waste disposal methods. Not regulated under \$313 of SARA Title III or RCRA (40 CFR 261.33)

UNITED STATES BORAX & CHEMICAL CORPORATION + 3075 WILSHIRE BLVD., LOS ANGELES, CA 90010-1294

Page 4

Borax

RESPIRATON PROTECTION (SPECIFY TYPE): Recommend use of light duty dust mask (such as 3M model 5800) in areas of airborne concentrations

SECTION VIII - SPECIAL PROTECTION INFORMATION

greater than $10mg/m^3$.

VENTILATION: Local exhaust is sufficient.

Information Only

PROTECTIVE GLOVES: None needed unless skin is abraded. Leather, cloth or rubber gloves.

EYE PROTECTION: Avoid eye contact. To avoid eye contact, dust goggles are recommended in areas of high airborne concentrations.

OTHER PROTECTIVE EQUIPMENT: None

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Dry indoor storage.

OTHER PRECAUTIONS: Retain package integrity.

Thelip 2. Its

DATE: 409 31, 1990 SIGNATURE:

P.L. Strong, Manager, Product Safety

UNITED STATES BORAX & CHEMICAL CORPORATION - 3075 WILSHIRE BLVD., LOS ANGELES, CA 90010-1294

Page 5

Borax

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BORAX	Meeting OSHA Star CAL OSHA Stan	FETY DATA SI ndard 29CFR § 1910.1200 (dard Title 26 § 8-5194 (g) August 31, 1990		• F 5
SE	CTION I - PRODUCT II	DENTIFICATION	· · · · · · · · · · · · · · · · · · ·	
PRODUCT TRADE NAME: Boric		TSCA NO.: 10	043-35-3	
CHEMICAL NAME AND SYNONY Boric acid, Orthobor	WS: Market with a state of	CAS NO.: 100	43-35-3	
CHEMICAL FAMILY: Borate	. 15	FORMULA: H	BO ₃ articles and	n a chuir tàir lài
PHYSICAL HAZARD RATING: NA	ational Fire Protectic sociation	n		
F1	alth 0 ammability 2000 ye activity 0	value e se se ales Statución de se	n an the second the second second second second second second second second second second second second second	
SEC	TION II — HAZARDOU	SINGREDIENTS		
MATERIAL OR COMPONENT % : Boric Acid >99% CAS			· · · · ·	
	t contains trace amou fornia to cause cance		emical known	n an the left S Store The state of the Store of the Sto
	SECTION III PHYSI	CAL DATA	:	Historica (manina a porta) A constanta (manina a porta) A
SPECIFIC GRAVITY: 1.	1te, odorless, crysta 5128 0.9°C (340°F) 20°C 4.7%	e Merodo Santo Antonio de Constanto Anto Companya da Constanto de Constanto de Constanto Antoneo de Constanto de Constanto de Constanto de Constanto de Constanto de Constanto de Constanto de Constanto		n de la constante de la constante Anglesia
1.0		n izt (* 1910) Stizt (* 1910)		
24 HOUR EME	RGENCY TELEPHONE	NUMBER: (714) 774-2	2673	egeneriye - Kît
CONTACT: P.L. Strong; Manag e information and recommendations con surranty of any kind expressed or implied	ntained herein are based upon d is made with respect to the infor	ata believed to be correct. How mation contained herein.	ever, no guarantee or	
INITED STATES BORAX & CHEMICAL COR	PORATION • 3075 WILSHIRE BLV			

Page 1 25-80-1907

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Information Only

SECTION IV - HEALTH HAZARD INFORMATION

EFFECTS OF ACUTE EXPOSURE

INGESTION:

ACUTE ORALLD₅₀: 3.5-4.1 gram/kg of body weight (Sprague-Dawley rats).

HUMAN ACCIDENTAL EXPOSURE: Anticipated symptons: nausea, vomiting, diarrhea. After 24 hours, erythema; macular skin rash, and dizziness may occur.

EYE: Is a mild eye irritant (rabbits - per 16 CFR \$1500.42)

DERMAL:

ACUTE DERMAL LD 50' Greater than 2.0 gram/kg of body weight (rabbits - per 16 CFR \$1500.40)

PRIMARY SKIN IRRITATION INDEX: 0 (rabbits - per 16 CFR \$1500.41)

SKIN: No known adverse effects to humans with intact skin. May be absorbed through damaged skin.

CORROSIVE: This product is non-corrosive.

INHALATION: May cause sneezing and coughing if exposed to high concentrations (>10 mg/m³).

EFFECTS OF CHRONIC OVEREXPOSURE

INGESTION: Animal testing for carcinogenicity of boric acid has been negative.

Animal studies show that ingestion of large amounts of borates over prolonged periods of time causes a decrease in sperm production and testicle size in male laboratory animals and developmental effects in fetuses of pregnant female laboratory animals. No evidence of such effects in humans.

EYE: May cause slight reversible conjunctivitis

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DERMAL: No evidence of effect from exposure on intact human skin.

INHALATION: As with any nuisance dusts, may aggravate chronic respiratory ailments suc. as asthma, bronchitis, etc.

UNITED STATES BORAX & CHEMICAL CORPORATION . 3075 WILSHIRE BLVD., LOS ANGELES, CA 90010-1294 Page 2
Boric Acid

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		3	01-0-2-0-
. HEALTH HAZAI	RD INFORMATION (cont	. from page 2)	
BEGULATORY INFORMATION		•	
OSHA PERMISSIBLE EXPOSURE I	LIMIT (PEL): Not listed	29CFR§1910 SUBPART Z	
		n an an an an an an an an an an an an an	م المنظم الي الجان الراقع. 1977 - مام الأنو
ACGIH RECOMMENDED THRESH			
NOT LISTED IN THE NATIONAL TO	· · · · · · · · · · · · · · · · · · ·	UAL REPORT ON CARCINOGEI	
NOT LISTED IN THE INTERNATION	VAL AGENCY FOR RESEARC	H ON CANCER (IARC) MONOG	RAPH
NOT LISTED ON THE OSHA CARC	INOGENS LIST		
•			
EMERGENCY AND FIRST AID PRO	CEDURES:	·	ې د د ور د درو د
•	-	energia di Barre di Contre Barre di Contre	
ES: Flush with tepid water for	15 minutes. Consult a		
KIN: Rinse with water.		143°°°	
	the factor was a second to the	ann a the an inn shear a se	a an an tha gain tha an an th
ALATION: Remove to fresh air.			
GESTION: Drink large amounts of	water or milk. Consul	t a physician.	
DTE TO PHYSICIAN:	والمحاربة والمعامية والمراجع والمراجع والمراجع	· · · · · · · · · · ·	سو دوه در در د
Gastric lavage with 5% sodium (saline catharsis. Assure adequa poison. After ingestion or abs grams or more), symptoms may a pated through the urine (70% is is available for physicians and available. Call (714) 774-2673	ate hydration. Boric a orption into the blood ppear after 24-72 hour n the first 24 hours). d emergency rooms. Med	cid is not considered an stream of large amounts s. Borates are readily d 'Complimentary blood ana	acute (15 issi- lysis
an an an an an an an An an	ುವುದೆ ಸಂಗ್ರೆ ಕಾರ್ಯಕ್ರಮ ಪ್ರೇಶನ ಸಂಗ್ರೆ ಸ್ಟಾರ್ಟ್ ಪ್ರಾಧಾಗವು ಹೇಗೆ ತೆಗ್ಗಳಲ್ಲಿ ಸಂಗ್ರೆ	na na na Sheketi a Cheerini. Na historia Cheerini (1997) Na hittoria Cheerini (1997)	· · · · · · · · · · · · · · · · · · ·
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ge 3	e e e e e e e e e e e e e e e e e e e		Boric Acid
			• • • • •
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SECTION V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METH. JSED): N/A

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THIUIMATION

FLAMMABLE LIMITS: N/A

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EXTINGUISHING MEDIA: None required. Product is an inherent fire retardant.

SPECIAL FIREFIGHTING PROCEDURES: None are required. No potential for fire or explosion hazard. Product is an inherent fire retardant.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI - REACTIVITY DATA

STABILITY: Boric acid is a stable product.

INCOMPATIBILITY (MATERIALS TO AVOID): Acetic anhydride; elemental potassium

HAZARDOUS DECOMPOSITION PRODUCTS: None:

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with acetic anhydride or elemental potassium may result in explosion.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep or vacuum followed by water rinse.

WASTE DISPOSAL METHOD: Refer to local disposal requirements and regulations for waste disposal methods. Not regulated under 5313 of SARA Title III or RCRA (40 CFR 261.33)

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UNITED STATE	ES BORAX & CHEI	MICAL CORPO	ORATION • 3	9075 WILSHIRE	BLVD., LO	SANGELES	CA 90010-1294	- USB	ORAX	
Page 4									Boric Acid	-

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATON PROTECTION (SPECIFY TYPE): Recommend use of light duty dust mask (such as 3M model 5800) in areas of high airborne concentra tions.

VENTILATION: Local exhaust is sufficient.

PROTECTIVE GLOVES: Leather, cloth or rubber gloves

EYE PROTECTION: To avoid eye contact, dust goggles are recommended in areas of high airborne concentrations.

OTHER PROTECTIVE EQUIPMENT: None

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Dry indoor storage.

OTHER PRECAUTIONS: Retain package integrity.

S 1990 SIGNATURE: P.L. Strong, Manager, Product Safety

UNITED STATES BORAX & CHEMICAL CORPORATION . 3075 WILSHIRE BLVD., LOS ANGELES, CA 500 10-1294

Page 5

3800-PM-WSWM0008e 1/2004 Module 2

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Applicant Name: PPL Susquehanna, LLC

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

WASTEWATER TREATMENT TECHNOLOGIES MODULE 2

APPLICA	NT:NAME PPL Susquehanna, LLC	
Outfall Number	Treatment Unit Description	Method for Handling and Disposal of Solid or Liquid Residue Resulting from Treatment (list in sequence)
070	Sedimentation (setting)	Cleanfill
. :	Discharge to Surface Water 2001	N/A estimate attact to the Eg
071	Sedimentation	Landfill, or soil amendment
	Disinfection (chlorination)	N/A
	Dechlorination	N/A
	Discharge to Surface Water	N/A
•		
171	Filtration	Radioactive Waste Landfill
	Ion Exchange	Radioactive Waste Landfill
	Neutralization	N/A
371	Neutralization	N/A
571	Requesting to be eliminated (see attached additional	
	support information for Module 3, Outfall 571)	
072	Oil & Grease Removal	Recycled
	Discharge to Surface Water	N/A
073	Oil & Grease Removal	Recycled
	Discharge to Surface Water	N/A
074	Oil & Grease Removal	Recycled
	Discharge to Surface Water	Ν/Α
075	Sedimentation (Settling)	Cleanfill
	Discharge to Surface Water	N/A

3800-PM-WSWM0008e 1/2004 Module 2

Applicant Name: PPL Susquehanna, LLC

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079	Grinding	NA
	Screening	Landfill
	Equalization	NA
	Activated Sludge	Aerobic Digestion / Landfill
	Neutralization	N/A
	Disinfection (Chlorine)	N/A
	Dechlorination	N/A
	Discharge to Surface Water	N/A
080	Sedimentation (Settling)	Cleanfill
	Discharge to Surface Water	N/A

3800-PM-WSW Module 3	YM0008f 1/2004				Applicant Name: F Outfall: 070	PPL Susquel	hanna, LLC	
		COMM DEPARTMEN BUREAU OF WATER	ONWEALTH OF P VT OF ENVIRONM SUPPLY AND W	ENNSYLVANIA ENTAL PROTECTI ASTEWATER MAN	ON IAGEMENT	· • • • • • • • • • • • • • • • • • • •		• . •
•	•	SOUR	CES OF WA MODULE	STEWATER E 3	ung n		· · ·	•
Before com	pleting this form, r	read the step-by-	step instructio	ns provided in	Appendix 1.			• •
APPLICANT	FINAME PPL	Susquehanna, LL	<u>.</u> C [`]	•		••• •		
OUTFALLEN	NUMBER 070	S-2 Pond			<i>, ,</i> , , , , , , , , , , , , , , , , ,	·····		
1. Process	Wastewater	N/A	······································					
a. Desc	cribe process and ty	pe of wastewater.	میرمد مراجع موجعه و معرف مرجع	· · · · · · · · · · · ·	· · · ·		· · ·	
b. Prod	luction Rate.		•		<u> </u>		·	
- Refe	rring to the instruction as contributing was							ach
c. Disch	harge Occurs.	hrs/day;			; months/y	/r.	•	
	<u></u>		During w	hich months?				
Repo	ort the discharge rate	e as:	•••	•			•	l
Т	The <u>maximum daily</u> (discharge rate.	·		• .	·	MGD	•
́Т	The monthly average	<u>e</u> discharge rate.			•		MGD	:
. Т	he long-term average	<u>ge</u> discharge rate.	•		. ·		MGD	· •
For b	atch discharges rep	port:	• •		•.	. •		
. N	lumber of decant cy	rcles.			•		Cycles/da	iy
L	ength of each decar	nt cycle.				. ——	MIN.	
A	verage decant discl	harge rate.			······································		GPM	÷
All Other	Wastewater Contr	ributing to this O	utfall N	₩A			<u>. </u>	
a. Descr	ribe the wastewater.	•				•	• ,	
•	•	· · · · · ·			•			
		•					·	
b. Sourc								
	arge Occurs.	hrs/day;	days/wk;	days/yr;	months/yr.			
		hrs/day;	days/wk; During which		months/yr.			
c. Discha					months/yr.			
c. Discha	arge Occurs.	as:			months/yr.		´ MGD	
c. Discha Report	arge Occurs.	eas: lischarge rate.			months/yr.		´ MGD MGD	
c. Discha Report Th Th	arge Occurs t the discharge rate ne <u>maximum daily</u> d) as: lischarge rate. discharge rate.			months/yr.			
c. Discha Report Th Th Th	arge Occurs.) as: lischarge rate. discharge rate. le discharge rate.			months/yr.		MGD	
c. Discha Report Th Th Th For ba	arge Occurs. t the discharge rate ne <u>maximum daily</u> d ne <u>monthly average</u> ne <u>long-term average</u>	e as: lischarge rate. discharge rate. le discharge rate. prt:			months/yr.		MGD	У
c. Discha Report Th Th Th For ba Nu	arge Occurs t the discharge rate ne <u>maximum daily</u> d ne <u>monthly average</u> ne <u>long-term average</u> tch discharges repo	e as: lischarge rate. discharge rate. le discharge rate. ort: cles.			months/yr.		MGD MGD	y

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	0-Ph dule	A-WSWM00081 1/2004 3	Applicant Name: PPL Susquehanna, LLC Outfall: 070
3.	То	tal Process, Miscellaneous Noncontact Cooling, and Sa	nitary Wastewater
	a.	Source(s). Stormwater only	
•	b.	Discharge Occurs hrs/day; days/wk; _	days/yr; months/yr.
		During which	months?
		Report the discharge rate as:	· · · ·
		The maximum daily discharge rate.	MGD .
		The monthly average discharge rate.	MGD
		The long-term average discharge rate.	MGD
4.	Sto	prmwater	
•	Cor	mplete Module 12 or Module 14 for the stormwater contribut	on.

	0-Pi dule	M-WSWM00081 1/2004 3	Applicant Name: PPL Susquehanna, LLC Outfall: 071
		COMMONWEALTH OF PENNSYLVAI DEPARTMENT OF ENVIRONMENTAL PRO BUREAU OF WATER SUPPLY AND WASTEWATER	TECTION
	•	SOURCES OF WASTEWA MODULE 3	
Be	fore	e completing this form, read the step-by-step instructions provid	ed in Appendix 1.
141	19-1	CANISNAME PPL Susquehanna, LLC	the second second second second second second second second second second second second second second second s
10	iş1.,	ALENUMBER 071 Cooling Tower Blowdown	
1.	Pro	ocess Wastewater	
	a.	Describe process and type of wastewater.	
	* 7 8	Cooling Water Blowdown from Circulating Water and Emergency Se Includes ESW Pond overflow to blowdown.	ervice Water (ESW) System operation.
	b.	Production Rate. Continuous Operation	· ·
		Referring to the instructions in Appendix 1 for this question, provide process contributing wastewater to this outfall. The most recent 5 years	the production data as an attachment for each ears of production data must be provided.
	C.	Discharge Occurs. 24 hrs/day; 7 days/wk; 365 days/y	r; <u>12</u> months/yr.
		During which month	hs? All
		Report the discharge rate as:	
		The maximum daily discharge rate. (Based on last	t 3 years) <u>18.31*</u> MGD
		The monthly average discharge rate. (Based on last	t 3 years) <u>12.09*</u> MGD
		The long-term average discharge rate. (Based on last	13 years) <u>12.09*</u> MGD
		For batch discharges report:	
		Number of decant cycles.	Cycles/day
		Length of each decant cycle.	MIN.
		Average decant discharge rate.	GPM
		Other Wastewater Contributing to this Outfall	
4	a.	Describe the wastewater.	
	1	Outfall 171 – Liquid Radwaste Discharge to CT Blowdown, 371 Neutr Water and 571 Circ Water Pumphouse sump return to Circ Water (Or additional Module 3 information, Outfall 571 description).	
i	b. :	Source(s). Volume of Liquid Radwaste discharge 171 to Cooling Tov	wer Blowdown.
C	c.	Discharge Occurs. 0-6 hrs/day; 1-7 days/wk; 60 days/yr; 12	-
		During which months?	All
	1	Report the discharge rate as:	
		The maximum daily discharge rate. (Based on last	• •
		The monthly average discharge rate. (Based on last	
		The long-term average discharge rate. (Based on last	3 years) <u>0.011</u> MGD
	F	For batch discharges report:	
		Number of decant cycles.	Cycles/day

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3800-PM-WSWM0008f 1/2004 Module 3	Applicant Name: PPL Susquehanna, LLC Outfail: 071
Length of each decant cycle.	MIN.
Average decant discharge rate.	GPM
3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wa	/astewater
a. Source(s). Cooling Tower Blowdown, ESW Spray Pond over flow a	and Liquid Radwaste Discharge
b. Discharge Occurs. 24 hrs/day; 7 days/wk; 365 days/yr;	: <u>12</u> months/yr.
During which months?	All
Report the discharge rate as:	
The maximum daily discharge rate.	<u>18.36</u> MGD
The monthly average discharge rate.	<u>12.10</u> MGD
The long-term average discharge rate.	<u>12.10</u> MGD
4. Stormwater	
Complete Module 12 or Module 14 for the stormwater contribution.	

*Includes 3% Emergency Spray Pond overflow. See Module 3 additional Outfall 071 description for details.

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	N-WSWM0008f 1/2004		pplicant Name: PPL Susquehanna, LLC
lodule	COMMON	WEALTH OF PENNSYLVANIA	1994 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
		ES OF WASTEWATER MODULE 3	
	completing this form, read the step-by-ste	ep instructions provided in Ap	ppendix 1.
EDE	CANTINAME PPL Susquehanna, LLC	·	
UTF	ALL NUMBER 072 S&A Sump	· · · · · · · · · · · · · · · · · · ·	
Pro	ocess Wastewater N/A	· · · · · · · · · · · · · · · · · · ·	
<u> </u>	Describe process and type of wastewater.	··· ··· ··· ··· ··· ··· ··· ··· ··· ··	
b.	Production Rate. Referring to the instructions in Appendix 1 for process contributing wastewater to this outfal	r this question, provide the prod	
C.	Discharge Occurs hrs/day;	days/wk; days/yr;	months/yr.
		During which months?	
	Report the discharge rate as:		
	The maximum daily discharge rate.		MGD
	The monthly average discharge rate.		MGD
	The long-term average discharge rate.	· .	MGD
	For batch discharges report:	······	
	Number of decant cycles.		Cycles/day
	Length of each decant cycle.		MIN.
•	Average decant discharge rate.		GPM
All	Other Wastewater Contributing to this Out	iali	
a.	Describe the wastewater.		
,	Miscellaneous stormwater collected around E		l Generator oil unloading area and
	equipment and S&A oil storage area berm do		
	equipment and S&A oil storage area berm dou 		
b. 3	Source(s). Containments around oil containin Discharge Occurs, <u>1</u> hrs/day; <u>-</u> days/wk;	ng equipment.	
b. 5	Source(s). Containments around oil containin Discharge Occurs, <u>1</u> hrs/day; <u>-</u> days/wk;	ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr.	
b. 5	Source(s). Containments around oil containin Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; [ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr.) <u>0.020</u> MGD
b. 5	Source(s). Containments around oil containin Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; E Report the discharge rate as:	ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr. During which months? All	
b. 5	Source(s). Containments around oil containin Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; E Report the discharge rate as: The <u>maximum daily</u> discharge rate. The <u>monthly average</u> discharge rate.	ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr. During which months? All (Based on last 3 years) (Based on last 3 years)	<u>0.011</u> MGD
b. 5 c. 1	Source(s). Containments around oil containin Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; E Report the discharge rate as: The <u>maximum daily</u> discharge rate. The <u>monthly average</u> discharge rate. The <u>long-term average</u> discharge rate.	ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr. During which months? All (Based on last 3 years)	<u>0.011</u> MGD
b. 5 c. 1	Source(s). Containments around oil containin Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; E Report the discharge rate as: The <u>maximum daily</u> discharge rate. The <u>monthly average</u> discharge rate.	ng equipment. <u>33_</u> days/yr; <u>12</u> months/yr. During which months? All (Based on last 3 years) (Based on last 3 years)	<u>0.011</u> MGD

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	00-PI Idule	M-WSWM0008f 1/2004 Applicant Name: PP 3 Outfall: 072	L Susquehar	nna, LLC	;
		Average decant discharge rate.	. <u></u>	GPM	· · [
3.	То	otal Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater		, ,	
	a.	Source(s). S&A Sump			
	b.	Discharge Occurs. <u>1</u> hrs/day; <u>-</u> days/wk; <u>33</u> days/yr; <u>12</u> months/yr	•		
· .		During which months? All			
		Report the discharge rate as:	:		
		The <u>maximum daily</u> discharge rate.	<u>0.020</u>	MGD	
		The monthly average discharge rate.	<u>0.011</u> I	MGD	:
		The long-term average discharge rate.	<u>0.011</u> M	MGD	
4.	Sto	ormwater	,		·]
	Cor	mplete Module 12 or Module 14 for the stormwater contribution.			

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3800 Mod		I-WSWM0008f 1/2004 3	Applicant Name: PPL Susquehanna, LLC Outfall: 073	
		CÓMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECT BUREAU OF WATER SUPPLY AND WASTEWATER MA		•
'		SOURCES OF WASTEWATER MODULE 3		•
Pat		completing this form, read the step-by-step instructions provided i	Amoundle d.	<u>.</u>
		Completing this form, read the step-by-step instructions provided in CANLINAME PPL Susquehanna, LLC		
				,
		ULENUMBER 073 U-1 Transformer Sump		
	_	ocess Wastewater N/A		
8	a.	Describe process and type of wastewater.	• • • • • • • • • • • • • • • • • • •	•
	b.	Production Rate.		
		Referring to the instructions in Appendix 1 for this question, provide the process contributing wastewater to this outfall. The most recent 5 years		ach
C	с.	Discharge Occurs hrs/day; days/wk; days/y	/r; months/yr.	
		During which months?		
		Report the discharge rate as:	··· ···	
I		The maximum daily discharge rate.	MGD	
		The monthly average discharge rate.	MGD	
		The long-term average discharge rate.	MGD	
<u> </u>		For batch discharges report:		
•		Number of decant cycles.	Cycles/da	ay
		Length of each decant cycle.	MIN.	
•		Average decant discharge rate.	GPM	
2. A		Other Wastewater Contributing to this Outfall		
a		Describe the wastewater.		
		Miscellaneous stormwater collected around U-1 Transformer(s), Lube oil preakers downsteam of O&G separator.	storage tank berm, and oil filled circuit	
b.	•	Source(s). Containments around oil containing equipment.		
c.	•	Discharge Occurs. 1_hrs/day; - days/wk; 18_days/yr; 12 months	s/yr.	
		During which months? A		
	i	Report the discharge rate as:	· · · · · · · · · · · · · · · · · · ·	
		The <u>maximum daily</u> discharge rate. (Based on last 3 ye	ears) <u>0.032</u> MGD	•
		The monthly average discharge rate. (Based on last 3 ye	ears) <u>0.008</u> MGD	
		The long-term average discharge rate. (Based on last 3 ye	ears) <u>0.008</u> MGD	
	1	or batch discharges report:	<u></u>	
		Number of decant cycles.	Cycles/da	iy
			· · · · · · · · · · · · · · · · · · ·	-
•		Length of each decant cycle.	MIN.	

	3800-PM-WSWM0008f1/2004Applicant Name: PPLModule 3Outfall:073			Susquehanna, LLC				
		Average decant discharge rate.	• • •	· · ·		• •		GPM
3.	То	tal Process, Miscellaneous Noncontact Co	oling, and Sa	nitary Wastew	ater	• •		
	a.	Source(s). U-1 Transformer Sump		and a look of the second				
	b.	Discharge Occurs1_ hrs/day;	days/wk;	<u>18</u> days/yr;	12	_months/yr.		
•			During which	months?	All	_		
		Report the discharge rate as:					, ۰	
		The maximum daily discharge rate.		· 1			<u>0.032</u>	MGD
		The monthly average discharge rate.					<u>0.008</u>	MGD
		. The long-term average discharge rate.					<u>0.008</u>	MGD
4.	Sto	ormwater						<u> </u>
	Cor	mplete Module 12 or Module 14 for the stormw	vater contributi	ion.				

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Length of each decant cycle. MIN. Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall GPM a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. C. Discharge Occurs. 1_ hrs/day; _: days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. The monthly average discharge rate. (Based on last 3 years) 0.016 The long-term average discharge rate. (Based on last 3 years) 0.007 For batch discharges report: Number of decant cycles. Cycles. Number of decant cycle. MIN.	3800-PM-WSWM0008f 1/2004 Module 3	Applicant Name: PPL Susquehanna, LLC Outfail: 074
MODULE 3 Before completing this form, read the step-by-step instructions provided in Appendix 1. APPL Susquehanna, LLC Order Completing this form, read the step-by-step instructions provided in Appendix 1. APPL Susquehanna, LLC Order Completing to the instructions in Appendix 1 for this question, provide the production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data must be provided c. Discharge Occurs. hrs/day; days/yr; months/yr. During which months? MGD Report the discharge rate as: MGD The maximum daily discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: MGD Number of decant cycles. Cycles Length of each decant cycle. MIN. Average decant discharge rate. GPM 4. All Other Wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of QAG separator. b. Source(s). Containments around cil containing equipment. C. Discharge Occurs. 1_ hrs/day; _: days/wk; 22 days/yr; 12 months/yr. Length the discharge rate as: The maximum daily discharge	DEPARTMENT OF ENVIRONMENTAL F	PROTECTION
And Section 1 PPL Susquehanna, LLC Ord U-2 Transformer Sump 1. Process Wastewater N/A a. Describe process and type of wastewater,		/ATER
074 U-2 Transformer Sump 1. Process Wastewater N/A a. Describe process and type of wastewater. b. Production Rate: Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment fo process contributing wastewater to this outfall. The most recent 5 years of production data must be provide: c. Discharge Occurs. hrs/day; days/wi; days/wi; months/yr. During which months? Report the discharge rate as: MGD The instructing wastewater page discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: Number of decant cycles. Cycles Length of each decant cycle. MINI. Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge rate as: The maximum daily discharge rate. (Based on last 3 years) 0.015 MG	Before completing this form, read the step-by-step instructions pro	vided in Appendix 1.
1. Process Wastewater N/A a. Describe process and type of wastewater. b. Production Rate: Referring to the Instructions in Appendix 1 for this question, provide the production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data must be provide: c. Discharge Occurs.	APPUCANTINAME PPL Susquehanna, LLC	and the second second second second
1. Process Westewater NA a. Describe process and type of wastewater. b. Production Rate. Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data must be provide: c. Discharge Occurs.	OUTFALLNUMBER 074 U-2 Transformer Sump	 A state of the sta
b. Production Rate. Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment fo process contributing wastewater to this outfall. The most recent 5 years of production data must be provide c. Discharge Occurs. hrs/day; days/wk; days/yr; months/yr. During which months? Report the discharge rate as: MGD The maximum daily discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: Number of decant cycles. Cycles Length of each decant cycle. MIN. Average decant discharge rate. GPM 2. All Other Wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam o Q&G separator. b. Source(s). Containments around cli containing equipment. Ling which months? c. Discharge Occurs. 1 hrs/day; _ days/wk; <u>22</u> days/yr; <u>12</u> months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. The maximum daily discharge rate. (Based on last 3 years) <u>0.016</u> MGD The instructions are obscharge rate. (Based on last 3 years) <u>0.007</u> MGD The monthly average discharge rate.	1. Process Wastewater N/A	
b. Production Rate. Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment fo process contributing wastewater to this outfall. The most recent 5 years of production data must be provide c. Discharge Occurs. hrs/day; days/wk; days/yr; months/yr. During which months? Report the discharge rate as: MGD The maximum daily discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: MGD Number of decant cycles. Cycles Length of each decant cycle. MIN. Average decant discharge rate. GPM 2. All Other Wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam o Q&G separator. b. Source(s). Containments around cil containing equipment. L c. Discharge Occurs. 1 hrs/day; _ days/wk; <u>22</u> days/yr; <u>12</u> months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The ingnitum average discharge rate. (Based on last 3 years) 0.007 For batch dischar	a. Describe process and type of wastewater.	
Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data must be provided on process contributing wastewater to this outfall. The most recent 5 years of production data must be provided on the productin discharge rate. (Based on last 3 years) 0.0016 MGD The inonthiv a		`
Referring to the instructions in Appendix 1 for this question, provide the production data as an attachment for process contributing wastewater to this outfall. The most recent 5 years of production data must be provided on process contributing wastewater to this outfall. The most recent 5 years of production data must be provided on the productin discharge rate. (Based on last 3 years) 0.0016 MGD The inonthiv a	b. Production Bate.	
During which months? Report the discharge rate as: The maximum daily discharge rate. MGD The monthly average discharge rate. MGD The long-term average discharge rate. Number of decant cycles. Length of each decant cycle. Average decant discharge rate. Average decant discharge rate. QFM 2. All Other Wastewater Contributing to this Outfall a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge Occurs. 1_hrs/day; _days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD		
Report the discharge rate as:	c. Discharge Occurs hrs/day; days/wk;	days/yr; months/yr.
The maximum daily discharge rate. MGD The monthly average discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: MGD Number of decant cycles. MIN. Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall GPM a. Describe the wastewater. GPM Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam oO&G separator. Discharge curves. b. Source(s). Containments around cil containing equipment. During which months? All Report the discharge rate as: During which months? All Report the discharge rate as:	During which m	onths?
The monthly average discharge rate. MGD The long-term average discharge rate. MGD For batch discharges report: MGD Number of decant cycles. Cyclea Length of each decant cycle. MIN. Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall GPM a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. C. Discharge Occurs. 1_ hrs/day; _: days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. The monthly average discharge rate. (Based on last 3 years) 0.0016 The long-term average discharge rate. (Based on last 3 years) 0.007 For batch discharges report: Number of decant cycles. Cycles. Length of each decant cycle. MIN.	Report the discharge rate as:	· · · ·
The long-term average discharge rate. MGD For batch discharges report:	The maximum daily discharge rate.	MGD
For batch discharges report:	The monthly average discharge rate.	MGD
Number of decant cycles.	The long-term average discharge rate.	MGD
Length of each decant cycle. MIN. Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall GPM a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cli containing equipment.	For batch discharges report:	
Average decant discharge rate. GPM 2. All Other Wastewater Contributing to this Outfall GPM a. Describe the wastewater. Generation Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. Generation b. Source(s). Containments around cil containing equipment. Generation c. Discharge Occurs. 1 hrs/day; _: days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: Generation The maximum daily discharge rate. (Based on last 3 years) 0.0016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Cycles. Cycles. Number of decant cycles. Cycles. MIN.	Number of decant cycles.	Cycles/da
2. All Other Wastewater Contributing to this Outfall a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam o O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge Occurs. 1_ hrs/day; _ days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Number of decant cycles. Length of each decant cycle. -1-	Length of each decant cycle.	MIN.
a. Describe the wastewater. Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge Occurs. 1_ hrs/day; _ days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum dally discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Number of decant cycles.	Average decant discharge rate.	GPM
Miscellaneous stormwater collected around U-2 Transformer(s), and lube oil storage tank berm downsteam of O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge Occurs. 1_ hrs/day; _days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum dally discharge rate. (Based on last 3 years) 0.016 MGD 0.007 MGD The monthly average discharge rate. (Based on last 3 years) The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Number of decant cycles. Cycles. Length of each decant cycle. MIN.	2. All Other Wastewater Contributing to this Outfall	
O&G separator. b. Source(s). Containments around cil containing equipment. c. Discharge Occurs. 1_ hrs/day; _ days/wk; 22 days/yr; 12 months/yr. During which months? All Report the discharge rate as: The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report:	a. Describe the wastewater.	
c. Discharge Occurs. <u>1</u> hrs/day; <u>:</u> days/wk; <u>22</u> days/yr; <u>12</u> months/yr. During which months? All Report the discharge rate as: The <u>maximum daily</u> discharge rate. (Based on last 3 years) <u>0.016</u> MGD The <u>monthly average</u> discharge rate. (Based on last 3 years) <u>0.007</u> MGD The <u>long-term average</u> discharge rate. (Based on last 3 years) <u>0.007</u> MGD For batch discharges report: Number of decant cycles Cycles. Length of each decant cycle MIN.		nd lube oil storage tank berm downsteam of
c. Discharge Occurs. <u>1</u> hrs/day; <u>:</u> days/wk; <u>22</u> days/yr; <u>12</u> months/yr. During which months? All Report the discharge rate as: The <u>maximum daily</u> discharge rate. (Based on last 3 years) <u>0.016</u> MGD The <u>monthly average</u> discharge rate. (Based on last 3 years) <u>0.007</u> MGD The <u>long-term average</u> discharge rate. (Based on last 3 years) <u>0.007</u> MGD For batch discharges report: Number of decant cycles Cycles. Length of each decant cycle MIN.	b. Source(s). Containments around cil containing equipment.	
During which months? All Report the discharge rate as: The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Number of decant cycles. Cycles. Length of each decant cycle. MIN.		months/vr
The maximum daily discharge rate. (Based on last 3 years) 0.016 MGD The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Number of decant cycles. Cycles. Length of each decant cycle. MIN.		•
The monthly average discharge rate. (Based on last 3 years) 0.007 MGD The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report:	Report the discharge rate as:	
The long-term average discharge rate. (Based on last 3 years) 0.007 MGD For batch discharges report: Cycles. Number of decant cycles. Cycles. Length of each decant cycle. MIN.	The <u>maximum daily</u> discharge rate. (Based on l	ast 3 years) <u>0.016</u> MGD
For batch discharges report: Number of decant cycles Cycles. Length of each decant cycle MIN.	The monthly average discharge rate. (Based on la	ast 3 years) <u>0.007</u> MGD
Number of decant cycles Cycles Cycles MIN.	The long-term average discharge rate. (Based on la	ast 3 years) <u>0.007</u> MGD
Length of each decant cycle MIN.	For batch discharges report:	
- 1 -	Number of decant cycles.	Cycles/day
- 1 ⁻	Length of each decant cycle.	· MIN.
- 1 -		
·	- 1 ²	270

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	00-PI dule		Applicant Name: PPL Outfall: 074	Susquehanna, LLC		
		Average decant discharge rate.			GPM	
3.	To	tal Process, Miscellaneous Noncontact Cooling, and Sanitary Wastew	ater	<u> </u>	·	
	a.	Source(s). U-2 Transformer Sump			•	
	b.	Discharge Occurs. <u>1</u> hrs/day; - days/wk; <u>22</u> days/yr;	12 months/yr.			
		During which months?	All			
		Report the discharge rate as:		• •		
		The maximum daily discharge rate.		<u>0.016</u>	MGD	· · .
		The monthly average discharge rate.		<u>0.007</u>	MGD	:
		The long-term average discharge rate.	· .	<u>0.007</u>	MGD	
4.	Sto	prmwater				
	Cor	nplete Module 12 or Module 14 for the stormwater contribution.			•	

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3800-PM-WSWM00081 1/2004 Module 3	Applicant Name: PPL Susquehanna, LLC Outfail: 075
COMMONWEALTH OF PENNSYLVAN DEPARTMENT OF ENVIRONMENTAL PROT BUREAU OF WATER SUPPLY AND WASTEWATER	ECTION
SOURCES OF WASTEWAT MODULE 3	ER en en en en en en en en en en en en en
Before completing this form, read the step-by-step instructions provide	ed in Appendix 1.
APPLICANTINAME PPL Susquehanna, LLC	Entry and the second second second
OUTFALL NUMBER 075 Peach Stand Pond	
1. Process Wastewater N/A	
a. Describe process and type of wastewater.	
	e en la companya de la companya de la companya de la companya de la companya de la companya de la companya de l La companya de la comp
b. Production Rate.	
Referring to the instructions in Appendix 1 for this question, provide the process contributing wastewater to this outfall. The most recent 5 years	
c. Discharge Occurs hrs/day; days/wk; day	
During which month	IS?
Report the discharge rate as:	
The maximum daily discharge rate.	MGD
The monthly average discharge rate.	MGD
The long-term average discharge rate.	MGD
For batch discharges report:	
Number of decant cycles.	Cycles/day
Length of each decant cycle.	MIN.
Average decant discharge rate.	GPM
2. All Other Wastewater Contributing to this Outfall N/A	
a. Describe the wastewater.	
b. Source(s).	
c. Discharge Occurs hrs/day; days/wk; days/yr	; months/yr.
During which months?	
Report the discharge rate as:	· ·
The maximum daily discharge rate.	MGD
The monthly average discharge rate.	MGD
The long-term average discharge rate.	MGD
For batch discharges report:	
Number of decant cycles.	Cycles/day
Length of each decant cycle.	MIN.
Average decant discharge rate.	GPM

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3. 1	otal Process, Miscellaneous Noncontact Cooling, and S	anitary Wastewater
a	. Source(s). Stormwater only	
b	. Discharge Occurs hrs/day; days/wk;	days/yr; months/yr.
	During which	n months?
	Report the discharge rate as:	-
•	The maximum daily discharge rate.	MG
	The monthly average discharge rate.	MG
	The long-term average discharge rate.	

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3800-P Module	7-WSWM0008f 1/2004 Applicant Name: PPL 3 Outfail: 079	. Susquenanna, LLC
	COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT	· · · · · · · · · · · · · · · · · · ·
· · . ~··	SOURCES OF WASTEWATER MODULE 3	
Befor	completing this form, read the step-by-step instructions provided in Appendix 1.	1.49. 4 . **
APPL	CANT NAME PPL Susquehanna, LLC	
OUTF	ALL NUMBER 12 079 Sewage Treatment Plant	
1. Pr	ocess Wastewater N/A	· · · · · · · · · · · · · · · · · · ·
а.	Describe process and type of wastewater.	
· .		• ** ** **
b.	Production Rate.	
	Referring to the instructions in Appendix 1 for this question, provide the production data as a process contributing wastewater to this outfall. The most recent 5 years of production data n	
C.	Discharge Occurs hrs/day; days/wk; days/yr; months/yr.	·
	During which months?	
	Report the discharge rate as:	B
	The <u>maximum daily</u> discharge rate.	MGD
	The monthly average discharge rate.	MGD
	The long-term average discharge rate.	<u> </u>
	For batch discharges report:	
	Number of decant cycles.	Cycles/c
	Length of each decant cycle.	MIN.
	Average decant discharge rate.	GPM
2. All	Other Wastewater Contributing to this Outfall	
a.	Describe the wastewater.	
	Sanitary wastewater effluent from extended aeration sewage treatment plant	
b.	Source(s). Gravity Collection System and Grinder Pump Stations	
C.	Discharge Occurs. <u>24</u> hrs/day; <u>7</u> days/wk; <u>365</u> days/yr; <u>12</u> months/yr.	
	During which months? All	
	Report the discharge rate as:	
	The maximum daily discharge rate. (Based on last 3 years)	<u>0.069</u> MGD
	The monthly average discharge rate. (Based on last 3 years)	<u>0.025</u> MGD
	The long-term average discharge rate. (Based on last 3 years)	<u>0.025</u> MGD
	For batch discharges report:	
	Number of decant cycles.	Cycles/c
	Length of each decant cycle.	MIN.
		GPM

	3800-PM-WSWM0008f 1/2004 Applicant Name: PPL Susquehanna, LLC Module 3 Outfall: 079						
3.	То	tal Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater	<u> </u>				
	a.	Source(s). Sewage Treatment Plant Effluent					
	b.	Discharge Occurs24_ hrs/day; _7_ days/wk; 365_ days/yr; 12_ months/yr.					
		During which months? All					
		Report the discharge rate as:	:				
		The maximum daily discharge rate. 0.069 MGD					
		The monthly average discharge rate.					
		The long-term average discharge rate. 0.025 MGD					
4.	Sto	rmwater					
	Cor	nplete Module 12 or Module 14 for the stormwater contribution.					

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3800- Modu	-PM-WSWM00081 1/2004 ule 3	. * ••			oplicant Name: PP utfall: 080	L Susqueh	ianna, LLC
				ITAL PROTECTION		•••	• •
		SOUR	CES OF WAS MODULE				• 7
Befo	ore completing this form,	read the step-by-s	tep instruction	s provided in A	ppendix 1.	···	· · ·
	and an international state and the state of	L Susquehanna, LL				· ·	
_		<u></u>		- 1			
					· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
	Process Wastewater	N/A				· ·	
• 8	a. Describe process and t	ype of wastewater.		, 	n n Maria an an	\$ • •	
b	p. Production Rate.		···· · · · · · · · · · · · · · · · · ·		· ·		
	Referring to the instruct process contributing wa	tions in Appendix 1 f astewater to this out	ior this question, iall. The most re	provide the proc cent 5 years of p	luction data as a production data n	n attachr nust be p	nent for e rovided.
c	. Discharge Occurs.	hrs/day;	days/wk;	days/yr;	months/yr.		
			During wh	ich months?			
	Report the discharge ra	ite as:			• •		
	The <u>maximum daily</u>	<u>ı</u> discharge rate.	•			 .	MGD
	The monthly average	<u>19</u> discharge rate.					MGD
	The long-term aven	age discharge rate.		· · · · · · · · · · · · · · · · · · ·	•		MGD
	For batch discharges re	port:				•	
	Number of decant of	ycles.					Cycles/
	Length of each deca	ant cycle.					MIN.
	Average decant disc	charge rate.		•		_ <u></u>	GPM
. A	II Other Wastewater Con	tributing to this Ou	utfall N/	A			
a.	. Describe the wastewate	ir.				•	
				. ·			
b.	. Source(s).	<u></u>	<u> </u>	- <u></u>			
c.	Discharge Occurs.	hrs/day;	days/wk;	days/yr;	months/yr.		_
			During which m	ionths?			
		·····					
<u> </u>	Report the discharge rat	e as:	1				
1	Report the discharge rat The <u>maximum daily</u>	•	,				MGD
<u> </u>		discharge rate.	,				MGD MGD
1	The maximum daily	discharge rate. <u>e</u> discharge rate.	• • •			·	
<u> </u>	The <u>maximum daily</u> The <u>monthly average</u>	discharge rate. <u>e</u> discharge rate. <u>ge</u> discharge rate.				·	MGD
	The <u>maximum daily</u> The <u>monthly average</u> The <u>long-term avera</u>	discharge rate. <u>e</u> discharge rate. <u>ge</u> discharge rate. port:					MGD MGD
	The <u>maximum daily</u> The <u>monthly average</u> The <u>long-term avera</u> For batch discharges rep	discharge rate. <u>e</u> discharge rate. <u>ge</u> discharge rate. port: ycles.	,				MGD

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3.	То	otal Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewa	ater	•	
	a.	Source(s). Stormwater only		••••••	
	b.	Discharge Occurs hrs/day; days/wk; days/yr; _	months/yr.		
		During which months?			
		Report the discharge rate as:			
		The maximum daily discharge rate.		MGD	
		The monthly average discharge rate.	_	MGD	
		The long-term average discharge rate.		MGD	

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ADDITIONAL OUTFALL DESCRIPTIONS

070 - The S-2 Pond, located on the South side of the Susquehanna SES site, is a storm water runoff outfall (SWRO). This SWRO outfall may contain occasional discharges of clarified water, demineralized water, well water, fire protection water, and other miscellaneous water. These discharges may also contain small amounts of chlorine, which will dissipate upon mixing with storm water in the pond, before the discharge reaches Lake Took-a-while. Due to the similarity of this outfall and Outfalls 075 and 080, only Outfall 075 was sampled for this NPDES permit application.

071 - Cooling Tower Blowdown includes input from the Unit 1 and Unit 2 Cooling Towers, internal discharges, and Emergency Spray Pond (Spray Pond) overflow, and other miscellaneous water. The Cooling Towers and Spray Pond contain river water used for cooling station main condensers and heat exchangers. Spray Pond discharge is based on pond level, and is dependent on make-up to the pond and rainfall. Assuming an estimated Spray Pond discharge of 250 gpm (0.36 MGD) and an average two-unit Cooling Tower discharge of 8,333 gpm (12-MGD), then the pond discharge adds only an additional 3.0% to the station blowdown. This amount however, is not captured in the blowdown flow recorders located upstream of the Spray Pond. Therefore, it may be more accurate to revise the permit to require an <u>Estimated Flow</u> and not <u>Recording Instrumentation</u> for Outfall 071. We will continue to provide recorded readings from blowdown excluding the additional 250 gpm from the Spray Pond. Turbulence and river debris in the blowdown line downstream of the Spray Pond

Evaporative losses in the Cooling Towers generally result in the cooling water being cycled 3 to 5 times the concentration of river water. Cooling Tower Basins each contain approximately 7 million gallons of water and the Spray Pond 25 million gallons.

In order to reduce fouling and corrosion in the Service Water and Circulating Water Systems, PPL utilizes a chemical treatment program. Chemicals included in present and proposed treatment are listed in Module 1 / Item #7 / Section a., "Information and Analysis of Effluent Quality," in this permit renewal application.

By definition closed cooling systems are not routinely discharged to the environment. When maintenance is performed on these systems, batch discharges can be directed to the Cooling Tower blowdown (Outfall 071), Sewage Treatment Plant (Outfall 079), or other storm water outfall as described in this permit application. The following Table 1, lists Station Closed Cooling Systems and volumes. TABLE 1 CLOSED COOLING SYSTEMS

	SED COOLING STST	SYSTEM
SYSTEMS	NO. OF SYSTEMS	VOLUME (gal)
Units 1 & 2 Reactor Building Closed Cooling Water	2	4,750
Units 1 & 2 Turbine Building Closed Cooling Water	2	1,130
Units 1 & 2 Common Gaseous Radwaste Recombiner Closed Cooling Water	3	3,080
Units 1 & 2 Reactor Building Chilled Water	2	4,750
Units 1 & 2 Turbine Building Chilled Water	2	6,200
Temporary Drywell Chiller	• •	550
Learning Center Closed Cooling Water Loop	1	650
Control Structure Chilled Water	1	1,200
Radwaste Building Chilled Water	1	860
A-D Emergency Diesel Generator Jacket Cooling Water	4	710
E Emergency Diesel Generator Jacket Cooling Water	1	1,500

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To date, no Zebra mussels or Asiatic clams have been found in the river near the Susquehanna SES. Zebra mussel young were observed during years past in the Johnson City, New York area, about 150 miles upriver. Asiatic clam adults have been observed in the river near Bloomsburg, Pennsylvania, approximately 18 miles downriver from Susquehanna SES. In 2001, a single Asiatic clam was collected from a heat exchanger within the plant, however since that time no additional Asiatic clams have been found.

If such species do eventually impact the plant, PPL plans to utilize a non-oxidizing biocide listed in Module 1, Item #7, to periodically eliminate these mollusks from the plant intake piping as well as the Cooling Tower and Spray Pond. This material will be added over a 12-24 hr. period at a frequency of 2-4 times or as needed annually. This biocide will be detoxified with bentonite clay, which will be continuously added to the Cooling Tower Blowdown Line during treatment. The bentonite clay absorbs the biocide, deactivating the biocide. Extensive studies of the biocide and its detoxified by-products have been conducted by the vendor and MSDSs for these products are attached as additional information to Module 1.

During refueling outages Cooling Tower basin sediment is removed and dewatered by belt filter press. A flocculant is used to enhance the dewatering process. The filtrate from the dewatering process is discharged to the Cooling tower blowdown line. The dewatered sediment is currently transported offsite for disposal.

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PPL Susquehanna, LLC has received PaDEP approval to dry Cooling and Spray Pond sediment onsite as a coproduct. This coproduct can be used to control site erosion and/or support warm season grasses on PPL lands in the vicinity of the Susquehanna SES. Runoff from the sediment may enter the SWROs, however, this additional runoff would be negligible compared to present site runoff volume. To date we have not utilized this option to dry cooling tower and spray pond sediment.

Included in the Cooling Tower Blowdown is miscellaneous wastewater such as tanker discharges of rainwater from the Condensate Storage Tank bermed areas, water from clean system drains in the Radiological Controlled Area (RCA) and peripheral facilities associated with the station and also mop water collections near the RCA exits 100 - 300 gal/week.

During periodical maintenance (or malfunctions) at the River Intake Structure screen wash water may be returned temporarily to the river from the Debris Handling Pit. This occurs infrequency and is recorded in station operating logs, work orders and tracking records as appropriate. Previous occurrences have been evaluated as non-impacting, (i.e. no detrimental chemicals are added at the Intake Structure) and were reported to the PaDEP in DMR cover letters for information only. For consistency these occurrences will be noted in our operating records and the PaDEP notified only if deleterious affects on the environment are suspected in accordance with appropriate sections of the NPDES Permit. During operation of the Clarified Water System, which uses river water makeup, (typically used only during outages to augment well water use) there is a minimum flow of clarified water (approximately 150 gpm) back to the circulating water system to maintain consistent clarifier operation. This clarified water has no impact of circ water as min flow or as pumped out of the clarified during shut down. It is clean water typically <2.0 NTUs. Solids removed as underflow during clarifier operation are collected and removed for offsite disposal. Filter backwash water is returned/recycled to the clarifier inlet for treatment. Following clarifier shutdown low volume waste is pumped to the neutralization basin (Outfall 371) for processing prior to discharge.

INTERNAL OUTFALLS

171 - Liquid Radwaste discharge includes leakage and wastewater from the radiologically controlled area and the in plant chem lab. Prior to combining with Outfall 071, this wastewater is passed through various treatment processes to reduce the concentration of radioactive materials. Approximately 90% of liquid radwaste are treated by one of two processes: filtration followed by ion-exchange demineralization, or ion-exchange demineralization followed by microstraining.

Approximately 10% of liquid radwaste is processed through the laundry drain system, which receives wastewater from equipment washdown stations and personnel decontamination facilities in the radiologically controlled area. PPL-supplied clothing is sent to an outside contractor for cleaning. Miscellaneous wastes discharged through this system also include service water leakage, mop water from cleaning, and leakage from various pumps and valves. This water passes through microstraining filters prior to sampling for discharge.

271 - Waste Filter Bypass was previously eliminated from this NPDES permit since it is no longer in operation.

371 - Neutralization Basin internal discharge includes inputs from the demineralizer rinse water, chemical waste inputs from Circulating Water Pumphouse Building equipment and floor drains and clarifier sludge holdup sump decant water. There are two neutralization basins each with a capacity of approximately 18,000 gallons. The basins are used alternately and the contents are air sparged, recirculated, and sampled prior to being directed to the suction side of the circulating water pumps.

471 - Waste Filter was previously eliminated from this NPDES permit since it is no longer in operation.

571 - Request elimination of the Circulating Water Pumphouse Building sump outfall from the NPDES permit since it receives only circulating water and seal water (well water) from circ water/service water pump operation and is not impacted by station operation. This sump automatically pumps to the circulating water system suction and is correctly included within the limits of the cooling tower system operation. Historic monitoring has only documented elevated solids during river water makeup turbidity excursions during periods of high river solids (reference attached August 2003 DMR Letter PLE-0023359 dated September 16, 2003). It does not meet the definition of Low Volume Waste; it is miscellaneous cooling water that should not require monitoring.

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072 - The Service and Administration (S&A) Sump receives stormwater from the emergency start-up transformer bermed areas, the diesel generator oil unloading areas and equipment, and S&A Oil Storage bermed area. The sump contains two cells, each with approximately 10,000-gallon capacity. An oil and grease separator is provided upstream of the sump to remove any fuel or transformer oil leakage. Request reduction in the monitoring frequency of this outfall to be consistent (currently quarterly) with outfalls 073 and 074 below. Adequate controls, treatment, and visual confirmation are in place. Historical monitoring at increased frequency for a long period of time has consistently shown minimal oil & grease and total suspended solids and has not indicated any challenges to the monitored parameters.

073 - Unit 1 Transformer Water Sump collects stormwater from the transformers, turbine lube oil, and oil circuit breaker bermed areas. This sump has two cells of approximately 8,100 gallons each. The storm water collected in this sump passes through an oil and grease separator prior to entering the sump and is visibly inspected prior to discharge.

074 - Unit 2 Transformer Water sump is similar to Outfall 073. It collects stormwater from the Unit 2 transformers and lube oil storage tank berm. Due to the similarity between these outfalls only Outfall 073 was sampled to represent this discharge for the NPDES permit renewal application.

075 - The Peach Stand Pond is a SWRO that collects and conveys runoff from North drainage area including site sumps and buildings. This outfall may contain occasional discharges of clarified water, demineralized water, well water, fire protection water, and other miscellaneous water. These discharges may contain small amounts of chlorine, which will dissipate upon mixing with storm water before entering Lake Took-a-while. Discharge from this outfall goes into Lake Took-a-while located east of US Route 11. Because this outfall and Outfalls 070 and 080 are similar, only this outfall was sampled for this NPDES permit renewal application.

- The Sewage Treatment Plant (STP) is designed to treat 80,000 gallons per day of sanitary wastes from the gravity collection system onsite and from grinder pump stations at the Learning Center, Riverlands Recreation Area, Environmental Lab, West Building, and Vehicle Maintenance Garage. In certain circumstances discharges from various sumps and drains may be routed to the Sewage Treatment Plant to meet NPDES permit limits. Sanitary wastes may contain small amounts of miscellaneous waste water, cleaning agents, and other chemicals. Material Safety Data Sheets for these chemicals recommend treatment at STPs prior to discharge (Susquehanna River).

080 - The C-1 Pond is a SWRO outfall located in the Central Drainage Area just East of the station's protected area. This outfall may contain occasional discharges of clarified water, demineralized water, well water, fire protection water, and other miscellaneous water. These discharges may contain small amounts of chlorine, which will dissipate upon mixing with storm water before entering Lake Took-a-while. Due to the similarity of this outfall and outfalls 070 and 075, only Outfall 075 was sampled for this permit application.



September 16, 2003

Ms. Kate Crowley Water Quality Regional Manager Bureau of Water Quality Management Pennsylvania Department of Environmental Protection Two Public Square Wilkes-Barre, PA 18711-0790

SUSQUEHANNA STEAM ELECTRIC STATION DISCHARGE MONITORING REPORT – AUGUST 2003 NPDES PERMIT NO. PA 0047325 PLE – 0023359

Dear Ms. Crowley:

Pursuant to Part A,3.b.(1) of NPDES Permit No. PA 00477325, enclosed is the Susquehanna Steam Electric Station (SES) Discharge Monitoring Report (DMR) for August. Also enclosed is the Monthly Facility Report Form (01-112).

On August 13, 2003 a total suspended solids excursion (191.1 mg/L) occurred at the circulating water pumphouse sump (internal outfall 571) due to elevated Susquehanna River turbidity from significant rainfall events. Although there are no solids limits on circulating water (cooling water) a given amount of circulating water typically passes through the circulating water pump seals contributing to sump solids levels whenever river solids are elevated. Additional sump samples collected by the end of the month resulted in the monthly average permit limit for this internal outfall being met.

If you have any questions, please call Curt Saxton (570) 542-1879 or Jerrold McCormick at (570) 542-3014.

Respectfully yours,

David J. Morgan

Sr. Staff Engineer/Scientist

CHS/raa

Enclosure 1 – August 2003 DMR (8 pages) Enclosure 2 – Monthly Facility Report Form (1 page)

Copy to: Ms. N. Green, EPA Region III

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38001 'SWN	[[[[Applica	nt Name: PPL Sus	 quehanna, LLC	
	В		WEALTH OF PENNSY OF ENVIRONMENTAL JPPLY AND WASTEW	PROTECTION	r ·			
	ANA	LYSIS RESULT	S TABLE POL MODULE 4	LUTANT GRO	UP <u>1</u>			
Before completing this form, read	the step-by-step ins	ructions provided i	n Appendix 1.		•:			
APPLICANTINAMET	iehanna, LLC		per et end	n i strik	. •			
Outfall Number	(Show location of sam	pling point on Line D	rawing)					[
Intake Sampling Result	s - Optional (Specify S	ource: <u>Susquehanna</u>	River)		•		· ,	·
Background Sampling F	Results - Optional (Spe	cify Location of Sam	ple:)	· · · · ·	·• .			
Treatment Facility Influe				Drawing)				
New Discharge (Basis f	or Information:	• •		· • · ·	•			
Bypass or Sewer Syste	m Overflow (Describe	:î ·· -	· · · · ·	۰ ۱		·		;
		1. LEVEL	PRESENT	······································		2. UNITS		3. Coefficient
POLLUTANT GROUP 1	a. Maximum I	Daily Value	b. Average o	of Analysis	c. No. of	a.		of Effluent Variability
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	Analysis	Concentration	b. Mass	(CV)
Blochemical Oxygen Demand, BOD	3.3	and an and a second second second second second second second second second second second second second second	2.6	<u> 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	<u> </u>			la and a second
Chemical Oxygen Demand, COD	16	and an and a second second second second second second second second second second second second second second	15 . 3	1	3	mg/1	· · · · · · · · · · · · · · · · · ·	
Hardness (CaCO ₃)	107		89.4			mg/l		
Total Suspended Solids, TSS	45	•	22.3		3	mg/1 ·		
Total Dissolved Solids, TDS	208	·	173		3	·· mg/1		
Ammonia as N	.12	·· · · ·	.07		3	mg/l		
Nitrate-Nitrite (as N)	.67	•••	47	به بر بر . 	3	mg/l		
Total Kjeldahl Nitrogen (TKN)	ND		ND	· ·	3	mg/l		
Phosphorus (as P), Total	ND				3	mg/l	· <u>····································</u>	·
Temperature winter	0° V	alue ·	23 \	alue	Numerous	(°C)		<u> </u>
Temperature summer	28.9°	Value	23 \	/alue .	Numerous	(°C)		
pH	Min. 7.39	Max. 8.32	ener in de la companya de la companya de la companya de la companya de la companya de la companya de la company Na companya de la companya de la companya de la companya de la companya de la companya de la companya de la comp	· · · · · · · · · · · · · · · · · · ·	3	. Standard units	Standard units	

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Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 1.a.

Average of Analysis - The average of all values within the last year and report both the mass and concentration. 1.b.

1.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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3800-PM-WSWM0008g 1/2004 Module 4

	T					3. Level Present					
POLLUTANT GROUP 1	Dellarad	1. MDL	2. EPA Method Number Used	a. Max Daily V	/alue	b. Average of An	alysis	C. Number of	4. Units		5. Coefficient of Effluent Variability
	Believed Absent	Used* (µg/L)		Concentration	Mass	Concentration	Mass	Analysis	Concentration	Mass	(CV)
Color		5	SM18-2120B	40	· ·	35		3	CU		
Fecal Coliform			,								
Fluoride		100	300.0	.12		0.07		3	mg/l		
Oil and Grease		2200	1664	ND	·	ND		3	mg/l		
Bromide		300	300	ND		ND		3	mg/l		
Chlorine, Total Residual		<u> </u>	330.1	ND		, ND		3	mg/l		·
Sulfate		1000	300.0	. 37.2		··· 22.4		3	mg/l		<u> </u>
Sulfide		1000	376.1	ND		No		3	mg/l		
Sulfite		2000	377.1	2.0		.67		3	mg/l		
Surfactants		25	SM18-5540C	.057		019		3	mg/l	-	
Aluminum, Total		50	200.7	.65		.31		3	mg/l		
Barium, Total		10	200.7	.033		.030		3	mg/l		· · ·
Boron, Total		50	200.7	.19		.06		3	mg/l	-	
Cobait, Totai		3	200.7	ND		ND		3	mg/l		
Iron, Total		30	200.7	1.23		.78		3	_ mg/l		
Iron, Dissolved		60	200.7	.13		.06		3	í mg/l		
Manganese, Total		3	200.7	.092		.087		3	mg/l		
Radioactivity GR-A		1.55	900	ND	-	ND		3	рСіЛ		
Total Organic Carbon, TOC		1000	SM185310B	3.6		2.5		3	mg/l		···
Radioactivity GR-B		2.36	900	4.90		1.63	·	3	рСИ		
Magnesium		50	200.7	7.83	_	6.16		3	mg/l		
Molybdenum		10	200.7	ND		ND		3	mg/l		
Tin, Total		10	200.7	ND	1.	ND		3	mg/l		
Titanium, Total		10	200.7	.01		.003		3	mg/l		

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3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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3800 Module	10SWM00001 1/2004			l	Ι.	I . I	ł	Applicant Na	me: PPL Susque	hanna, LLC	•	
				EPARTMENT OF	ENVIRONM	PENNSYLVANIA MENTAL PROTECT VASTEWATER MA						
			ANALYSIS			E POLLUTAN E 5	NT GROU	P 2				
Before	e completing this form, read t	he step-by	-step instructions	provided in Ap	pendix 1.	,		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	
APPLI	CANTINAME PPL Susq	uehanna, l	.LC									
	Outfall Number (Show locat	ion of sampling poir	nt on Line Drawl	ng)			<u> </u>				
Intake Sampling Results - Optional (Specify Source: Susquehanna River)												
Background Sampling Results - Optional (Specify Location:)												
	Treatment Facility Influer	nt Sampling	Results (Show loca	ation of sampling	g point on	Line Drawing)						
· ·	New Discharge (Basis fo	r Informatic	n:)			•						
{_	Bypass or Sewer System	ı Overflow (Describe:)									
PO	LLUTANT GROUP 2					3. Level Present						
		1: MDL		a. Max Dally	Daily Value b. Average of Analysis		Analysis	Ċ.	4. Units		5. Coefficient of Effluent	
	Metals	Used* 2. EPA Me (µg/L) Number U		Concentration	Mass	Concentration	Mass	Number of	Concentration	Mass	Varlability (CV)	
1M	Antimony, Total	10	200.7	ND		ND		3	mg/t			
2M	Arsenic, Total	4	200.7	ND		ND		' 3	mg/l			
ЗМ	Beryllium, Total	3	200.7	ND .		ND		3	. mg/l			
4M	Cadmium, Total	1	200.7	ND		ND		3	mg/l			
5M	Chromium III	1	200.7	ND .	,	ND		3	mg/l	· · · ·		
5M	Chromium VI	10	SM18-3500-CrD	ND		ND		3	mg/l			
6M	Copper, Total	10	200.7	.016		.015		3	mg/l	·	-	
7M	Lead, Total	<u>v 3</u>	200.7	ND		ND	·	3	mg/l			
8M ·	Mercury, Total	.2	245.1	ND		ND of		3	mg/l			
9M	Nickel, Total	10	200.7	ND		ND		3	mg/l			
10M	Selenium, Total	10 -	200.7	ND		ND . 1	4 .	3	mg/l			
11M	Silver, Total	. 2	200.7	ND	[ND	1	3	mg/I	1 .	1	

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If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5. З.

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Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 3.a.

Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration. 3.b.

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A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c. -

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large ٠ number of effluent limits and/or monitoring requirements in the final NPDES permit. ۰. Sec. 2. • a president and a strand strand 2

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						3. Level Prese	nt				
POLLUTANT GROUP 2		JIANI GROUP 2 1. MDL 2. EPA a. Max Daily Value b. Average of Analysis c.		с.	4. Units		5. Coefficient of Effluent				
	Metals	Used* (µg/L)	Method Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	· Variability (CV)
12M	Thallium, Total	10	200.7	ND ·		ND		3	mg/l		
13M	Zinc, Total	5	200.7	.028	<u>_</u>	.026		3	mg/l		
14M	Cyanide, Total	5	335.3	ND		ND		3	mg/l		
14M	Cyanide, Free	5	SM4500CNI	ND		ND		3	mg/l		-
15M	Phenois, Total	5	420.4	ND		ND		3	mg/i		

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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3800-PM-WSWM00081 1/2004 Module 6

Applicant Name: PPL Susquehanna, LLC

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 3 MODULE 6

				provided in Ap	·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	·		
YERI	CANTINAMETE PPL Susquehan	_							4	· .	
	Outfall Number (Sho	w location of s	ampling poin	t on Line Draw	ing)						
	Intake Sampling Results - Op	tional (Specify	/ Source: <u>Sus</u>	squehanna Rive	er)			t traite	•		
	Background Sampling Result	s - Optional (S	Specify Locati	ion:)				۰.			
	Treatment Facility Influent Sa	impling Result	s (Show loca	tion of sampling	g point on i	Line Drawing)					
	New Discharge (Basis for Info	ormation:									
	Bypass or Sewer System Ov	erflow (Descril	be:)			1 <u>.</u> 	•	,	• -		` <u>_</u> ,
DI	OLLUTANT GROUP 3				3. Level Present	· · · ·	-	1			
	OLLUTANT GROUP 3	1. MDL Method		a, Max Dally Value		b. Average of Analysis		C.	4. Unit	5. Coefficient of Effluent	
<u>, :</u>	Volitales	Used* (µg/L) ····	Number	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
1V	Acrolein	20	624	: ND	ative, jur	ND.	1 · · · · · · · · · · · · · · · · · · ·	3	ug/l 🗤	:	
2V '	Acrylonitrile		:. _ 624	ND	·	ND		3	ug/l		· ·
3 V ∵	Benzene	1	624	See ND	• • • •	ND		3	ug/l		
5V **	Bromoform	1	624	ND		ND		3`	ug/l		
6V :	Carbon Tetrachloride	. 1	624	· ND		ND		3	ug/I		
7V	Chlorobenzene	1	624	ND	· · ·	ND .		3	ug/I		
8V	Chlorodibromomethane		624	ND		ND		3	ug/l	1	1
9V (Chloroethane	· · · · ·	624	ND		ND.		3	ug/i		
10V	2-Chloroethylvinyl Ether		624	ND	····	ND-	1	3	ug/l	1	1

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3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

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Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 3.a.

Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration. 3.b,

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and 3.c. background. 1 .

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large • number of effluent limits and/or monitoring requirements in the final NPDES permit. ٠.

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no						3. Level Present					
PU	LLUTANT GROUP 3	1. MDL	2. EPA Method	a. Max Dally	/ Value	b. Average of A	Analysis	c. Number of	4. Units	i	5. Coefficient of Effluent Variability
	Volitales	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Analysis	Concentration	Mass	(CV)
11V	Chloroform	- 1	624	ND	•	ND		3	ug/l		···
12V	Dichlorobromomethane	1	624	ND		ND		3	ug/l		
14V	1,1-Dichloroethane	1	624	ND		ND		3	ug/I		
15V	1,2-Dichloroethane	1	624	ND .	· · · · · · · · · · · · ·	ND ·		3	ug/l		
16V	1,1-Dichloroethylene	1	624	ND		ND		3	ug/l		
. 17V	1,2 Dichloropropane	1	624	ND		ND		3	ug/l		
_ 18V	1, 3-Dichloropropylene	2	624	ND "		ND		3	ug/l		·
19V	Ethylebenzene	1	624	ND		, ND		3	'ug/l		
_20V	Methyl Bromide	1	624	ŅD		ND :		3	ug/l		
21V	Methyl Chloride	.1	624	· ND		ND		3	ug/l		
22V	Methylene Chloride	2	624	ND		ND		3	ug/l		[
23V	1,1,2,2-Tetrachloroethane	. 1	624	ND		ND	· · ·	3	ug/i		
24V	Tetrachloroethylene	1	624	- ND		ND		3	ug/l		1
25V	Toluene	1	624	ND		ND		3	ug/l		
26V	1,2-Trans-dichloroethylene	1	624	ND	1	ND	1.	3	ug/l	i	1
27V	1,1,1-Trichloroethane	1	624	ND	1	ND	1	3	ug/l		<u>†</u>
28V	1,1,2-Trichloroethane	1	624	ND	1	ND .	1	3	ug/l		,
29V	/ Trichloroethylene	1	624	ND	1	ND		3	ug/l	· · · · ·	
31V	Vinyl Chloride	1	624	ND	1	ND	1	3	ug/l		1

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

It is in the applicant's Interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

800 lodulě	SWN 1/2	[r. r		Г	[[Ι.	Applicant	Name: PPL Sus	quehanna, l	
			D BUREAU	EPARTMENT O	FENVIRON	PENNSYLVANIA MENTAL PROTE WASTEWATER M	CTION				
-		A .	NALYSI	S RESULTS	S TABLI MODUL	E POLLUTA .E 7	NT GROU	IP 4	, <i>·</i>		
Befor	e completing this form, read the	step-by-step	o instruction	ns provided in	Appendix	1.	•	6	•*		
APAL	CANTINAME PPL Susquehann	a, LLC									
,	Outfall Number (St	now location o	f sampling p	oint on Line Dra	awing)				المعالية المريخية ال المريخية المريخية الم		
	Intake Sampling Results - C	ptional (Spec	ify Source: S	Susquehanna F	liver)		, • •		and a second sec		
1.00	Upstream Background Sam	pling Results	- Optional (S	Specify Location	ń:)		_ • •				· ·
	Treatment Facility Influent	Sampling Res	ults (Show ic	ocation of samp	ling point o	on Line Drawing)	L				• • • • • • • • • • • • •
	New Discharge (Basis for I	nformation:		· * i		•••••••••	-	•			
	Bypass or Sewer System C	verflow (Des	cribe:). <u> </u>	, ,	· · · · ·	,			,	
D	OLLUTANT GROUP 4	ita ana ana a Arana ang ang ang ang ang ang ang ang ang		, ,		3. Level Present			·		5, Coefficient
F		1. MDL	2. EPA Method	a. Max Dall	y Value	b. Average o	f Analysis	C.	4. Unit	S	of Effluent
	Acid Compounds	Used* (µg/L)	Number. Used	Concentration	Mass	Concentration	······································	Number of Analysis	Concentration	Mass	Variability
1A ¹	2-Chiorophenol	10	625	ND		ND	سان و، استنبار ر	3.3	ug/l		
2A -	2,4-Dichlorophenol	10	625 -		4 444 444 444 1	ND ()		<u> </u>		-1	and the construction of the second second second second second second second second second second second second
3A'	2,4-Dimethylphenol	10	625	ND		ND			ug/i		
4A_	4,6-Dinitro-o-cresol	19	625	ND .		ND	· · · · ·	3	ug/l		·
5A	2,4-Dinitrophenol	24	625	ND		ND		. 3	ug/1		
6A	2-Nitrophenol	¹ 10 ¹¹	625	See ND and		ND		3	ug/l		: *.
7A	4-Nitrophenol	· 11 ·	625	ND		ND		3	ug/l		ч. . С. м
8A	P-chloro-m-cresol	10	625	ND		, ND		3	ug/l		
9A	Pentachlorophenol	24	625	ND		ND ·		3	ug/l		
10A	Phenol	10	625	ND	·	ND		3	ug/l		
11A	2,4,6-Trichlorophenol	10	625	ND	1	ND		3	ug/l		

If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5. 3.

Maximum Daily Value – Report the <u>highest</u> daily value or daily average value from the last year of data. Report both mass and concentration. Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration. 3.a.

3.b.

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large ÷ number of effluent limits and/or monitoring requirements in the final NPDES permit.

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 5 MODULE 8

Defense semanlettere th	In Annual and all the second second	1		
Before completing th	is form, read the step	-by-step instructions	provided in A	Appendix 1.

ABPLICANTINAME PPL Susquehanna, LLC

Outfall Number _____ (Show location of sampling point on Line Drawing)

Water Supply Sampling Results - Optional (Specify Source: <u>Susquehanna River</u>)

Background Sampling Results - Optional (Specify Location: ____)

Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)

New Discharge (Basis for Information: ____)

Bypass or Sewer System Overflow (Describe: _____)

	POLLUTANT GROUP 5		- ,	· ·		3. Level Present					· ~.
		1. MDL	2. EPA Method	a. Max Dail	y Value	b. Annual Av Analy		с.	4. Unit:	S	5. Coefficient of Effluent
L	Base Compounds	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
1B	Acenaphthene	3	625	ND		ND		3	μg/L		
2B	Acenaphthylene	3 ·	625	ND		ND		3	µg/L		
3B	Anthracene	· 2	625	ND		ND		3	µg/L		
4B	Benzidine	- 19	625	ND		ND		3	µg/L		
5B	Benzo(a)anthracene	2	625	ND		ND	:	3	΄μg/L		
6B	Benzo(a)pyrene	2	625	ND		ND		3	μg/L		
7B	3,4-Benzofluoranthono	2	625	ND		ND		3	μg/L		
8B	Benzo(ghi)perylene	2	625	ND	,	ND		3	μg/L		l .
9B	Benzo(k)fluoranthene	2	625	ND		ND	· · · · · · · · · · · · · · · · · · ·	3	µg/L		
10B	Bis(2-Chloro-ethoxy)methane	3	625	ND		ND	•••	3	μg/L		
11B	Bis(2-Chloroethyl)ether	3	625	ND		ND		3	µg/L		
12B	Bis(2-Chloro-isopropyl)ether	2	625	ND		ND		3	µg/L		
13B	Bis(2-Ethylhexyl)phthalate	2	625	ND		ND		3	μg/L		
14B	4-Bromophenyl Phenyl Ether	3	625	ND		ND		3	µg/L		1
15B	Butylbenzyl Phthalate	5	625	ND		ND	i	3	μg/L		
16B	2-Chloronaphthalene	5	625	ND		ND		3	µg/L		
17B	4-Chlorophenyl Phenyl Ether	5	625	ND		ND	l	3	µg/L		

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

					3. Level Present				·	
POLLUTANT GROUP 5	1. MDL	2. EPA Method	a. Max Dall	y Value	b. Annual / of Anal			4. Units		5. Coefficient of Effluent
Base Compounds	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	c. Number of Analysis	Concentration	Mass	Variability (CV)
18B Chrysene	2	625	ND		ND		3	µg/L		
19B Dibenzo(a,h)anthracene	2	625	ND		ND	· ·	3	μg/L	e 1 1 4	
20B 1,2-Dichlorobenzene	5	625	ND		ND		3	µg/L		
21B 1,3- Dichlorobenzene	5	625	ND	at in	ND	· · · ·	• 3	μg/L	· ·	
22B 1,4- Dichlorobenzene	5	625	ND		ND		. 3	μg/L		
23B 3,3'-Dichlorobenzidine	- 10	625	ND		ND		3	μg/L		
24B Diethyl Phthalate	10	625	ND		ND			μg/L		
25B Dimethyl Phthalate	10	625	ND		ND		3	μg/L		
26B Di-n-butyl Phthalate .	5	625	ND.		ND	;	3	μg/L		
27B 2,4-Dinitrotoluene	2	625	ND		ND		3	μg/L		
28B 2,6-Dinitrotoluene	2	625	ND		ND -		. 3 -			
29B DI-n-octyl Phthalate	5	625	ND		ND .		. 3	µg/L	•	
30B 1,2-Diphenylhydrazine (as Azobenzene)	5	625	ND	· · ·	ND		3	. <i>µ</i> g/L		·
31B Fluoranthene	- 2	625	ND		ND	· ·	· 3	μg/L		:
32B Fluorene		625	MD.	• •	ND	,	3	μg/L		;
33B Hexachlorobenzene			ND		ND	·	! 3	ι μg/L	1	1
34B Hexechlorobutadiene	5	625		***	ND		3	μg/L	;	ł
35B Hexachlorocyclopentadlene	10	625	ND		ND		• 3 ·····	····-µg/L ····		
36B Hexachloroethane	5	625	ND	;	ND	1	3			

37B

38B

39B

40B

41B

42B

43B

44B

45B

46B

Isophorone

Naphthalene

Nitrobenzene

Phenanthrene

Pyrene

Indeno(1,2,3-cd)pyrene

N-Nitrosodimethylamine

N-Nitrosodi-n-propylamine

1.2,4-Trichlorobenzene

N-Nitrosodiphenylamine

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3.a. Maximum Daily Value - Report the <u>highest</u> daily value or daily average value from the last year of data. Report both mass and concentration.
 3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

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A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

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It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large . number of effluent limits and/or monitoring requirements in the final NPDES permit. · . \$

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Applicant Name: PPL Susquehanna, LLC

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 6 MODULE 9

	e completing this form, read the ste		tructions pro	ovided in Apper	ndix 1.										
APPL	CANTINAME PPL Susquehanna	, LLC													
	Outfall Number (Show	location of sam	npling point o	n Line Drawing)											
	Intake Sampling Results - Optic	onal (Specify So	ource: <u>Susqu</u>	ehanna River)											
	Upstream Background Samplin	g Results - Opt	tional (Specil	y Location:											
	Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)														
· ·	New Discharge (Basis for Inform	.,					•								
· ·	Bypass or Sewer System Over				•				• •						
			/	r	3	Level Present			1						
	POLLUTANT GROUP 6		2. EPA		·					5. Coefficient					
		1. MDL	Method	a. Max Daily Value		b. Average of Analysis		C.	4. Units		of Effluent Variability				
.	Pesticides	Used*	Number					Number of							
	•	(μg/L) ·	Used	Concentration	Mass	Concentration	Mass	Analysis	Concentration	<u>Mass</u>	(CV)				
1P	Aldrin	(µg/L) ·	Used	Concentration	Mass	Concentration	Mass	Analysis	Concentration	Mass					
1P 2P	Aldrin Alpha-BHC	(µg/L) '	Used	Concentration	Mass	Concentration	Mass	Analysis	Concentration		(CV)				
		(µg/L)	Used	Concentration	Mass	Concentration	Mass			Mass					
2P	· Alpha-BHC	(µg/L)	Used		Mass	Concentration	Mass	Analysis		Mass					
2P 3P	Alpha-BHC Beta-BHC	(µg/L)			Mass		Mass	Analysis		Mass					
2P 3P 4P	· Alpha-BHC Beta-BHC Gamma-BHC	(µg/L)	Used		Mass		Mass								
2P 3P 4P 5P	Alpha-BHC Beta-BHC Gamma-BHC Deita-BHC	(µg/L)			Mass		Mass				(CV)				
2P 3P 4P 5P 6P	Alpha-BHC Beta-BHC Gamma-BHC Deita-BHC Chlordane	(µg/L)	Used								(CV)				
2P 3P 4P 5P 6P 7P	Alpha-BHC Beta-BHC Gamma-BHC Deita-BHC Chlordane 4,4'-DDT	(µg/L)	Used		Mass										
2P 3P 4P 5P 6P 7P 8P	Alpha-BHC Beta-BHC Gamma-BHC Deita-BHC Chlordane 4,4'-DDT 4,4'-DDE				Mass										

З.

If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5. Maximum Daily Value – Report the <u>highest</u> daily value or daily average value from the last year of data. Report both mass and concentration. 3.a.

3.b.

Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

3800/-----/SWN 1/1 | Applicant Name: PPL susquehanna, LLC

r	POLLUTANT GROUP 6			·	3.	Level Present		·]		
ſ	OLLOTANT GROUP 8	1. MDL	2. EPA Method	a, Max Dall	y Value	b. Average of	Analysis	с.	4, Units	5	5. Coefficient of Effluent
	Pesticides	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
12P	Beta-endosulfan						-, •				
I3P	Endosulfan Sulfate		1 1	· ·	• ** ·						
14P	Endrin		[·	
15P	Endrin Aldehyde					•					
16P_	Heptachlor		· ·		•						
17P -	Heptachlor Epoxide					Second Second				• • •	
18P	PCB-1242	.96	608	ND		ND		3	µg/L_	,	· · · · ·
19P	PCB-1254	96	608	ND		ND		3	¹ μg/L.	- 3 - X -	
20P	PCB-1221	.96	608	ND		ND		3	/g/L	- C	
21P	PCB-1232	.96	608	ND ND		ND		3	μg/L		Ţ
22P	PCB-1248	.96	608	ND		ND		3	µg/L		
23P	PCB-1260		608	ND		ND		3	μg/L ;	1 (1) 1 (1)	
24P	PCB-1016		608			ND	i	. 3	μg/L	19	
25P	Toxaphène			•				1: :	1	1,5 A	
26P	DIOXIN: 2,3,7, 8-Tetrachlorodibenzo-P-		,	Describe Res	uits:		· •	· · ·		1,4	بر این بر این ا

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

• It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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3800-PM-WSWM0008g 1/2004 Module 4

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 1

MODULE 4

Before completing this form, read the step-by-step instructions provided in Appendix 1.

APPLICANTINAME PPL Susquehanna, LLC

Outfall Number 071 (Show location of sampling point on Line Drawing) Flows = 6/3, 12.63 MGD, 6/17, 14.58 MGD, & 7/1, 15.38 MGD

Intake Sampling Results - Optional (Specify Source: ____)

Background Sampling Results - Optional (Specify Location of Sample:

Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)

)

New Discharge (Basis for Information:

Bypass or Sewer System Overflow (Describe: _____

		1. LE	VEL PRESENT			2. UN	TS	3.
POLLUTANT GROUP 1	a. Maximum	Daily Value	b. Average o	f Analysis	c. No. of	a.		Coefficient of Effiuent Variability
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	Analysis	Concentration	b. Mass	(CV)
Biochemical Oxygen Demand, BOD	5.4	573	2.7	338	3	mg/l	lb/day	
Chemical Oxygen Demand, COD	49.0 ·	5960 ·	43.6	5160	3	mg/l	lb/day	
Hardness (CaCO3)	377	48700	324.0	38400	3	mg/l	ib/day	
Total Suspended Solids, TSS	42	4460	21.3	2520	3	mg/l	lb/day	
Total Dissolved Solids, TDS	696	89300	608.7	72100	3	mg/l	lb/day	
Ammonia as N	1.23	150	• .47	55.7	3	mg/l	lb/day	
Nitrate-Nitrite (as N)	2.38	251	1.93	241	3	mg/l	lb/day	
Total Kjeldahl Nitrogen (TKN)	2.20	282	1.63	193	3	mg/l	lb/day	
Phosphorus (as P), Total	1.01	106	.93	110	3	mg/l	lb/day	
Temperature winter	13	/alue	13 V	alue	Numerous	(°C)	NA	
Temperature summer	32 '	Value	29 V	alue	Numerous	(°C)	NA	
pH	Min. 8.58	Max. 8.64		ala per per per per per per per per per per	3	Standard units	Standard units	

1.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

1.b. Average of Analysis - The average of all values within the last year and report both the mass and concentration.

1.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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Module 4														

					3.	Level Present					5. Coefficient
POLLUTANT GROUP 1		1. MDL	2. EPA	a. Max Daily	/ Value	b. Average of	Analysis_	c.	4. Units		of Effluent
	Belleved Absent	Used* (µg/L)	Method Number Used	Concentration	Mass	Concentration	Mass_	Number of Analysis	Concentration	Mass	Variability (CV)
Color		5	sm18-2120b	150	:	70		3	CU		
Fecal Coliform						, - ·					
Fluoride		100	300	.25	30.4	.25	29.6	3	mg/l	ib/day	
Oil and Grease		2100	1664	ND	ND	ND ····	ND	3	mg/l	lb/day	
Bromide		300	300	1.8	219	1.3	154	3	mg/I	lb/day	a
Chlorine, Total Residual		50	330.1	ND	ND	ND	.:ND	3	mg/l	lb/day	
Sulfate		5000	300	121	15500	96.6	11400	3	:mg/l	lb/day	
Sulfide		1000	376.1	ND	ND	ND	·ND	3	mg/l	lb/day	
Sulfite		2000	377.1	ND	ND	ND	ND -	3.	. mg/l	lb/day	
Surfactants		25	•sm18-5540c	.145	18.6	.072	8.53	3 ·	mg/I	i ib/day	•
Aluminum, Total		. 50	200.7	2.93	309	1.26	149	3	mg/l	lb/day	
Barium, Total		10	200.7	.128	16.4	· ··.117	13.9	3	mg/l	ib/day	í
Boron, Totai		50	200.7		. 10.3	.07	8.29	3,	mg/1 🗐	i Ib/day	
Cobalt, Total service and		3	200.7		ND	ND	ND ···	: 3	mg/l	i lb/daÿ	••••••••••••••••••••••••••••••••••••••
Iron, Total		30	200.7	3.49		1. 1. 2.17 · · · ·	1 256	3] mg/l	lb/day	149881 () () 1 () () () () () () () () () (
Iron, Dissolved		60	200.7	.28	29.5	.20	- 23.7	·		lb/day	
Manganese, Total		3	200.7	.263	27.7	.198	23.4	3	mg/1	lb/day	
Radioactivity GR-A		2.36	900	ND	ND	· ND	ND	3.	pCl/l	N/A	
Total Organic Carbon, TOC		1000	sm18-5310b	10.6	1116	9.2	1090	3	mg/l	· Ib/day	
Radioactivity GR-B		2.56	900	12.4	N/A	10.7	N/A	3	pCl/l	N/A	
Magnesium		50,	200.7	27.1	3476	. 21.7	2570	3	mg/i	lb/day	
Molybdenum		10	· 200.7	ND	ND	ND	ND	3	mg/l	lb/day	
Tin, Total		10	200.7	ND	ND	11 ND	. ND	3	mg/I	lb/day	
Titanium, Total		10	200.7	.03	.3.16	.01	1.18	3	mg/i	lb/day	/

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

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3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

• It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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Module 5	-

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 2

MODULE 5

Before completing this form, read the step-by-step instructions provided in Appendix 1.

APPLICANTINAMETAL PPL Susquehanna, LLC

Outfall Number 071 (Show location of sampling point on Line Drawing)

Intake Sampling Results - Optional (Specify Source: ____

Background Sampling Results - Optional (Specify Location: ___

Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)

New Discharge (Basis for Information:

Bypass or Sewer System Overflow (Describe: _____

	OLLUTANT GROUP 2		· ·			3. Level Present					
F		1. MDL	1	a. Max Daily	Value	b. Average of Analysis		C	4. Units		5. Coefficient of Effluent
	Metals	Used* (µg/L)	2. EPA Method Number Used	Concentration	Mass	Concentration	Mass -	Number of Analysis	Concentration	Mass	Variability (CV)
1M -	Antimony, Total	10	200.7	ND	' ND	ND	ND	3	mg/L	lb/day	
2M -	Arsenic, Total	4	200.7	ND	ND	: ND	ND	- 3	mg/L	lb/day	
ЗМ	Beryllium, Total	3	200.7	ND	ND	ND	· ND	3	mg/L	lb/day	· ·
4M	Cadmium, Total	1	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
5M	Chromium III	3	200.7	.003	32	.001	.11	3	mg/L	lb/day	[
5M	Chromium VI	10	sm18-3500-Cr-D	ND	ND	ND	ND	3	mg/L	lb/day	<u> </u>
6M	Copper, Total	10	200.7	.012	1.25	.008	.947	3	mg/L	- Ib/day	1
- 7M	Lead, Total	3	200.7	.005	.645	.0017	.201	3 `	mg/L	lb/day	T
8M	Mercury, Total	.2	200.7	ND	· ND	ND	ND	3	mg/L	lb/day_	
9M	Nickel, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
10M	Selenium, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
11M	Silver, Total	2	200.7	ND	·ND	· ND	ND	3	mg/L	lb/day	

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.8. Maximum Daily Value ~ Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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Module 5	

Applicant Name: PPL Susquehanna, LLC

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					3. Level Presen	it				
LLUTANT GROUP 2	1. MDL	2. EPA	a. Max Daily Value		b. Average of Analysis		с.	. 4. Units		5. Coefficient of Effluent
Metais	Used* (µg/L)	Method Number Used	Concentration	Mass	Mass Concentration		Number of Analysis	Concentration	Mass	Variability (CV)
Thallium, Total	:: ··· 10 //	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
Zinc, Total	5	200.7	.027	3.47	.019	2.25	3	mg/L _.	lb/day	
Cyanide, Total	1 5 (194	335.4	ND	ND	ND	ND .	- 3	mg/L	lb/day	· ·
Cyanide, Free	5	SM4500CNI	ND real	ND	ND	" ND	3	mg/L	lb/day	·
Phenois, Total	5	420.4	ND	ND	ND	ND	3	mg/L	lb/day	
	Thallium, Total Zinc, Total Cyanide, Total Cyanide, Free	Metals1. MDL Used* (µg/L)Thallium, Total10Zinc, Total5Cyanide, Total5Cyanide, Free5	Metals1. MDL Used* (µg/L)2. EPA Method Number UsedThallium, Total10200.7Zinc, Total5200.7Cyanide, Total5335.4Cyanide, Free5SM4500CNI	Metals1. MDL Used* (µg/L)2. EPA Method Method Number Useda. Max Dally ConcentrationThallium, Total10200.7NDZinc, Total5200.7.027Cyanide, Total5335.4NDCyanide, Free5SM4500CNIND	Metals1. MDL Used* (µg/L)2. EPA Method Number Useda. Max Dally ValueThallium, Total10200.7NDNDZinc, Total5200.7.0273.47Cyanide, Total5335.4NDNDCyanide, Free5SM4500CNINDND	ALLUTANT GROUP 2 Metals1. MDL Used* (µg/L)2. EPA Method Number Useda. Max Daily Valueb. Average of December 2000Thallium, Total10200.7NDNDNDZinc, Total5200.7.0273.47.019Cyanide, Total5335.4NDNDNDCyanide, Free5SM4500CNINDNDND	Metals1. MDL Used* (µg/L)2. EPA Method Number Useda. Max Daily Valueb. Average of AnalysisThallium, Total10200.7NDNDNDNDZinc, Total5200.7.0273.47.0192.25Cyanide, Total5335.4NDNDNDNDCyanide, Free5SM4500CNINDNDNDND	ALLUTANT GROUP 2 Metals1. MDL Used* (µg/L)2. EPA Method Number Useda. Max Daily Valueb. Average of Analysis Concentrationc. Number of AnalysisThallium, Total10200.7NDNDNDND3Zinc, Total5200.7.0273.47.0192.253Cyanide, Total5335.4NDNDNDND.3Cyanide, Free5SM4500CNINDNDNDND3	Metals 1. MDL Used* (µg/L) 2. EPA Method Number Used a. Max Daily Value b. Average of Analysis c. Number of Analysis 4. Units Thallium, Total 10 200.7 ND ND ND ND 3 mg/L Zinc, Total 5 200.7 .027 3.47 .019 2.25 3 mg/L Cyanide, Total 5 335.4 ND ND ND ND 3 mg/L	Metals 1. MDL Used* (µg/L) 2. EPA Method Number Used a. Max Daily Value b. Average of Analysis c. Number of Analysis 4. Units Thallium, Total 10 200.7 ND ND ND ND 3 mg/L ib/day Zinc, Total 5 200.7 .027 3.47 .019 2.25 3 mg/L ib/day Cyanide, Total 5 335.4 ND ND ND ND 3 mg/L ib/day Cyanide, Free 5 SM4500CNI ND ND ND ND 3 mg/L ib/day

If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5. 3.

Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 3.a.

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Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration. 3.b.

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3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit. . ..

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Module 6	

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 3 MODULE 6

	completing this form, read the s		nstructions	provided in Ap	opendlx 1.								
APPLI	CANTINAME PPL Susquehan	na, LLC											
	Outfall Number 071 (Show I	ocation of sar	npling point o	n Line Drawing)								
	Intake Sampling Results - Optional (Specify Source:)												
	Background Sampling Results - Optional (Specify Location:)												
Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)													
	New Discharge (Basis for Information:)												
	Bypass or Sewer System Ove	erflow (Descri	be:)								,		
P	POLLUTANT GROUP 3 3. Level Present												
•	· OLLOTANT GHOOP 5		2. EPA Method	a. Max Daily Value b. Average of A			f Analysis	с.	4. Units		5. Coefficient of Effluent		
	Volitales	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)		
1V	Acrolein	20	624	ND	ND	ND	ND	3	ug/l	lb/day			
2V	Acrylonitrile	4	624	ND	ND	ND	ND	3	ug/l	lb/day			
3V	Benzene	1	624	ND	ND	ND	ND	3	ug/l	lb/day	•		
5V	Bromoform	1	624	ND	ND	ND	ND	3	ug/l	lb/day			
6V	Carbon Tetrachloride	1	624	ND	ND	ND	ND	3	ug/l	lb/day			
7V	Chlorobenzene	1	624	624 ND ND ND 3						lb/day			
8V	Chlorodibromomethane	1	624	ND	ND	ND	ND	3	ug/i	lb/day			
9V	Chloroethane	1	624	ND	ND	ND	ND	3	ug/i	lb/day			
10V													

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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Applicant Name: PPL Susquehanna, LLC

						3. Level Present				.	
PU	LLUTANT GROUP 3	1. MDL Used*	2. EPA Method Number	a. Max Daily	Value	b. Average of A	Analysis	c. Number of	4. Units		5. Coefficient of Effiuent Variability
	Volltales	(µg/L)	Used	Concentration	Mass	Concentration	Mass	Analysis	Concentration	Mass.	(CV)
11V	Chloroform	1	624	ND	ND	ND	ND _	3	ug/l	lb/day	· · .
12V	Dichlorobromomethane	1	624	· ND	ND 🕾	ND	ND	3	ug/l	lb/day	
14V	1,1-Dichloroethane	1	. 624	ND	r, ND · ·	ND	ND	3	ug/l	ib/day	
15V	1,2-Dichloroethane	. 1 .	624	ND ·	ND	ND.	ND	3	ug/l	íb/day	
16V	1,1-Dichloroethylene	1	624	·· ND	ND	ND T	ND	3	ug/l .	lb/day	
j 17V	1,2 Dichloropropane		624	· · ND	ND	ND	ND	3	ug/l	lb/day	
18V	1, 3-Dichloropropylene	1	624	ND	· ND	ND	" ND	3	, ug/l	lb/day	
19V	Ethylebenzene	. 1 .	624	·ND	ND	ND	ND	3 3	Ūġ⁄l	lb/day	
20V	Methyl Bromide	. 1	624	ND	· ND	ND	ND	. 3	ug/l	lb/day	·
21V	Methyl Chloride	1	624	ND	ND	ND	ND		ug/l	lb/day	•
22V	Methylene Chloride	2	624	ND	ND	ND	. ND.		ug/1 ·	Ib/day <u>:</u>	
· 23V	1,1,2,2-Tetrachloroethane	1	624	ND	ND					· Ib/day ·	···· ···· ;• ·
⊴24V	Tetrachloroethylene	1	624	ND	ND		ND		ug/1	Ib/day	
25V	Toluene Chill Litt	•1	624	ND	ND	ND		··	ug/1 ··· ·	ib/day -	
_ 26V	1,2-Trans-dichloroethylene	1	624	ND	ND	ND	ND		ug/1	Ib/day	
27V	1,1,1-Trichloroethane	1	(ND	ND	ND	ND	3	ug/l	lb/day	
28V	1,1,2-Trichloroethane	1.	624	ND	ND ·	ND	ND	3	ug/l	lb/day	· ·
29V	Trichloroethylene	1	624	ND	ND	ND	ND	3		lb/day	
^{31V}	Vinyl Chloride	1.	624	ND	ND	ND	ND	3	ug/l	lb/day	1

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

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3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION **BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT**

ANALYSIS RESULTS TABLE POLLUTANT GROUP 4 MODULE 7

Befo	Before completing this form, read the step-by-step instructions provided in Appendix 1.												
APP	LICANTINAME PPL Susquehan	na, LLC	······						····				
	Outfall Number 071 (Sho	w location of	sampling poi	nt on Line Draw	/ing)				- <u>-</u>				
	Intake Sampling Results -	Optional (Spe	cify Source:)									
• •	Upstream Background Sar	mpling Results	s - Optional (Specify Locatio	n:)			·					
	Treatment Facility Influent					on Line Drawing)							
New Discharge (Basis for Information:)													
Bypass or Sewer System Overflow (Describe:)													
POLLUTANT GROUP 4 2 EPA 3. Level Present 5 Coefficient													
Г .	OLLOTANT GROUP 4	1. MDL	2. EPA Method	a. Max Dall	y Value	b. Average o	of Analysis c. <u>4. Un</u> Number of	4. Unit	s i	5. Coefficient			
	Acid Compounds	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass		Concentration	Mass	Variability (CV)		
1A	2-Chlorophenol	10	625	ND	ND	ND	ND		ug/1	lb/day .	_		
2A	2,4-Dichlorophenol	10	625	ND	ND	ND	ND	3	ug/l	lb/day			
ЗA	2,4-Dimethylphenol	10	625	ND	ND	ND	ND	3	ug/l -	lb/day			
4A -	4,6-Dinitro-o-cresol	20	625	ND	ND	ND	ND	3	ug⁄l	ib/day			
5A	2,4-Dinitrophenol	25	625	ND	ND	ND	ND	3	ug/l	lb/day	•		
6A	2-Nitrophenol	10	625	ND	ND	ND	ND	3	ug/l	lb/day			
7A	4-Nitrophenol	12	625	ND	ND	ND	ND	3	ug/l	lb/day			
8A	P-chloro-m-cresol	10	625	ND	- ND	ND ·	ND	3	_ ug∕l	ib/day			
9A	Pentachlorophenol	25	625	ND	ND	ND	. ND	3	ug/l	lb/day			
10A	Phenol	10	625	ND	ND	ND	ND	3	ug/l	lb/day	· ·		
11A	2,4,6-Trichlorophenol	10	625	• ND	ND	ND	ND	3	ug/l	lb/day			

З. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b.

Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large . number of effluent limits and/or monitoring requirements in the final NPDES permit.

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		B		COMMONWE RTMENT OF I VATER SUPP	ENVIRONN	ENTAL P	ROTECTIO		
		ANA	LYSIS RE		TABLE /IODUL		UTANT	GROUF	› 5

Before completing this form, read th	e step-by-ste	o instructio	ns provided in	Appendix	1.					
APPLICANTNAME PPL Susque	hanna, LLC		· · ·		· · ·	e				
Outfall Number 071	(Show location	n of samplin	g point on Line	Drawing)	e e george	· ·		:.	, .	
Water Supply Sampling Re	•					•				}
Background Sampling Res				- • E			•			
									· · ·	
Treatment Facility Influent			ocation of samp	ling point o	n Line Drawing)	•	,	•		· · · · · ·
New Discharge (Basis for	Information:		• •• •• •	• •	*					
Bypass or Sewer System	Overflow (Desc	cribe:)	· • • • •		•				ا الحالي م
POLLUTANT GROUP 5			<u> </u>	1.9	3. Level Present					
FOLLOTANT GROUP 5		2. EPA			b. Annual A					5. Coefficient
Base Compounds	•1. MDL Used*	Method Number	a. Max Dail	y Value	Analy	'SIS	C. Number of	4. Unit	S	of Effluent Variability
	(µg/L)	Used	Concentration	Mass	Concentration	Mass	_ Analysis_	Concentration	Mass	(CV)
1B Acenaphthene	3	625	ND	ND	ND	ND		ug/l	Ib/day	a ganan ana ana ara ara ara
2B Acenaphthylene 2 Acenaphthylene	3 *	625	ND 1	ND	ND ND			ug/1	···· ib/day	a haan na maan ahaa ah
3B Anthracene	2 :	625	_ ND 1 €	ND 👘	ND	ND		ug/i	b/day	
4B Benzidine	20 1	625 🖂	ND	ND	ND 🗠	<u>ND</u>			lb/day	and and the second
5B Benzo(a)anthracene	2 2	625	ND ND	ND	ND	ND		l ug/i	ib/day	
6B Benzo(a)pyrene	2 ;	625	ND ···	ND ·	ND	ND	. 3	. ug/l	b/day	· · ·
7B 3,4-Benzofluoranthene	2	625	ND	ND	ND	ND	33	ug/1	··· Ib/day	
8B Benzo(ghi)perylene	2	625	· ND	ND	ND	<u>. ND</u>	3.	ug/l	Ib/day ····	···· ··· ·
9B Benzo(k)fluoranthene	5	. 625	ND ND	ND	ND	ND .	3	ug/1	·· Ib/day	
10B Bis(2-Chloro-ethoxy)methane	3	625 📝	ND ND	ND	<u>ND</u>	<u> ND .</u>	. 3.	ug/1	Ib/day ···	· · ·
11B Bis(2-Chloroethyl)ether	2 .	625	ND	ND	ND	ND .	3	ug/1	· Ib/day	· · · · · · · · · · · ·
12B Bis(2-Chloro-isopropyl)ether	2	625	<u> </u>	ND ·	ND	. ND	3	ug/1	lb/day	· ·
13B Bis(2-Ethylhexyl)phthalate	2	625	ND	ND :		ND	3	ug/i _ · ·	lb/day	· ·
14B 4-Bromophenyl Phenyl Ether	3	625	ND	ND	ND'	ND	- 3-	ug/l	lb/day	· · ·
15B Butylbenzyl Phthalate	. 5	625	ND	_ ND	. ' ND	. ND	3	ug/l	lb/day	
16B 2-Chloronaphthalene	5	625	ND	ND.	ND	ND	3	ug/1	b/day	· · · · · · · · ·
17B 4-Chlorophenyl Phenyl Ether	5	625	ND	ND	ND .	ND	3 -	· ug/i	ib/day	· · ·

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3.a. Maximum Daily Value – Report the <u>highest</u> daily value or daily average value from the last year of data. Report both mass and concentration. 3.b. Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. ł

Υ, It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large ٠ number of effluent limits and/or monitoring requirements in the final NPDES permit.

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						3. Level Present			· · · · · · · · · · · · · · · · · · ·		
•	POLLUTANT GROUP 5		2. EPA			b. Annual /					5. Coefficient
	·	1. MDL	Method	a. Max Dail	y Value	of Anal	ysis	с.	4. Unit:	s	of Effluent
	, Base Compounds	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
18B	Chrysene	2	625	ND	ND	ND	ND	3	ug/l	lb/day	
19B	Dibenzo(a,h)anthracene	2	625	ND	ND	ND	ND	3	ug/l	ib/day	
20B	1,2-Dichlorobenzene	5	625	ND	ND	ND	ND	3	ug/l	lb/day	
21B	1,3- Dichlorobenzene	5	625	ND	ND	ND	ND .	3	ug/l	lb/day	
22B	1,4- Dichlorobenzene	5	625	ND	ND	ND ·	ND	3	ug/l	lb/day	
23B	3,3'-Dichlorobenzidine	10	625	ND	ND	ND	- ND	3	ug/l	lb/day	
24B	Diethyl Phthalate	10	625	ND	ND	ND	ND	3	ug/i	lb/day	•
25B	Dimethyl Phthalate	10	625	ND	ND	ND	ND	3	ug/l	lb/day	·
26B	Di-n-butyl Phthalate	5	625	ND	ND	ND	ND	3	ug/l	· · lb/day	
27B	2,4-Dinitrotoluene	2	625	ND	ND	ND	ND	3	ug/l	lb/day	
28B	2,6-Dinitrotoluene	· 2	625	ND	ND "	ND	ND	3	ug/l	lb/day	- 1
29B	Di-n-octyl Phthalate	5	625	ND	ND	ND	ND	3	ug/l	lb/day ·	
30B	1,2-Diphenylhydrazine (as Azobenzene)	5	625	ND	ND	ND	ND	3	ug/l	lb/day -	•
31B	Fluoranthene	. 2	625	ND	ND 1	ND .	ND	3	ug/l	lb/day	
32B	Fluorene	3	625	ND	ND	ND	ND	3	ug/i · ·	lb/day	
33B	Hexachlorobenzene	2	625	ND	ND	ND	ND	3	ug/l	lb/day	
34B	Hexechlorobutadiene	5	625	ND	ND	ND	ND	3	ug/i	lb/day	-
35B	Hexachlorocyclopentadiene	10	625	ND	ND	ND	ND	. 3	ug/i	lb/day-	• •••
36B	Hexachloroethane	5	625	. ND	ND	ND	ND	3	ug/l	lb/day	
37B	Indeno(1,2,3-cd)pyrene	_2	625	· ND	ND	ND	ND	3	ug/l	ib/day	
38B	Isophorone	3	625	ND ·	ND	ND	ND -	3	ug⁄i	ibiday	
39B	Naphthalene	3	625	ND	ND	· ND	ND	3	ug/l	lb/day	
40B	Nitrobenzene	_3	625	ND	ND	ND	ND .	3	ug/l.	lb/day	
41B	N-Nitrosodimethylamine	3	625	ND	ND	ND	ND	3	ug/l	lb/day	-
42B	N-Nitrosodi-n-propylamine	3	625	ND	ND ·	ND	ND	3_	_ ug/l .	lb/day	
43B	N-Nitrosodiphenylamine	3	625	ND	ND	ND	ND	3	ug/l	lb/day	
44B	Phenanthrene	3	625	ND	ND	ND	ND	3	ug/i	lb/day	
45B	Pyrene	2	625	ND	ND	ND	ND	3	ug/l	lb/day	
46B	1,2,4-Trichlorobenzene	5	625	ND	ND	ND	ND	3	ug/l	ib/day	

3.a. Maximum Daily Value – Report the <u>highest</u> daily value or daily average value from the last year of data. Report both mass and concentration.
3.b. Average of Analysis – Determine the average of all samples taken within the past year. Report both mass and concentration.
3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit. ٠ **.** · . . .

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3800-PM-WSWM00081	1/2004
Module 9	

Applicant Name: PPL Susquehanna, LLC

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

ANALYSIS RESULTS TABLE POLLUTANT GROUP 6 MODULE 9

Befor	re completing this form, read the ste	p-by-step Inst	ructions pro	vided in Appe	ndix 1.						
_	CANTINAME PPL Susquehanna		·				· ·		· · · · · · · · · · · · · · · · · · ·		
	Outfall Number 071 (Sho	w location of s	ampling point	t on Line Drawir	ng)						<u></u>
	Intake Sampling Results - Optional (Specify Source:)										
• ,	 Upstream Background Sampling Results - Optional (Specify Location:) Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing) 										
New Discharge (Basis for Information:)											
 	Bypass or Sewer System Overf	low (Describe:	<u>_</u>						. <u></u>		· · · · · · · · · · · · · · · · · · ·
	POLLUTANT GROUP 6 1. MDL Used* (µġ/L)	1. MDL	2. EPA Method	3. Level Present				·			5. Coefficient
				a. Max Dally Value		b. Average of Analysis		C. 1	4. Units		of Effluent
J		Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)	
1P	Aldrin					and the second s		· · · ·			
2P	Alpha-BHC	· i ,• i		· · ·			a famar ana	محم يعينه		· · · · · · · · · · · · · · · · · · ·	, , <u>,,,,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
3P	Beta-BHC							مريعون والمراجع	•		۰. میں، میں، رزیا
4P	Gamma-BHC						1 .		and the second s		
5P	Delta-BHC	· · · · · ·		,		:	.+	· ·		<u> </u>	
6P	Chlordane		·	ļ		·	· .				
7P -	4,4'-DDT		· .		· ·	ļ				· · ·	
8P	4,4'-DDE	· · · · · · · · · · · · · · · · · · ·	<u> </u>				· · · ·			,	•
9P	4,4-DDD	· · · ·	<u> </u>		ļ		• • • •				
10P	Dieldrin	l	· · · ·	<u> </u>	· · ·		J		· · · ·	<u> </u>	
11P	Alpha-endosulfan	l	<u> </u>	• • • • •	•		<u> </u>	· ·	<u> </u>	1.1	

3.

If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5. Maximum Dally Value – Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 3.a.

Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration. 3.b.

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background. 3.c.

* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

3800-PM-WSWM00081 1/2004 Module 9 Applicant Name: PPL Susquehanna, LLC

POLLUTANT GROUP 6			2. EPA Method		Level Present						
		1. MDL		a. Max Dally Value		b. Average of Analysis			4. Units		5. Coefficient of Effluent
	Pesticides	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
12P	Beta-endosulfan										
13P	Endosulfan Sulfate										
14P	Endrin						·				
15P	Endrin Aldehyde										
.16P	Heptachlor										
17P	Heptachlor Epoxide										-
18P	PCB-1242	.95	608	ND	ND'	. ND	ND	3	µg/L	1b/day	
19P	PCB-1254	.95	608	ND	ND	ND	ND	3	μg/L	1b/day	•
20P	PCB-1221	.95	608	ND	· ND	ND	ND	3 .	µg/L	1b/day	
21P	PCB-1232	.95	608	ND	ND	· ND	ND	3	µg/L	1b/day	
22P	PCB-1248	.95	608	ND	ND	ND	ND	3	µg/L	1b/day	
23P	PCB-1260	.95	608	ND	ND	ND	ND	3	µg/L ⋅	1b/day	
24P	PCB-1016	.95	608	ND	ND	ND	ND	. 3	μg/L	1b/day	
25P	Toxaphene		1		<u> </u>						
26P	DIOXIN: 2,3,7, 8-Tetrachlorodibenzo-P- Dioxin (TCDD)			Describe Results:							

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Dally Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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• It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

1 1 1 1 1 8800-PM-WSWM0008g 1/2004 Module 4	т I	ι ι	τι	t. t	Appli	cant Name: PPL S	usquehanna, LLC	• • •
			NWEALTH OF PENNS OF ENVIRONMENTA SUPPLY AND WASTE	L PROTECTION	л	• .		
	AN	ALYSIS RESUL	TS TABLE PO MODULE 4	LLUTANT GRO	OUP 1	e de el		·
Before completing this form, read	d the step-by-step in	structions provided	in Appendix 1.	. •	• •	•. '		
APPLICANT NAME PPL Susq	uehanna, LLC	ere en son de la	1	м. ·				
Outfall Number072	2 (Show location of	sampling point on Lin	e Drawing) :	Flow = 7/13, 0.0098	MGD			
Intake Sampling Resul	ts - Optional (Specify	Source:		· •				
Background Sampling	Results - Optional (Sp	pecify Location of San	nple:) ⁻					
Treatment Facility Influ	ent Sampling Results	(Show location of sa	mpling point on Line	Drawing)				
🛛 🔲 New Discharge (Basis	for Information:		· · · · · · · · · · · · · · · · · · ·					
Bypass or Sewer Syste	em Overflow (Describ	e:)		· · · · · ·				
		1. LEVE	L PRESENT			2. UN	IITS	3.
POLLUTANT GROUP 1	a. Maximum	Daily Value	b. Average	of Analysis	c. No. of			Coefficient of Effluent Variability
مراجع بالاستان المراجع المحمد المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع ا المراجع المراجع المراجع المحمد المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع ا المراجع المراجع	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	Analysis	Concentration _	., b. Mass	(CV)
Blochemical Oxygen Demand, BOD	ND	ND	ND	ND	1	mg/L		
Chemical Oxygen Demand, COD	3 <u>1</u> ND i	ND	ND :	ND	<u>. 1</u>	<u></u> mg/L	. Ib/day	معسومه المستحمية
Hardness (CaCO ₃)	•••		ł					مه مدد این در د
Total Suspended Solids, TSS	7	0.57	7 :	0.57	1 .	mg/L ·	lb/day	
Total Dissolved Solids, TDS		· · · · · · · · · · · · · · · · · · ·					• •	
Ammonia as N				~ .		- · ·		
Nitrate-Nitrite (as N)	0.44	0.036	÷. 0.44	0.036	- 1	mg/L •	· · · ib/day ··	,
Total Kjeldahl Nitrogen (TKN)	• ND	ND ·	ND	ND	- 1"	mg/L	lb/day	
Phosphorus (as P), Total	ND		n ND m	ND T	1	mg/L	lb/day	
Temperature winter		Value		Value				
Temperature summer	-	Value		Value				<u> </u>
pH ····································	Min. 7.45	Max. 7.45	مېرې د وه ور و ور مېرو و مېرو و مېرو و و ور د و د و و و و و و و و و و و و و و و و و		1	Standard units	Standard units	

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1.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

1.b. Average of Analysis - The average of all values within the last year and report both the mass and concentration.

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1.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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	[]	······································	[l		3. Level Present			1		
POLLUTANT GROUP 1		1. MDL	2. EPA Method	a. Max Dail	y Value	b. Average of	Analysis	с.	4. Units	s	5. Coefficient of Effluent
	Believed Absent	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variability (CV)
Color											
Fecal Coliform											
Fluoride											
Oil and Grease		2100	1664	ND	ND	ND .	ND	1	mg/L	lb/day	
Bromide					•						
Chlorine, Total Residual											
Sulfate						•		· · · · · · · · · · · · · · · · · · ·			
Sulfide								-			
Sulfite											
Surfactants									•		
Aluminum, Total		•				I .					
Barium, Total						1					
Boron, Total		· · · · · ·									· ·
Cobalt, Total			1								
Iron, Total			1					· · ·			
Iron, Dissolved]			<u> </u>						
Manganese, Total				· · ·	ŀ						
Radioactivity											
Total Organic Carbon, TOC					1	· ·					
Radioactivity.			·			· ·					
Magnesium		1			1		1	<u></u>		· · ·	
Molybdenum		1			1		1			1	
Tin, Total		1			1			1		1	
Titanium, Total					1			1			

aCc

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

[<u> </u>	800-(. [Аррич	ant Name, PPL Su	laquehanna, ∟LC	1 1
		1		WEALTH OF PENNS) OF ENVIRONMENTAL UPPLY AND WASTEW	PROTECTION	т			
		AN#	LYSIS RESULT	TABLE POL MODULE 4	LUTANT GRO	UP 1			
·	Before completing this form, read	I the step-by-step in:	structions provided i	n Appendix 1.		· .			· · ·
	ABPLICANTINAME PPL Susq	uehanna, LLC		<u> </u>	· · · · .				
	Outfall Number073	. (Show location of s	sampling point on Line	Drawing) F	flow = 7/12, 0.0081 l	MGD			
	Intake Sampling Result	ts - Optional (Specify	Source:)						
	Background Sampling	Results - Optional (Sp	ecify Location of Sam	ple:)					
	Treatment Facility Influ	ent Sampling Results	(Show location of san	npling point on Line I	Drawing)				
	New Discharge (Basis	for Information:						-	
	Bypass or Sewer Syste	em Overflow (Describe	ə:)		•		x	• •	
			1. LEVE	PRESENT			2. UN	ITS	3. Coefficient
	POLLUTANT GROUP 1	a. Maximum		b. Average o	of Analysis	c. No. of		ء سيري محمد ا	of Effluent Variability
	and the second second second second second second second second second second second second second second second	~ (1) Concentration	(2) Mass	(1) Concentration	(2) Mass	Analysis	Concentration	b. Mass	(CV)
	Blochemical Oxygen Demand, BOD	ND	ND	ND	ND	: 1	mg/L	lb/day	
	Chemical Oxygen Demand, COD	19	1.28	19	1.28	1	mˈɡ/L	lb/day	
	Hardness (CaCO ₃)								
	Total Suspended Solids, TSS	7	0.47	7 .	0.47	1	mg/L	Ib/day	
	Total Dissolved Solids, TDS					<i></i>			· .
	Ammonia as N					2 .	·		-
ω	Nitrate-Nitrite (as N)	0.4	0.027	0.4	0.027	. 1	mg/L	· Ib/day	•
SUD	Total Kjeldahl Nitrogen (TKN)	1.4	0.095		0.095	: 1	mg/L	lb/day	
	Phosphorus (as P), Total	ND	. ND	ND	ND	· 1 ·	mg/L	lb/day	:
	Temperature winter		Value	Va	alue	Numerous			
	Temperature summer		Value	Ve	alue	Numerous			
	рН	Min. 7.86 :	Max. 7.86			; 1	Standard units	Standard units	

Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration. 1.a.

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Average of Analysis - The average of all values within the last year and report both the mass and concentration. 1.b.

· - .

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and 1.c. 11 1.1 background.

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Applicant Name: PPL Susquehanna, LLC

3800-PM-WSWM0008g 1/2004 Module 4

				·····		3. Level Present			<u></u>		
POLLUTANT GROUP 1	_	1. MDL	2. EPA Method	a. Max Dail	y Value '	b. Average of	Analysis	C.	4. Units		5. Coefficient of Effluent
	Believed Absent	Used* (µg/L)	Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Variabliity (CV)
Color			N 11 4		1 • 1			es fait			•
Fecal Coliform	••	· ·			·. ·						
Fluoride											
Oil and Grease		2100	1664	ND	ND .:	ND	ND	1	mg/L	lb/day	
Bromide											
Chlorine, Total Residual				1 .							
Sulfate					· •		·		4 - 		
Sulfide		•.									
Sulfite							-				· · ·
Surfactants			••			· · · ·					
Aluminum, Total											
Barium, Total				1	1						1
Boron, Total			1					1			1
Cobalt, Total			1			1					1 · · · ·
Iron, Total			1					·			
Iron, Dissolved							1				1
Manganese, Total			1								1
Radioactivity		1			1						
Total Organic Carbon, TOC		<u> </u>					<u> </u>				
Radioactivity					1			1			
Magnesium											
Molybdenum		1								1	1
Tin, Total.		· · ·		· · · · ·			1			1	1
Titanium, Total		1									

Ulc

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

NCN M		DEPARTMENT	NWEALTH OF PENNSY OF ENVIRONMENTAL SUPPLY AND WASTEW	PROTECTION	п			
	AN	ALYSIS RESUL	TS TABLE POL MODULE 4	LUTANT GRO	UP 1	• • •	· .	
Before completing this form, rea	d the step-by-step in	structions provided	in Appendix 1.				•	· · · · · · · · · · · · ·
PPLICANTINAME PPL Susc	uehanna, LLC	· · · · · · · · · · · · · · · · · · ·	<u> </u>	ny tanàna amin'ny tanàna mandritry tanàna mandritry dia mandritry dia kaominina dia kaominina dia kaominina dia				
Outfall Number <u>079</u> (Show location of samp	ling point on Line Dr	awing) Flow = $5/2$	7, 0.02482 MGD				
Intake Sampling Result	its - Optional (Specify	Source:)		· · · · · · · · · · · ·				••••••
Background Sampling	Results - Optional (Sp	ecify Location of Sar	nple:)				· .	ه و حکیمت او و
Treatment Facility Influ	uent Sampling Results	(Show location of sa	mpling point on Line D	Drawing)			•	
New Discharge (Basis	for Information:	_) <u>-</u> ;		• •		•	•	· ·-
Bypass or Sewer Syst	em Overflow (Describ	9:)	. ¹ . .	• • •	• •		•	
		. 1. LEVE				2. UN	ITS	3. Coefficient
POLLUTANT GROUP.1	a. Maximum	Daily Value	b. Average o	f Analysis	• •	··· · · · ···		of Effluent
الم المستقدية مستقدية مستقد المنتخذ المنتخذ المرادية المرادية المرادية المنتخب المستقدين المرادية الم	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	c. No. of Analysis	Concentration	atte b. Mass 200	(CV)
Blochemical Oxygen Demand, BOD	4.2	.869	4.2	.869	1:2 1	: mg/l	한다 ib/day 안가	• [
hemical Oxygen Demand, COD	25	5.17	25 7 7	5.17	127	mg/l	lb/day	, *
lardness (CaCO3)	82.4	· 17.1	82.4	17.1	1	mg/l	lb/day	· ,
otal Suspended Solids, TSS	NĎ	ND	ND	ND	1	mg/l	ib/day	
otal Dissolved Solids, TDS	648	134	. 648	134	1	mg/l	lb/day	
mmonia as N	1.36	.282	1.36	.282	1	. mg/l	i ib/day	· · · · · · · · · · · · · · · · · · ·
litrate-Nitrite (as N)	31.3	6.48	31.3	6.48	1		lb/day	• •
otal Kjeldahl Nitrogen (TKN)	2.1	.435	2.1	.435	•• • 1 •	mg/i	··· lb/day	
Phosphorus (as P), Total	6.46		6.46 ;	1.34	1	mg/l	lb/day	
Cemperature winter	- 3\	/alue	5 Va	ilue	Numerous	•C	N/A	
temperature winter	1 · · ·							
Temperature summer	23	Value	21 V	alue	Numerous	°C	N/A	

Maximum Dally Value - Report the highest daily value or dally average value from the last year of data." Report both mass and concentration. 1.a.

-

Average of Analysis - The average of all values within the last year and report both the mass and concentration. 1.b.

A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and 1.c.

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3800-PM-WS	VM0008g	1/2004
Module 4		

· · · · · · · · · · · · · · · · · · ·					3	Level Present					
POLLUTANT GROUP 1	Dellaurat	1. MDL	2. EPA	a. Max Daily	/ Value	b. Average of	Analysis	с.	4. Units	、 I	5. Coefficient of Effluent
·	Belleved Absent	Used* (µg/L)	Method Number Used	Concentration	Mass	Concentration	Mass	Number of Analysis	Concentration	Mass	Varlability (CV)
Color		5	sm18-2120b	45		45		1	cu		
Fecal Coliform			922d	32		32		1	col/100ml		
Fluoride		200	300	ND	ND	ND	ND	1	mg/l	lb/day	
Oil and Grease		2100	1664	ND	' ND	ND	ND	1	mg/l	lb/day	
Bromide .		300	300	ND	ND	ND	ND .	1	mg/l	lb/day	
Chlorine, Total Residual		50	330.1	ND	ND	ND	ND	1	mg/l	lb/day	
Sulfate		2000	300	79	16.3	79	. 16.3	··· 1	mg/l	lb/day	
Sulfide		1000	376.1	• ND	. ND	ND	ND ·	1	mg/l ⁻	lb/day	
Sulfite		2000	377.1	4	.827	. 4	.827	1	mg/l	lb/day	
Surfactants		25	sm18-5540c	.044	.0091	.044	.0091	1	mg/l	lb/day	
Aluminum, Total		50	200.7	ND	1 ND	ND	ND	1	mg/l	lb/day	
Barium, Total		10	200.7	ND	ND	ND	ND	1	mg/i	lb/day	
Boron, Total		50	200.7	ND	ND	ND	ND	1	mg/l	lb/day	
Cobalt, Total		3	200.7	ND	ND :	ND	ND	1 .	mg/l	lb/day	
Iron, Total		30	200.7	.06	.012	.06	.012	1	mg/l	ib/day	
Iron, Dissolved		60	200.7	ND	ND	ND	ND	1	mg/l	Ib/day	
Manganese, Total		. 3	200.7	.018	.0037	¹ .018	.0037	1 .	mg/l	lb/day	
Radioactivity GR-A		1.45	900	ND	ND	ND	ND	1	рСИ	N/A	1
Total Organic Carbon, TOC		1000	sm18-5310b	8.9	1.84	8.9	1.84	1.	mg/l	. Ib/day	1.
Radioactivity GR-B		2.66	900	22.6 ·	N/A ·	22.6	N/A	1	рСИ	Ń	
Magnesium		50	200.7	5.7	1.17	. 5.7	1.17	1. 1	mg/l	lb/day	
Molybdenum		10	200.7	ND	ND	ND	ND	1	mg/l	ib/day	
Tin, Total		10	200.7	ND	ND	. ND	. ND	1	mg/l	ib/day	/
Titanium, Total		10	200.7	ND	ND	· ND	ND	1	mg/i	lb/day	

3. If other data is available (i.e., DMR data, etc.), the past year of data may be used to determine 3a, 3b, 3c, and 5.

3.a. Maximum Daily Value - Report the highest daily value or daily average value from the last year of data. Report both mass and concentration.

3.b. Average of Analysis - Determine the average of all samples taken within the past year. Report both mass and concentration.

3.c. A minimum of 3 Sampling Events required for process wastewater discharges, and a minimum of 1 Sampling Event for all other discharges, treatment facility influent, intake water and background.

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* It is in the applicant's interest to achieve the lowest level of detection possible. This will minimize uncertainty and therefore the need for additional analysis or potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

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3800-PM-WSWM0008m 1/2004 Module 10

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. . Applicant Name: PPL Susquehanna, LLC

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

HAZARDOUS SUBSTANCE TABLE -MODULE 10 124.11

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ו	Before completi	ng this for	m, read the st	ep-by-step ins	tructions pr	ovided in Appendix 1		•	· •]
	APPLICANTINA	MEL	PPL Susqueha	anna, LLC	** ** ** *	· ·· · ·	· • •	• • :		
Γ	1. Name of	· .	3.	Amount Per Ou	ıtfall ·····		5. Tr	eatment F	Provided	
T	Table 3 Substance	2. Outfal	Quantity Ib/24 hrs	Frequency	Duration	4. Origin and Source	a	b	C	
	Sodium Hypochlorite	071	5000	2x/day	2 hrs/Unit	Cooling Tower Chlorination			D	
Γ		·		i	· · · · · · · · · · · · · · · · · · ·					
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3800-PM-WSWM0008n 1/2004 Module 11 Applicant Name: PPL Susquehanna, LLC Outfall: All

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

OTHER TOXIC CHEMICALS MODULE 11

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Before completing this form, read the step-by-step instructions provided in Appendix 1.

Applicant Nameson FFL Susquenanna,

OutfallNumber 213 All (N/A)

1. GC/MS "Five Peaks" pollutants (see Appendix 1)

Group Number (3 - 6)	Chemical Substance or Compound Name	MDL. (µg/L)	Average Effluent Concentration (ug/L)	Maximum Effluent Concentration (µg/L)	 No. Samples Positive / No. analyzed	· ,
•					1	
					. 1	
					 1	···
					 /	
					 1	

2. Other Chemicals

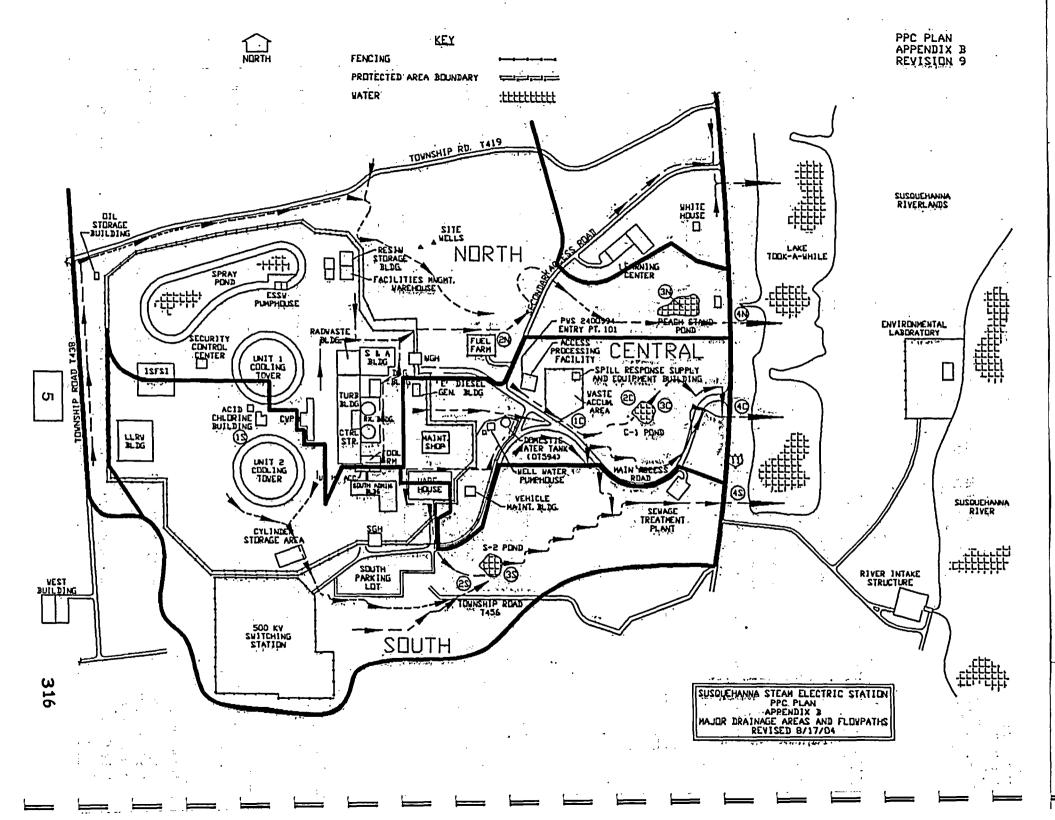
		Average Concentration	Indicate if Presence is
Substance	Reason for Presence in Discharge	(µg/L)	Known (K) or Suspected (S)
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If additional peaks were not available for one or more groups with the method used check here and attach an explanation of why the method was selected.

Provide additional sheets as necessary.

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3800-PM-WSWM0008c	1/2004	Applicant Name: PPL Susguehanna, LLC
Module 12	BIDEA	COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION L OF WATER SUPPLY AND WATER WATER MANAGEMENT
-	DUREA	J OF WATER SUPPLY AND WASTEWATER MANAGEMENT STORMWATER
		MODULE 12
Before completing	g this form, read th	e step-by-step instructions provided in Appendix 1.
APPEICANT:NAM	E PPL S	usquehanna, LLC
. Site Plan and S	itormwater Runoff.	Attach a copy of your facility's site plan. (See instructions)
DEP strongly re	ecommends the sep	aration of stormwater and other wastewaters.
Description of F	Potential Pollutant S	purces and Controls
a. For each s potential po	tormwater outfall, p Ilutant(s) and sourc	ovide an estimate of the area (include units) drained to the outfall, and a list of es for the outfall.
Outfall Number	Total Area Drained (provide units)	Potential Pollutant(s) and Sources
070	133 Acres	Oil Storage in south drainage, water storage tanks, water treatment bldgs.
075	167 Acres	Oil Storage in north drainage, firing range, site runoff
080	51 Acres	Oil and waste storage in central drainage, water storage tanks, well treatment bldg.
	·	
c. For each sto pollutants in	limit storage volume ormwater outfall, pro stormwater runoff; maintenance for cor	maintained, PPC Plan Implemented, training provided, assessments, audits, (s), utilize less hazardous approved materials whenever possible. vide the location and description of existing structural control measures to reduce and a description of the treatment the stormwater receives, including the schedule trol and treatment measures and the ultimate disposal of any solid or fluid wastes
Outfall N	umber	Control Measures
070		Rention pond, spill containment / berms, level alarms
075		Spill berms, Oil spill collar on rentention pond standpipe, leak detection alarms
080	÷ .	Rentention pond, spill containments, level controls/alarms
Non-stormwater	Discharges	
a. All non-storr application fo		rom these outfall(s) are identified in the Industrial Wastewater section of this
	escription of the me rved during a test.	thod used, the date of any testing, and the on-site drainage points that were
N/A		
facility in the last material released	information regardir 3 years, including th	g the history of significant leaks or spills of toxic or hazardous pollutants at the le approximate date and location of the spill or leak, and the type and amount of
Lube Oil Cleanup 09/23/04.	In North Storm Dra	nage from Main Turbine Lube Oil Mist Elim Roof Vent Discharge Completed
		-1- 315



	PREPAREDNES	S, PREVENTION, AND	D CONTINGENCY (PPC) PLAI	NNING.	
	Does the facility h	have a PPC plan?	no sino - Al El d i Alvia (al Mellin). El tradecio de la companya de la companya	en de la composition de la composition de la composition de la composition de la composition de la composition La composition de la c	🛛 YES 🔲 NO
			plans, such as a Pollution Incid ter Measure (SPCC) Plan or S		YES 🗌 NO
	If "YES," identify a	and indicate date(s) im	plemented. Note: 1999		a da se a cara de la
		Type of Plan	۱ <u> </u>	Date Imp	emented -
	PPC Plan	Note: Two (2) Copie	es provided w/Application	Updated	11/19/04
	SPPC Plan	Note: Two (2) Copie	es provided w/Application	Updated	11/19/04
	DEP may require	the plan(s) be submitte	ed with this application.		
	•	vater Information Subm pling be performed as			YES INO
	· ·	••••	· · · · · ·	· · · · ·	
		······································		· · · ·	and the second sec
Ł	b. Complete a S Indicate the to	Stormwater Sampling I stal number of tables su	Data Table (Module 13) for e ubmitted. Outfall 075 was sam	ach outfall containing sto npled representative of 07	rmwater. 0 & 080
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3800-PM-WSWM0008p 1/2004 Module 13 Applicant Name: PPL Susquehanna, LLC Outfall: 075

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COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

STORMWATER SAMPLING DATA TABLE

MODULE 13

Before completing this form, read the step-by-step instructions provided in Appendix 1.

APPLICANTINAME OF PPL Susquehanna, LLC

51.0

075 IREPRESENTATIVE OUTFALLENUMBER(S)

1. Provide the results of at least one analysis for every pollutant in this table. See Appendix 1.

	CAS	Maximum Values (include units)	Average Values (include units)	Number	
Pollutant	Number (if available)	Grab Sample Taken During First 30 Minutes	Grab Sample Taken During First 30 Minutes	of Storm Events Sampled	Sources of Pollutants
Oil and Grease		ND	ND	1	
Biological Oxygen Demand (BODS)		ND	ND	1	
Chemical Oxygen Demand (COD)		ND	ND	1	
Total Suspended Solids (TSS)		9 mg/L	9 mg/L	1 ,	
Total Kjeldahl Nitrogen		ND	ND	1.	
Nitrate plus Nitrite Nitrogen		1.78 mg/L	1.78 mg/L	1 *.	· · ·
Total Phosphorus		ND	ND	1 :	
pH (min./Max.)		7.55 SU	7.55 SU	1	· · · · · · ·

2. List each pollutant that is limited by an ELG which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). See the instructions for additional details and requirements.

· ·	CAS	Maximum Values (include units)	Average Values (include units)	Number		
Pollutant	Number (if available)	Grab Sample Taken During First 30 Minutes	Grab Sample Taken During First 30 Minutes	of Storm Events Sampled	Sources of Pollutants	
Chlorine total Residual		<0.05 mg/L	<0.05 mg/L	1	Infrequent, Incidental Tank Drainage	
					· · · · · · · · · · · · · · · · · · ·	
		·				

3800-PM-WSWM0008p 1/2004 Module 13 ł

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Applicant Name: PPL Susquehanna, LLC Outfall: 075

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3.		each poll pendix 1.)	utant shown	in Table 3 and Po	llutant (Groups 1-6	that is I	known or bel	ieved to be	present. (See	
	- I		CAS Number (if	umber Grab Sample Taken (if During		erage Values Include units) rab Sample aken During	Number of Storm Events				
	P	ollutant	available)	First 30 Minutes		st 30 Minutes	Sampled		Sources of Pollutants		
Le	ad			ND .)	. 1	material pr	Firing Range – bullet backstop material previously screened to remove fragments		
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4.	Prov	ide data foi	r the storm eve	ent(s) which resulted	d in the r	<u>naximum v</u>	alues for	the flow weigi	nted compos	ite sample.	
1	I .	2.	З.	4.		5.	·	6.	7.	8.	
T Dat Sto Eve		Duration of Storm (in minutes)	Total rainfall during storm event (in inches)	during storm beginning of storm event measured and end		Maximum during rai (gallons pe or specify	n event er minute	Total flow from rain event (gallons or specify units	Season Sample Was taken	Form of Precipitation (rainfall, snowmeit)	
07/0	7/04	8 min	0.1	72 Hours	•	166.35	gpm	28,435 gal	Summer	Rainfall	
			······								
·											
F											
5. 1	Provi	de a descri	ption of the m	 ethod of flow measu	rement	I or estimate	1				
[\ _	Volun	netric meas	surement at di	scharge pipe into co	nțainer	of known qi	uantity.				
						· · · · · · · · · · · · · · · · · · ·					

Appendix A

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EPA 316(b) Phase II Documentation



PPL Susquehanna, LLC Operation is in compliance with Phase II per Compliance Alternative (1)(i)

NPDES RENEWAL APPLICATION PERMIT NO. PA 0047325

January 6, 2005

EPA 316(b) Rule (Phase II) Cooling Water Intake Structure water and the state

PPL Susquehanna, LLC is choosing to comply with the requirements of the Phase II 316(b) Rule by selecting Compliance Alternative (1)(i). The following data shows that this facility is equipped with a closed-cycle recirculating system. According to the rule, having made this demonstration, this facility will be deemed to have met the applicable performance standards and will not be required to demonstrate further that this facility meets the impingement mortality and entrainment performance standards in 40 CFR 125.94(b) of the rule. We are submitting the following data as required by 40 CFR ಂಗ ಎಂದಿ ಇನ್ನೇ ನಿನ 122.2(r)(2),(3) and (5).

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1.

Source water physical data The Susquehanna River is the principal water source for the Susquehanna SES 1.1 (SSES). The Susquehanna River Drainage Basin, shown on Figure 1, lies in the northeastern portion of the United States generally between latitudes N 39° 30' to N 43° 00' and longitudes W 74° 30' to W 79° 00'. The basin is the largest on the Atlantic seaboard of the United States. The length of the Susquehanna Basin is about 250 miles. The total drainage area is 27,510 square miles of which 6,270 are in south central New York, 20,950 in central Pennsylvania, and 290 in northeastern Maryland. The total drainage area upstream of the site is about 10,240 square miles.

Figure 2, Susquehanna River Profile, shows the stream profile of the Upper Susquehanna River within a 50-mile radius of the SSES. Between its confluence with the Lackawanna River, about 31 miles upstream of the SSES to its confluence with the West Branch of the Susquehanna, about 41 miles downstream, the river undergoes a drop of about 115 feet for an average drop of 1.6 feet per mile. Within this reach there is only a small change is streambed gradient. Upstream of the station the average gradient is 1.8 feet per mile. Downstream of SSES, the average gradient is 1.5 feet per mile. 这两个主义的

The river channel is about 800 feet wide in the vicinity of the SSES. Bathymetric features of the river in the vicinity of the make up water intake and blowdown discharge structures are provided on Figure 3, Susquehanna River Bathymetry.

Moderate to steep slopes directed toward the river along both its banks characterize the topography in the general area of the site. The station is located approximately 4,000 feet west of the intake structure at an elevation of about 670 feet above mean sea level (msl) or about 190 feet above the river bed. The average slope toward the river is about 8%.

The elevation of the Susquehanna River at the SSES site ranges from 485.9 ft to 518.2 ft above msl. Flow range is from about 800 to 345,000 cfs. The maximum elevation and flow were from Tropical Storm Agnes in June 1972.

> 316(b) Phase II Page 1 of 15

A. 2141.0

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Mr. Levy

A policy decision of the Susquehanna River Basin Commission regarding consumptive withdrawals during low flow periods provides that future water users will not diminish natural flow during droughts. The source of low flow augmentation for SSES is the Cowanesque Reservoir. Cowanesque is a storage release reservoir that was completed in 1990 and is owned and operated by the U. S. Army Corps of Engineers. Cowanesque is located in Pennsylvania along the New York border about 170 miles upstream from the Susquehanna SES. A water release from Cowanesque is triggered by a river flow at the USGS Wilkes-Barre, Pennsylvania gaging station equal to the 7-day, 10-year low flow plus the consumptive use of the Susquehanna SES. The 1-day and 5-day rates of river flow decline and the 5-day travel time to Wilkes-Barre are other factors considered to make a water release. The normal trigger value is 868 cfs.

The Susquehanna River at SSES shows a predictable annual pattern of temperatures, with lowest temperatures in winter and highest temperatures in late summer. High water temperatures in August and September are moderated by lower air temperatures and higher river flows in October. In 2002, daily mean water temperatures ranged from 0° C (January 1 through January 9) to 28.9° C (August 4), while average monthly daily mean temperatures ranged from 0.8° C in January to 26.0° C in August.

2. Cooling Water Intake Structure Data

- 2.1 The Phase I 316(b) report for the SSES intake structure was filed with the PA DER on 11 August 1982 and approved on 6 October 1982 after review by the United States Environmental Protection Agency, United States Department of Interior Fish and Wildlife Service, Pennsylvania DER Wilkes-Barre Office, and the Pennsylvania Fish Commission. The SSES intake structure was constructed to outperform acceptable intake flow design parameters listed in "Development Document for Best Technology Available for Location, Construction and Capacity of Cooling Water Intake Structures for Minimizing Adverse Environmental Impact", USEPA, April 1976.
- 2.2 Susquehanna SES is a base-loaded plant and is in operation 24/7/365 unless offline for an outage. The river intake structure consists of an embayment and pumphouse. It is located on the west bank of the Susquehanna River at a latitude of N 41° 05.300' and longitude of W 76° 07.910' (Figure 4). An earth embankment extends 20 ft above the floodplain to elevation 526.0 ft above msl, which is 1.0 ft above the maximum water elevation for the postulated Standard Project Flood. The floor level of the intake superstructure is located at the top of the graded embankment. The elevated embankment and the riverbank at the intake entrance are covered with a blanket of heavy riprap for erosion protection during high riverflow conditions.

316(b) Phase II Page 2 of 15 The intake structure consists of a steel superstructure above the operating floor and a reinforced concrete substructure extending into the rock below the level of the river bottom. The superstructure houses the makeup water pumps and associated equipment, including switchgear, automatic operating equipment for trash-handling screens, motor control centers, screen wash strainers, and a debrishandling facility.

The substructure contains two water entrance chambers that house the traveling screens and two pump chambers. The floor and sides of the entrance chambers (Figure 5) form the intake openings. The top of the intake openings is formed by an inverted weir extending 1.0 ft below the minimum river water level (elevation 484.0 ft) to intercept floating oil and debris. The front of the intake is at the riverbank with flared wing walls extending down the natural slope of the bank to provide for an even and gradual water-approach velocity.

The dimensions of the wing walls are shown in Figure 6. The applicant has computed the area of the embayment created by the wing walls as approximately 5,400 sq ft (horizontal projection). During periods of low flow, the embayment will contain approximately 37,800 cu ft of water (based on an elevation of 482 ft above msl). At normal flow (based on mean flow derived from June 1973 to May 1978) the calculated volume of the embayment will be 59,400 cu ft; at high flow (top of wing walls at an elevation of 505 ft above msl) or maximum volume of the embayment, the volume will be 86,500 cu ft.

Riprap protecting the east slope of the intake structure facing the river extends approximately 161 ft south and 89 ft north from the respective edges of the structure. The riprap was placed by "end dumping" on a two-horizontal-to-onevertical slope to an approximate elevation of 482 ft above msl. The riprap on the north and south side of the embankment covers approximately 2,500 sq ft and 6,200 sq ft, respectively. The total surface area of riprap behind the wing walls from elevation 505 ft (top of wing walls) to elevation 482 ft above msl is about un des de la composition. Energia de la composition 8,700 sq ft.

The intake-flow velocity is perpendicular to and less than the river velocity. Figure 5 shows the average horizontal velocity of the water flowing from the river to the 计自动 机拉丁酸磷酸盐 가는 가지 않는 것이 가지 않는 것이 있는 것이 있는 것이 있다. 이 가지 않는 것이 있는 것이 있다. 이 가지 있다. 한 가슴, 가지만 것 같아? 아이가 가지 않는 것이 것이 같아? 것이 있다. 것이 있다. 것이 있는 것이 같이 있다. intake pumps.

Four nominal one-third capacity intake pumps with a capacity of 30 cfs each are installed in the intake structure. Three pumps can support station load operation (100%) of both units with an 87 cfs intake flow under the least favorable (1%) meteorological conditions. Four-pump operation is utilized from time to time to support certain operating conditions (i.e. to maintain makeup water system pressure) and may see increased use in the future as power uprates at the station are implemented. Makeup flows can increase up to 20% under these conditions but are acceptable within design criteria of the makeup system.¹⁷

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Each of the two water entrance chambers is equipped with two automatically operated trash removal screens in series. A bar screen behind each of the inverted weir intake openings prevents large debris from impeding operation of the automatic traveling screen. The bar screen, trash racks, and traveling screens are operated automatically either by differential pressure sensors or by a timer for periodic cleaning. Water-spray systems wash debris from the screens into a pit for disposal whenever the trash rack or traveling screens operate. The bar screens consist of vertical 1.25-in bars with a 1.0-in opening between bars. The traveling screens have 0.37-in mesh wire openings.

Stop-log slots are provided in front of and behind the screens so that the provided stop-logs may be lowered and the chamber dewatered for repair of the screens. Another set of stop-logs may be used to close the slot in the center wall for the purpose of dewatering one of the pump chambers. The insertion of these barriers requires the effort of heavy portable equipment and a maintenance crew. Such an effort will normally be scheduled during a period of reduced station load when less water is required and design-intake velocities are not being exceeded.

With three pumps in operation (the flow being 87 cfs), the velocity of water through both intake-structure passages is:

- a. 0.37 ft/s through the entrance openings (i.e., under inverted weir); this value is independent of river level.
- b. 0.58 ft/s through the clean bar screen openings at the minimum river level of 484 ft above msl.
- c. 0.64 ft/s through the clean traveling screen openings at the minimum river level of 484 ft above msl.

Since there is the capability to block off one or more of the passages, there is a potential for increased velocities. During four-pump operation, these flow velocities may increase by up to 20%.

Under the worst case anticipated, with three pumps operating at a flow of 87 cfs and with only one passage open, the inlet velocity would be 0.75 ft/s. Four-pump operation under these conditions could increase this velocity up to 20%. The insertion of stop-logs is regulated by strict administrative procedures.

3. Cooling Water System Data

Each circulating water system consists of a main condenser, circulating water pumps, piping and valves, a natural draft cooling tower and a basin below the tower that acts as a reservoir for the cooled circulating water.

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3.1

Main Condensers Each condenser is single pass, triple shell, triple pressure and is designed to remove 8.07 billion Btu/hr. At design conditions the circulating water flow through each condenser is 484,000 gpm, and at design meteorological conditions (73° F wet bulb and 65% relative humidity) the inlet temperature is 87° F and the outlet temperature is 121.8° F. The parts of the condenser that contact the circulating water are tubes made of stainless steel and tube sheets and water boxes made of carbon steel. The travel time of the circulating water through the condenser is about 15 seconds.

Circulating Water Pumps and Piping 3.2

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 A state of the second state of th The circulating water system for each unit has four-25% capacity circulating water pumps, which are of the horizontal split case centrifugal type. Each pump is designed to deliver 121,000 gpm at 103.5-ft total differential head.

The circulating water piping is lined with coal tar epoxy to minimize corrosion.

3.3 Cooling Towers

HAR STATES IN THE STATES IN THE The towers are of the hyperbolic natural draft counter flow type, 540 ft high by 420 ft base diameter and are located approximately 750 ft apart (center-to-center). Cold air enters the bottom of the tower, mixes with the circulating water in the tower fill (water dispersal material), and removes heat from the water and the warm air-water vapor mixture rises to leave the tower at the top. The towers are suitable for year-round operation. Circulating water outlets from the tower basins are protected from ingress of debris by screens that are cleaned manually. Duplicate screens are provided to permit removal of either one for cleaning.

The cooling tower blowdown is discharged through a diffuser directly into the river. Monitoring instrumentation in the circulating water circuit and the blowdown lines warns if blowdown criteria are being approached.

The tower blowdown rate is set from the central control room to control the concentration of chemical and dissolved solids in the circulating water. Water lost from the circulating system by tower evaporation, drift and blowdown is made up by river water supplied from the intake structure. and outperiod from the finance of control that the first of the first

Circulating water carrying the heat rejected from the station is brought into direct contact with atmospheric air drawn into the tower by the difference in air densities inside and outside the tower. As the heated water falls through the tower, the incoming air-cools it. The cooler air passing over the warmer water vaporizes a small percentage of the water, thereby cooling the remaining water. The air is heated as it flows through the tower. The heat exchange between the air and water through direct contact is derived from two types of heat transfer: a) the evaporative cooling of the water and b) the sensible heating of the air due to the difference in temperature of water and air.

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Table 1, Cooling Tower Performance, shows the maximum and minimum water evaporation rates required for the 8 billion Btu/hr waste heat rejection for one unit at full power. This data is based upon the range of meteorology recorded at Avoca, Pennsylvania.

<u>Drift</u>

Drift is the water that is entrained in the air discharging from the cooling tower. For the Susquehanna SES towers the manufacturer's guaranteed drift loss is 0.02% of the design circulating water flow. The drift is expected to be approximately 0.002% of the design circulating water flow.

Drift is minimized by the installation in the tower of "Drift Eliminators." These function by forcing the discharge air carrying the entrained water to make sudden changes in direction; the resulting centrifugal force effectively separates the drops of water from the air, depositing them on the surface of the eliminator. The accumulated water droplets coalesce and then flow down to the tower basin.

Fog

A visible plume results when the warm moist air discharging from the tower mixes with cooler ambient air that lacks the capacity to absorb all of the moisture. The excess moisture condenses as fog. There is no practical means of preventing the formation of a visible plume in this type-cooling tower.

Tower Performance

The towers are designed to cool 478,000 gpm of circulating water to a temperature of 87° F at an ambient wet bulb temperature of 73° F and a relative humidity of 65%.

The average monthly tower performance for a flow of 478,000 gpm at the average monthly temperatures and humidities is presented in Table 1, Cooling Tower Performance. Also shown for comparison is the cooling tower performance design condition (Case 1) and the maximum (Case 2) and minimum (Case 3) evaporation in Figure 7, Cooling Tower Performance.

In general the flow of the circulating water remains constant through the cooling towers under normal variations in heat rejection loads. During periods of extended reduced heat rejection loads, it may be desirable to reduce the circulating water flow by shutting off one (or two in extreme cases) of the circulating water pumps. In all such cases the evaporation and drift losses are less than the normal operating conditions.

For reasons of power generation efficiency, pumps would not be stopped unless circulating water temperatures could be kept below normal with the reduced flow. The temperature of the blowdown would be affected by a negligible amount with a reduced number of pumps in operation.

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The cooling tower has provisions that are used to isolate the center section of the tower during extremely cold weather operation. This is done to direct more warm water toward the periphery of the cooling tower to prevent freezing in the outside fill sheets.

3.4 Cooling Tower Basin

Each tower is located over a circulating water basin-reservoir. The basin inside diameter is 410.5 ft and at normal water level of seven feet contains about seven million gallons. The cooled water from the tower fill rains down uniformly upon the basin surface. The mean time for the 508,000-gpm design rate of cooled water to travel through the seven million-gallon basin is about 15 minutes.

The actual travel time of an increment of water flowing horizontally across the basin varies from a few seconds to over five hours, depending upon the distance from the point where the water falls to the basin surface to the circulating water outlet. The increment of circulating water, which is ultimately blown down makes approximately 100 passes across the basin before it is discharged. The longest of the paths taken by the blowdown water, by which suspended solids are ultimately discharged, determines the suspended solids concentration of the entire circulating water flow.

The settling opportunity provided by the longest flow paths ensures that much of the suspended solids entering with the makeup water will settle in the basin and not appear in the blowdown.

The cooling tower basin has high and low level switches that are tied into a flowmodulating valve in the makeup piping. The valve is opened or closed automatically to provide makeup water as necessary for the circulating water system during all meteorological and station operating conditions.

The basin is equipped with ramps to permit earth-moving equipment to enter the tower basin and remove the accumulation of deposited silt during scheduled shutdowns.

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Table 1

COOLING TOWER PERFORMANCE (Based on One Unit at Full Load)

Month(1)	Wet Bulb °P	X Rel. Hum.	Evaporation		Cold	Exit	Exit Air	Exit Air	Sp. Vol	Density
			gpa	acre Pt Per Mo.	Water op	Air Op	Million cfm	Velocity fpm	Pt3/16 Dry kir	lb/Pt ^j Mixture
Jan	22.3	24	9,560	1,307	59.2	77.6	58.7	825	13.99	.0729
?eb	18.5	0 15 28	9,480	1,170	57.9	75.2	60.2	846	13.89	.0733
lar .	27.1	15	10,490	1,434	62.0	80.7	56.9	799	14.12	.0724
A P C	35.4	28	11,020	1,458	66.7	86.0	53.5	752	14.35	.0715
Say	48.4	53	11,730	1,603	73.1	92.1	51.7	727	14.65	.0705
June	58.6	67	12,170	1,600	78.4	97.8	49.31	693	14.96	.0695
July	62.4	69	12,340	1,687	80.3	98.7	50.71	713	15.01	.0694
Nug	63.3	76	12,250	1,674	80.7	99.3	50.4	.708	15.04	.0693
Sept	53.8	72	11,640	1,540	75.3	94-2	52.1	732 - 、	14.76	.0701
Oct	45.5	63	11,180	1,528	71.1	89.6	54.1	761	- 14.53	.0709
Nov	35.4	45	10.700	1,415	66.2	85.4	54.4	765	14.33	.0716
Dec	25.5	33	9,870	1,349	61.0	79.8	57.3	805	14.08	.0724
Design (2	73	65	13,170		87	104.8	46.4	65 ['] 3	15.37	.0683
Maximum()	75	37	14,210		90	108.4	41.5	583	15.61	.0676
Hinimum (3		100	6,550		46	41.1	70.2	987	13.73	.0740

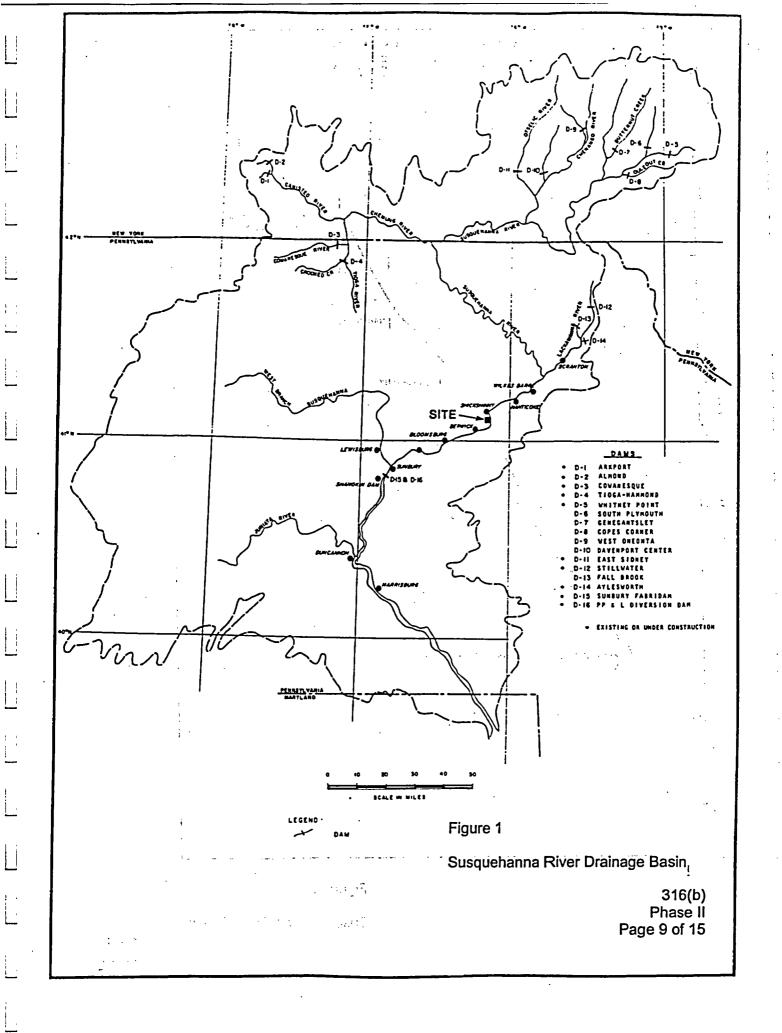
(1) Yonthly Performance based upon on site Meteorological Observations during 1973 to 1975
 (2) Selection of design condition based upon on site meteorological observations during 1973-1975

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(3) Maximum summer evaporation (not the highest wet bulb) and minimum evaporation condition based upon on site meteorology observations during 1973 to 1975.

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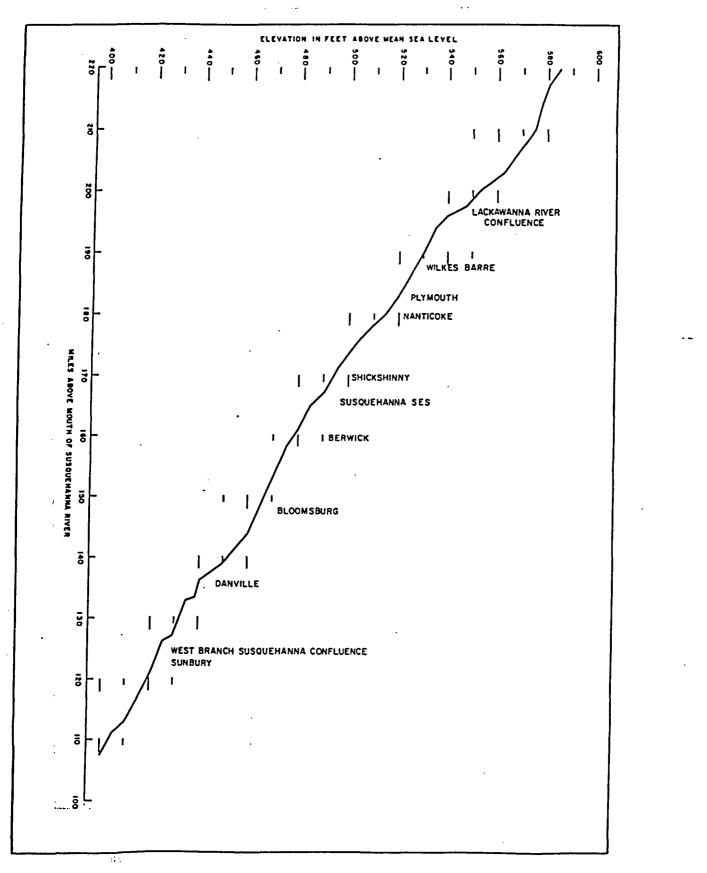
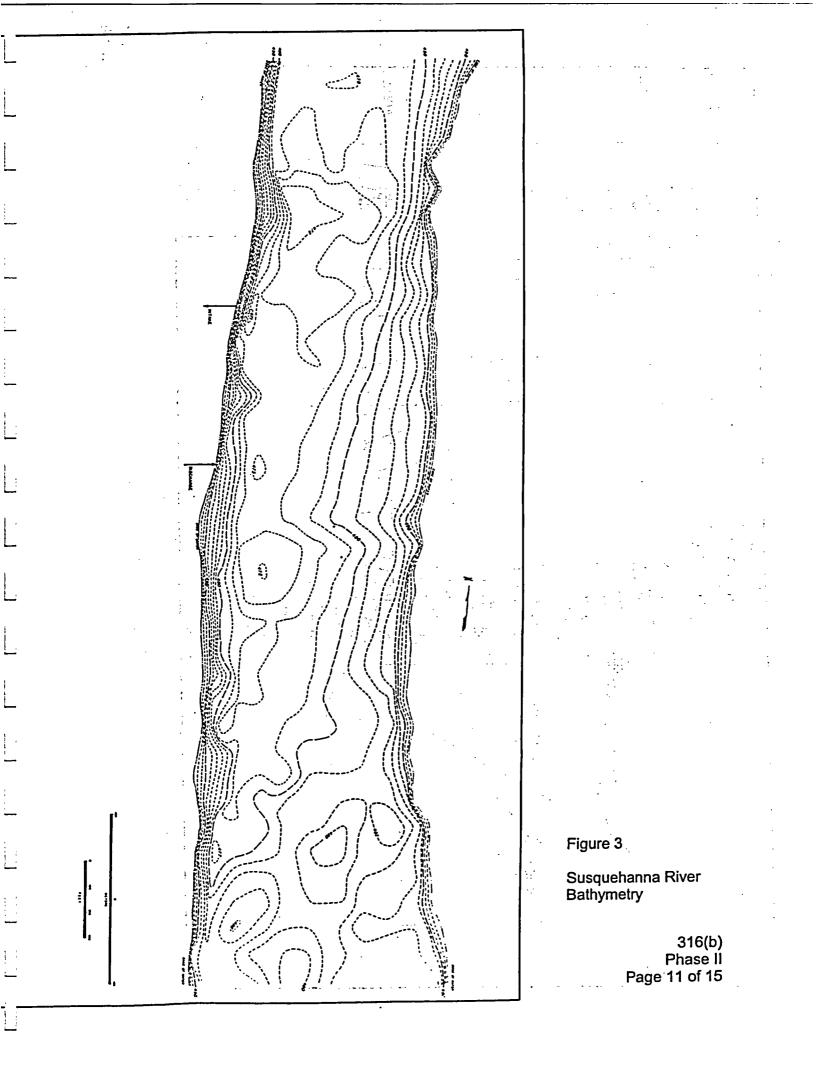
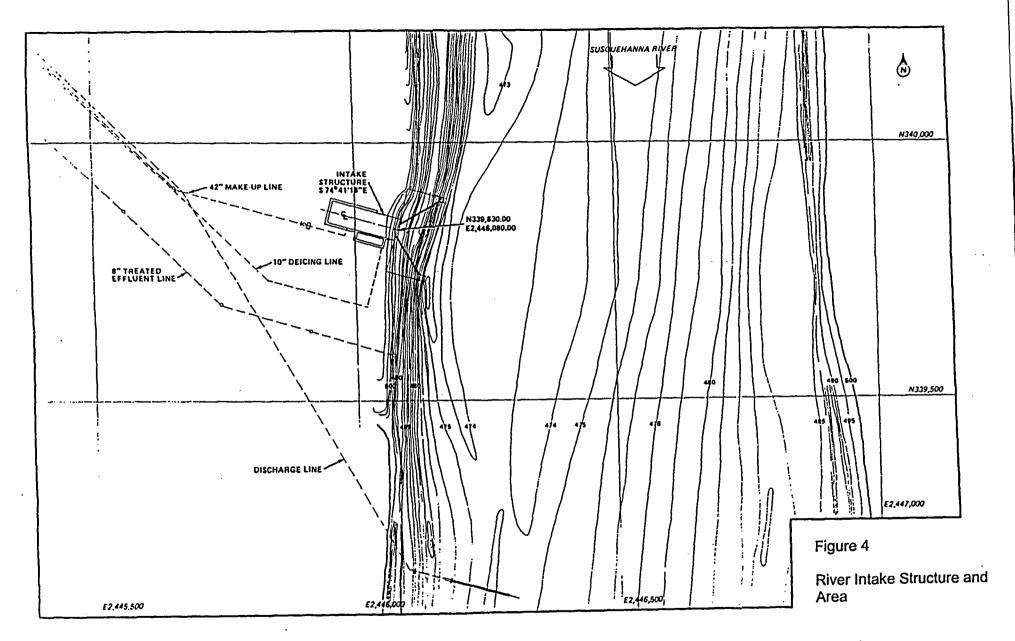


Figure 2

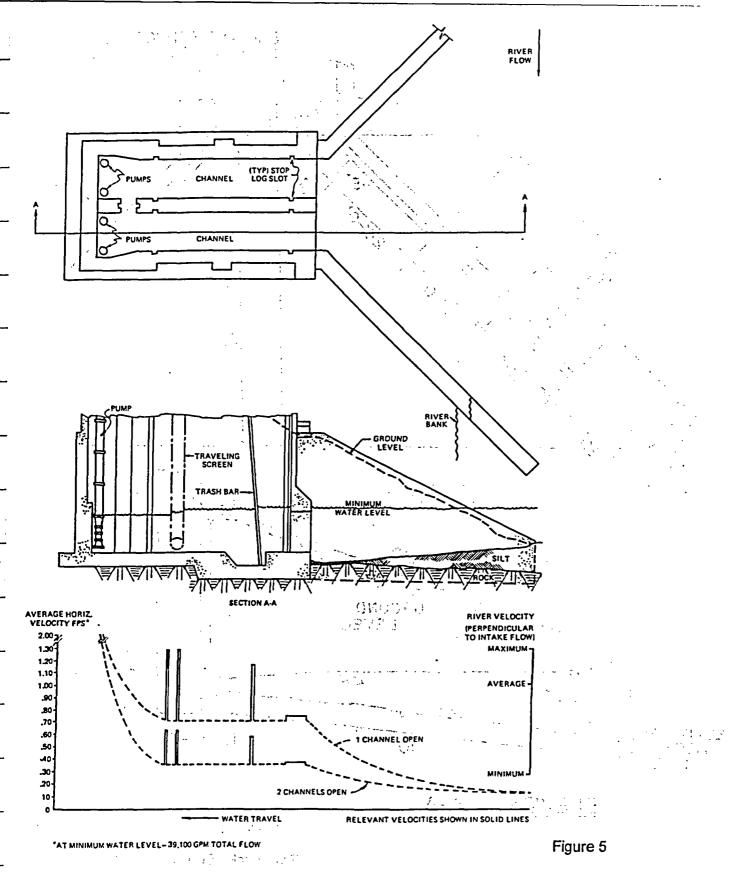
Susquehanna River Profile

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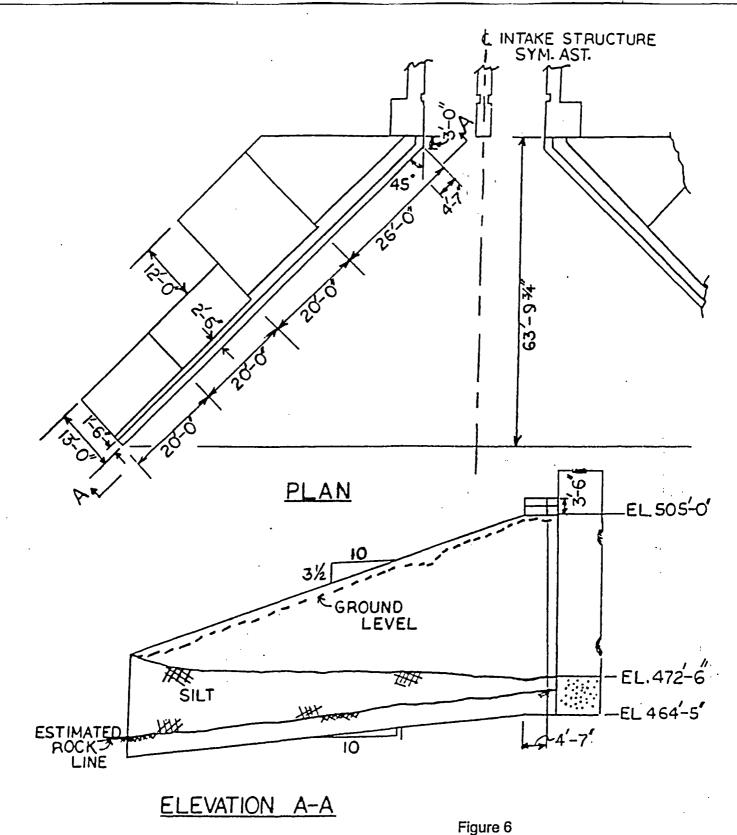


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River Intake Structure and Velocity Profile

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River Intake Structure Wing Walls

316(b) Phase II Page 14 of 15 NATURAL DRAFT COOLING TOWER PERFORMANCE CURVES-COLD WATER TEMPERATURE COLD WATER IN FUNCTION OF WET BULB AIR TEMPERATURE TEMPERATURE °F AND RELATIVE HUMIDITY 100 90 **RELATIVE HUMIDITY** 80 70 DE-ICING 60 50 20 10 30 50 40 60 70 80 WET BULB AIR TEMP °F

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TOTAL WATERFLOW: 478,000 GPM

Figure 7

Cooling Tower Performance

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Appendix B

Preparedness Prevention and Contingency (PPC) Plan (Includes SPCC Plan)



NPDES RENEWAL APPLICATION PERMIT NO. PA 0047325

January 6, 2005

PPL Susquehanna, LLC

(2 Copies provided to PaDEP with Original Application)

(PPL distribution, see Nuclear Department Waste and Chemical web site for copy of PPC Plan)