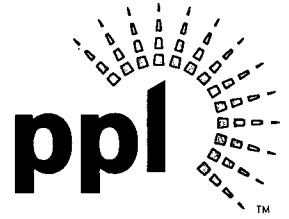


Timothy S. Rausch
Sr. Vice President & Chief Nuclear Officer

PPL Susquehanna, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3445 Fax 570.542.1504
tsrausch@pplweb.com



MAR 26 2010

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

**SUSQUEHANNA STEAM ELECTRIC STATION
NRC NOTIFICATION OF NPDES PERMIT
RENEWAL APPLICATION
PLA-6606**

**Docket 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. Curt H. Saxton at (570) 542-1879 if there are any questions concerning this letter.


T. S. Rausch

Attachment

Copy: NRC Region I
Mr. P. W. Finney, NRC Senior Resident Inspector
Mr. R. R. Janati, DEP/BRP
Mr. B. K. Vaidya, NRC Project Manager

*COOL
NRR*

Attachment to PLA-6606

NPDES Renewal Permit Application

Susquehanna Steam Electric Station

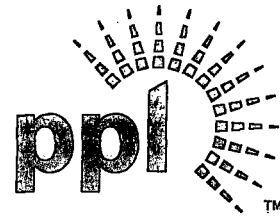


NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

RENEWAL PERMIT
APPLICATION
PERMIT NO. PA 0047325



PPL Susquehanna, LLC
Berwick, PA
March 2010



February 25, 2010

Mr. Mike Brunamonti, P.E.
Chief Permits Section
Water Management Program
Pennsylvania Department of Environmental Protection
2 Public Square
Wilkes-Barre, PA 18711-0790

**SUSQUEHANNA STEAM ELECTRIC STATION
APPLICATION-NPDES RENEWAL PERMIT PA-0047325
PLE-0024902**

Dear Mr. Brunamonti:

PPL Susquehanna, LLC is submitting a NPDES permit renewal application for the Susquehanna Steam Electric Station (SES), Salem Township, Luzerne County, PA. The present NPDES permit no. PA-0047325 expires on September 1, 2010.

Included for Pennsylvania Department of Environmental Protection review are; 1) three copies of the application (one notarized), 2) an application fee of \$500.00, payable to the Commonwealth of Pennsylvania, 3) copies of letters with certified mail receipts 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.

Sincerely,

Raymond E. Rhoads for

Bruce E. Rhoads
Manager – Plant Chemistry

Enclosure

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

February 25, 2010

- 2 -

PLE -0024902

bcc:

T.	D.	Belles	NUCSA3	w/a
N.	A.	Evans	GENTW17	w/a
J.	S.	Fields	GENPL5	w/a
J.	M.	Helsel	NUCSB3	wo/a
B.	H.	Herre	SFC	w/a
T.	V.	Jacobsen	NUCE3	w/a
A.		Khanwalkar	GENTW17	wo/a
J.	L.	McCormick	NUCSA3	w/a
R.	W.	Osborne	Allegheny	w/a
J.	J.	Petrilla	NUCSA4	w/a
T.	S.	Rausch	NUCSB3	wo/a
P.		Renshaw	GENTW17	wo/a
B.	E.	Rhoads	NUCSA3	w/a
C.	H.	Saxton	NUCSA3	w/a
J.	P.	Schmidt	GENTW17	wo/a
J.		Scopelliti	SSO	wo/a
R.	L.	Takacs	NUCSA3	w/a
J.		Zerance	NUCPT	wo/a
SP&E File (CCN 773015-07A)			GENN3	w/a
DCS File			NUCSA2	w/a

Attachment A

Requested Permit Changes

1. Request elimination of Internal Outfall 171 Radwaste Annual Monitoring for Oil and Grease, since the result of this analysis has always been less than detectable and it is difficult to matrix the analysis requirements with the radiological aspects to maintain the available analyses.
2. Request eliminating nutrient monitoring from Sewage Treatment Plant Outfall 079. The prescribed 3 year monitoring period under the previous permit has expired.

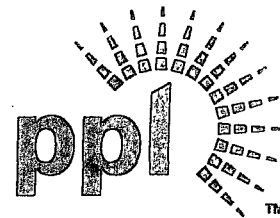
Attachment B

Table of Contents

NPDES Permit Application and Supplemental Information

- I 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 – Statement 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) (1/8/2010)**

January 28, 2010



Ms. Patricia Owens
Secretary, Salem Township
Salem Township Municipal Building
38 Bomboy Lane
PO Box 405
Berwick, PA 18603

**SUSQUEHANNA STEAM ELECTRIC STATION
NATIONAL POLLUTANT DISCHARGE ELIMINATION
SYSTEM PERMIT RENEWAL: PA 0047325
PLE-0024885**

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 February 2010 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 for

Bruce E. Rhoads
Manager – Plant Chemistry / Environmental

Certified Mail Number: 7002 2410 0006 5855 1507

Copy to:

Ms. N. Green, EPA Region III
Mr. Mike Brunamonti, PaDEP



January 28, 2010



Mr. Douglas Pape, 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
PLE-0024886**

Dear Mr. Pape,

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 February 2010 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,

Raymond E. Dulher for

Bruce E. Rhoads
Manager – Plant Chemistry / Environmental

Certified Mail Number 7002 2410 0006 5855 1491

Copy to:

Ms. N. Green, EPA Region III
Mr. Mike Brunamonti, PaDEP



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<p><input checked="" type="checkbox"/> Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</p> <p><input checked="" type="checkbox"/> Print your name and address on the reverse so that we can return the card to you.</p> <p><input checked="" type="checkbox"/> Attach this card to the back of the mailpiece, or on the front if space permits.</p> <p>1. Article Addressed to:</p> <p style="margin-left: 40px;">Ms. Patricia Owens Secretary, Salem Twp Salem Twp Municipal Bldg 38 Bombay Lane P.O. Box 405 Berwick, PA 18603</p> <p>2. Article Number (Transfer from service label) <u>7002 2410 0006 5855 1507</u></p>	<p>A. Signature <i>Judy Bondanelli</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>Judy Bondanelli</u> C. Date of Delivery <u>2-11-10</u></p> <p>D. Is delivery address different from item 1? <input checked="" type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. </p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<p><input checked="" type="checkbox"/> Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</p> <p><input checked="" type="checkbox"/> Print your name and address on the reverse so that we can return the card to you.</p> <p><input checked="" type="checkbox"/> Attach this card to the back of the mailpiece, or on the front if space permits.</p> <p>1. Article Addressed to:</p> <p style="margin-left: 40px;">Mr. Douglas Pape, Chief Clerk Luzerne County Courthouse 200 North River St. Wilkes-Barre, PA 18711</p> <p>2. Article Number (Transfer from service label) <u>7002 2410 0006 5855 1491</u></p>	<p>A. Signature <i>Samuel B. Pape</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>Samuel B. Pape</u> C. Date of Delivery <u>2-11-10</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. </p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

Checklist



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

**APPLICATION FOR NPDES PERMIT
FOR INDUSTRIAL DISCHARGERS**

APPLICANT'S ✓ CHECKLIST

APPLICANT NAME PPL Susquehanna, LLC

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 on hold with no action, or will be considered withdrawn and the application file closed.

Item		Check If Included	DEP Use Only
1.	General Information Form (8000-PM-IT0001)	<input checked="" type="checkbox"/>	
2.	One original and (2) copies of application package submitted [original must be notarized]	<input checked="" type="checkbox"/>	
3.	Additional copy for Erie and Allegheny counties (if required)	<input type="checkbox"/>	
4.	Additional copy for the river basin commission (if required)	<input type="checkbox"/>	
5.	Application Fee - \$500	<input checked="" type="checkbox"/>	
6.	Proper evidence of Act 14 municipality and county notification	<input checked="" type="checkbox"/>	
7.	Proof of local newspaper public notice (for new and substantially changed discharges only)	<input type="checkbox"/>	
8.	Topographic Map	<input checked="" type="checkbox"/>	
9.	Industrial Wastewater - Module 1	<input checked="" type="checkbox"/>	
10.	Wastewater Treatment Technologies - Module 2	<input checked="" type="checkbox"/>	
11.	Sources Of Wastewater sheet(s) - Module 3	<input checked="" type="checkbox"/>	
12.	Analysis Results Table(s) - Modules 4-9	<input checked="" type="checkbox"/>	
13.	Hazardous Substance Table - Module 10	<input checked="" type="checkbox"/>	
14.	Toxic Chemicals (Optional) - Module 11	<input checked="" type="checkbox"/>	
15.	Stormwater (if required) - Module 12	<input checked="" type="checkbox"/>	
16.	Stormwater Sampling Data Table (if required) - Module 13	<input checked="" type="checkbox"/>	
17.	No Exposure Certification (if required) - Module 14	<input type="checkbox"/>	
18.	Other: Additional Outfall description, 316B Supporting Statement, Requested Permit Changes	<input checked="" type="checkbox"/>	

Form



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM - AUTHORIZATION APPLICATION

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.

Related ID#s (If Known)		DEP USE ONLY Date Received & General Notes
Client ID# _____	APS ID# _____	
Site ID# _____	Auth ID# _____	
Facility ID# _____		

CLIENT INFORMATION

DEP Client ID#	Client Type / Code LLC		
Organization Name or Registered Fictitious Name PPL Susquehanna, LLC		Employer ID# (EIN) 23-3022601	Dun & Bradstreet ID# 14-498-6556
Individual Last Name N/A	First Name MI	Suffix MI	SSN MI
Additional Individual Last Name N/A	First Name MI	Suffix MI	SSN MI
Mailing Address Line 1 769 Salem Blvd.		Mailing Address Line 2	
Address Last Line - City Berwick	State PA	ZIP+4 18603-0467	Country USA
Client Contact Last Name Rausch	First Name Timothy	MI S.	Suffix Mr.
Client Contact Title SR VP - Chief Nuclear Officer		Phone 570-542-3445	Ext
Email Address TSRausch@pplweb.com		FAX 570-542-1504	

SITE INFORMATION

DEP Site ID#	Site Name PPL Susquehanna, LLC		
EPA ID#	PAD 000765883	Estimated Number of Employees to be Present at Site	1000
Description of Site Two Unit Generating Station			
County Name Luzerne	Municipality Salem Township	City <input type="checkbox"/>	Boro <input type="checkbox"/>
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>
Site Location Line 1 769 Salem Blvd.		Site Location Line 2	
Site Location Last Line - City Berwick	State PA	ZIP+4 18603-0467	
Detailed Written Directions to Site 7 miles North of Berwick on U.S. Route 11			
Site Contact Last Name Saxton	First Name Curtis	MI H	Suffix Mr.
Site Contact Title Services & Programs Supervisor	Site Contact Firm PPL Susquehanna, LLC		
Mailing Address Line 1 769 Salem Blvd.	Mailing Address Line 2		
Mailing Address Last Line - City Berwick	State PA	ZIP+4 18603-0467	

Phone	Ext	FAX	Email Address
570-542-1879		570-542-3461	chsaxton@pplweb.com
NAICS Codes (Two- & Three-Digit Codes – List All That Apply)			6-Digit Code (Optional)
221			221113
Client to Site Relationship			
OWNOP			

FACILITY INFORMATION

Modification of Existing Facility		Yes	No
1.	Will this project modify an existing facility, system, or activity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Will this project involve an addition to an existing facility, system, or activity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If "Yes", check all relevant facility types and provide DEP facility identification numbers below.			

Facility Type	DEP Fac ID#	Facility Type	DEP Fac ID#
<input type="checkbox"/> Air Emission Plant	<input type="checkbox"/>	<input type="checkbox"/> Industrial Minerals Mining Operation	<input type="checkbox"/>
<input type="checkbox"/> Beneficial Use (water)	<input type="checkbox"/>	<input type="checkbox"/> Laboratory Location	<input type="checkbox"/>
<input type="checkbox"/> Blasting Operation	<input type="checkbox"/>	<input type="checkbox"/> Land Recycling Cleanup Location	<input type="checkbox"/>
<input type="checkbox"/> Captive Hazardous Waste Operation	<input type="checkbox"/>	<input type="checkbox"/> MineDrainageTrmt/LandRecyProjLocation	<input type="checkbox"/>
<input type="checkbox"/> Coal Ash Beneficial Use Operation	<input type="checkbox"/>	<input type="checkbox"/> Municipal Waste Operation	<input type="checkbox"/>
<input type="checkbox"/> Coal Mining Operation	<input type="checkbox"/>	<input type="checkbox"/> Oil & Gas Encroachment Location	<input type="checkbox"/>
<input type="checkbox"/> Coal Pillar Location	<input type="checkbox"/>	<input type="checkbox"/> Oil & Gas Location	<input type="checkbox"/>
<input type="checkbox"/> Commercial Hazardous Waste Operation	<input type="checkbox"/>	<input type="checkbox"/> Oil & Gas Water Poll Control Facility	<input type="checkbox"/>
<input type="checkbox"/> Dam Location	<input type="checkbox"/>	<input type="checkbox"/> Public Water Supply System	<input type="checkbox"/>
<input type="checkbox"/> Deep Mine Safety Operation -Anthracite	<input type="checkbox"/>	<input type="checkbox"/> Radiation Facility	<input type="checkbox"/>
<input type="checkbox"/> Deep Mine Safety Operation -Bituminous	<input type="checkbox"/>	<input type="checkbox"/> Residual Waste Operation	<input type="checkbox"/>
<input type="checkbox"/> Deep Mine Safety Operation -Ind Minerals	<input type="checkbox"/>	<input type="checkbox"/> Storage Tank Location	<input type="checkbox"/>
<input type="checkbox"/> Encroachment Location (water, wetland)	<input type="checkbox"/>	<input type="checkbox"/> Water Pollution Control Facility	<input type="checkbox"/>
<input type="checkbox"/> Erosion & Sediment Control Facility	<input type="checkbox"/>	<input type="checkbox"/> Water Resource	<input type="checkbox"/>
<input type="checkbox"/> Explosive Storage Location	<input type="checkbox"/>	<input type="checkbox"/> Other:	<input type="checkbox"/>

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
	41	5	30	-76	8	55

Horizontal Accuracy Measure Feet 20.0 --or-- Meters

Horizontal Reference Datum Code	<input type="checkbox"/>	North American Datum of 1927
	<input checked="" type="checkbox"/>	North American Datum of 1983
	<input type="checkbox"/>	World Geodetic System of 1984

Horizontal Collection Method Code	GPSST / SURVY
-----------------------------------	---------------

Reference Point Code H20PI

Altitude Feet 676' --or-- Meters

Altitude Datum Name	<input type="checkbox"/>	The National Geodetic Vertical Datum of 1929
	<input checked="" type="checkbox"/>	The North American Vertical Datum of 1988 (NAVD88)

Altitude (Vertical)	Location	Datum	Collection Method	Code	GPSST / SRVEY
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Geometric Type Code POINT

Data Collection Date 12/21/04

Source Map Scale Number 1" Inch(es) = 24,000 Feet

--or-- Centimeter(s) = Meters

PROJECT INFORMATION

Project Name
PPL Susquehanna, LLC

Project Description
NPDES Permit Renewal

Project Consultant Last Name	First Name	MI	Suffix
N/A			

Project Consultant Title	Consulting Firm
N/A	

Mailing Address Line 1 N/A	Mailing Address Line 2
--------------------------------------	-------------------------------

Address Last Line - City	State	ZIP+4
N/A		

Phone NA	Ext	FAX	Email Address
Time Schedules	Project Milestone (Optional)		

1. Have you informed the surrounding community and addressed any concerns prior to submitting the application to the Department? ☒ Yes ☐ No

2. Is your project funded by state or federal grants? ☐ Yes ☒ No

Note: If "Yes", specify what aspect of the project is related to the grant and provide the grant source, contact person and grant expiration date.

Aspect of Project Related to Grant

Grant Source: _____

Grant Contact Person: _____

Grant Expiration Date: _____

3. Is this application for an authorization on Appendix A of the Land Use Policy? (For referenced list, see Appendix A of the Land Use Policy attached to GIF instructions) ☐ Yes ☒ No

Note: If "No" to Question 3, the application is not subject to the Land Use Policy.

If "Yes" to Question 3, the application is subject to this policy and the Applicant should answer the additional questions in the Land Use Information section.

LAND USE INFORMATION

Note: Applicants are encouraged to submit copies of local land use approvals or other evidence of compliance with local comprehensive plans and zoning ordinances.

1. Is there an adopted county or multi-county comprehensive plan? ☐ Yes ☐ No

2. Is there an adopted municipal or multi-municipal comprehensive plan? ☐ Yes ☐ No

3. Is there an adopted county-wide zoning ordinance, municipal zoning ordinance or joint municipal zoning ordinance? ☐ Yes ☐ No

Note: If the Applicant answers "No" to either Questions 1, 2 or 3, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 4 and 5 below.

If the Applicant answers "Yes" to questions 1, 2 and 3, the Applicant should respond to questions 4 and 5 below.

4. Does the proposed project meet the provisions of the zoning ordinance or does the proposed project have zoning approval? If zoning approval has been received, attach documentation. ☐ Yes ☐ No

5. Have you attached Municipal and County Land Use Letters for the project? ☐ Yes ☐ No

COORDINATION INFORMATION

Note: 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)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.1	Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be equal to or greater than 200 tons/day? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.2	Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be greater than 50,000 tons/year? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.3	Will this coal mining project involve coal preparation/ processing activities in which thermal coal dryers or pneumatic coal cleaners will be used? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.4	For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters? (DEP Use/4x62)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.5	Will this coal mining project involve the construction of a permanent 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 exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet? (DEP Use/3140)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.6	Will this coal mining project involve underground coal mining to be conducted within 500 feet of an oil or gas well? (DEP Use/4z41)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.0	Is this a non-coal (industrial minerals) mining project? If "Yes", respond to 2.1-2.6. If "No", skip to Question 3.0. (DEP Use/48y1)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.1	Will this non-coal (industrial minerals) mining project involve the crushing and screening of non-coal minerals other than sand and gravel? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
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 sand and gravel operations (screening only) and dry sand and gravel operations with a capacity of less than 150 tons/hour of unconsolidated materials? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.3	Will this non-coal (industrial minerals) mining project involve the construction, operation and/or modification of a portable non-metallic (i.e., non-coal) minerals processing plant under the authority of the General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)? (DEP Use/4x70)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.4	For this non-coal (industrial minerals) mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters? (DEP Use/4x62)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.5	Will this non-coal (industrial minerals) mining project involve the construction of a permanent 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 exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet? (DEP Use/3140)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

3.0	Will your project, activity, or authorization have anything to do with a well related to oil or gas production, have construction within 200 feet of, affect an oil or gas well, involve the waste from such a well, or string power lines above an oil or gas well? If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0. (DEP Use/4z41)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	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)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	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)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3.3	Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities? (DEP Use/4z41)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
4.0	Will the project involve a construction activity that results in earth disturbance? If "Yes", specify the total disturbed acreage. (DEP Use/4x66)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
4.0.1 Total Disturbed Acreage					
5.0	Does the project involve any of the following? If "Yes", respond to 5.1-5.3. If "No", skip to Question 6.0. (DEP Use/4x10)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
5.1	Water Obstruction and Encroachment Projects - 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? (DEP Use /4x10).	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
5.2	Wetland Impacts - 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 wetland? (DEP Use/4x10).	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
5.3	Floodplain Projects by the commonwealth, a Political Subdivision of the commonwealth or a Public Utility - 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 floodplain? (DEP Use /4x10).	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
6.0	Will the project involve discharge of stormwater or wastewater from an industrial activity to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system? (DEP Use/4x62)	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
7.0	Will the project involve the construction and operation of industrial waste treatment facilities? (DEP Use/4x62)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	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)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
8.0.1 Estimated Proposed Flow (gal/day)					
9.0	Will the project involve the subdivision of land, or the generation of 800 gpd or more of sewage on an existing parcel of land or the generation of an additional 400 gpd of sewage on an already-developed parcel, or the generation of 800 gpd or more of industrial wastewater that would be discharged to an existing sanitary sewer system? (DEP Use/4x61).	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
9.0.1 Was Act 537 sewage facilities planning submitted and approved by DEP? If "Yes" attach the approval letter. Approval required prior to 105/NPDES approval.					
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)	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
10.0.1 Gallons Per Year (residential septage)					
10.0.2 Dry Tons Per Year (biosolids)					

11.0	Does the project involve construction, modification or removal of a dam? If "Yes", identify the dam. (DEP Use/3140)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
11.0.1	Dam Name		
12.0	Will the project interfere with the flow from, or otherwise impact, a dam? If "Yes", identify the dam. (DEP Use/3140)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
12.0.1	Dam Name		
13.0	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)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
13.0.1	Enter all types & amounts of emissions; separate each set with semicolons.		
14.0	Does the project include the construction or modification of a drinking water supply to serve 15 or more connections or 25 or more people, at least 60 days out of the year? If "Yes", check all proposed sub-facilities. (DEP Use/4x81)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
14.0.1	Number of Persons Served		
14.0.2	Number of Employee/Guests		
14.0.3	Number of Connections		
14.0.4	Sub-Fac: Distribution System	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14.0.5	Sub-Fac: Water Treatment Plant	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14.0.6	Sub-Fac: Source	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14.0.7	Sub-Fac: Pump Station	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14.0.8	Sub Fac: Transmission Main	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14.0.9	Sub-Fac: Storage Facility	<input type="checkbox"/> Yes	<input type="checkbox"/> No
15.0	Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery? (DEP Use/4x81) and 4x52).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
16.0	Is your project to be served by an existing public water supply? If "Yes", indicate name of supplier and attach letter from supplier stating that it will serve the project. (DEP Use/4x81)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
16.0.1	Supplier's Name		
16.0.2	Letter of Approval from Supplier is Attached	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
17.0	Will this project involve a new or increased drinking water withdrawal from a stream or other water body? If "Yes", should reference both Water Supply and Watershed Management. (DEP Use/4x81 and 4x10)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
17.0.1	Stream Name		
18.0	Will the construction or operation of this project involve treatment, 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)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
18.0.1	Type & Amount		
19.0	Will your project involve the removal of coal, minerals, etc. as part of any earth disturbance activities? (DEP Use/48y1)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
20.0	Does your project involve installation of a field constructed underground storage tank? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit. (DEP Use/2570)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
20.0.1	Enter all substances & capacity of each; separate each set with semicolons.		
21.0	Does your project involve installation of an aboveground storage tank greater than 21,000 gallons capacity at an existing facility? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit. (DEP Use/2570)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
21.0.1	Enter all substances & capacity of each; separate each set with semicolons.		

- 22.0 Does your project involve installation of a tank greater than 1,100 gallons 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) ☐ -- Yes ☒ No
- 22.0.1 Enter all substances & capacity of each; separate each set with semicolons.
- 23.0 Does your project involve installation of a storage tank at a new facility with a total AST capacity greater than 21,000 gallons? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit. (DEP Use/2570) ☐ Yes ☒ No
- 23.0.1 Enter all substances & capacity of each; separate each set with semicolons.
- 24.0 Will the intended activity involve the use of a radiation source? (DEP Use/4x90). ☐ Yes ☒ No

CERTIFICATION

I certify that I have the authority to submit this application on behalf of the applicant named herein and that the information provided in this application is true and correct to the best of my knowledge and information.

Type or Print Name Timothy S. Rausch

Signature 

SR VP - Chief Nuclear Officer

Title

2/26/10
Date



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

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)		DEP USE ONLY
Client ID#	APS ID#	Date Received & General Notes
Site ID#	Auth ID#	
Facility ID#		

APPLICANT IDENTIFIER

Applicant/Operator Name PPL Susquehanna, LLC

Is this an application for a:

☐ 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

1. SIC Code	NAICS Code	Corresponding SIC/NAICS Description
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.)

☐ NO (Skip question 3.)

3. Is the facility applying for permit exemption under the No Exposure rule? (See Instructions)

☐ YES ☒ NO

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	September 1, 2005
Water Quality Permit - STP	4085411	October 7, 1985
Water Quality Permit - IND.	4076203	May 25, 1977

6. ATTACH TOPOGRAPHIC MAP (See Instructions)

7. NUMBER OF OUTFALLS

a. 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 NUMBER (list)	LATITUDE			LONGITUDE			RECEIVING WATER (Name)	LOW FLOW STREAM	
	Deg	Min	Sec	Deg	Min	Sec		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. Name of Nearest Downstream Potable Water Intake Danville Water Authority Distance 26 miles

10. 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? ☐ YES ☒ NO

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.

11. CONTRACTED ANALYTICAL ASSISTANCE

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

☐ NO ☒ YES (Provide information below.)

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

12. 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.

☒ YES ☐ NO

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?

☐ YES ☒ NO

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

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.

Timothy S. Rausch

SR VP / Chief Nuclear Officer

Name (type or print legibly)

Official Title

Signature

Date

(Use corporate or professional seal as appropriate.)

Taken, sworn, and subscribed before me, this

2nd

day of

March

20 10

Notary Seal

Laurie Minto

COMMONWEALTH OF PENNSYLVANIA

Notarial Seal

Laurie M. Minto, Notary Public
Salem Twp., Luzerne County

My Commission Expires July 24, 2010

Member, Pennsylvania Association of Notaries

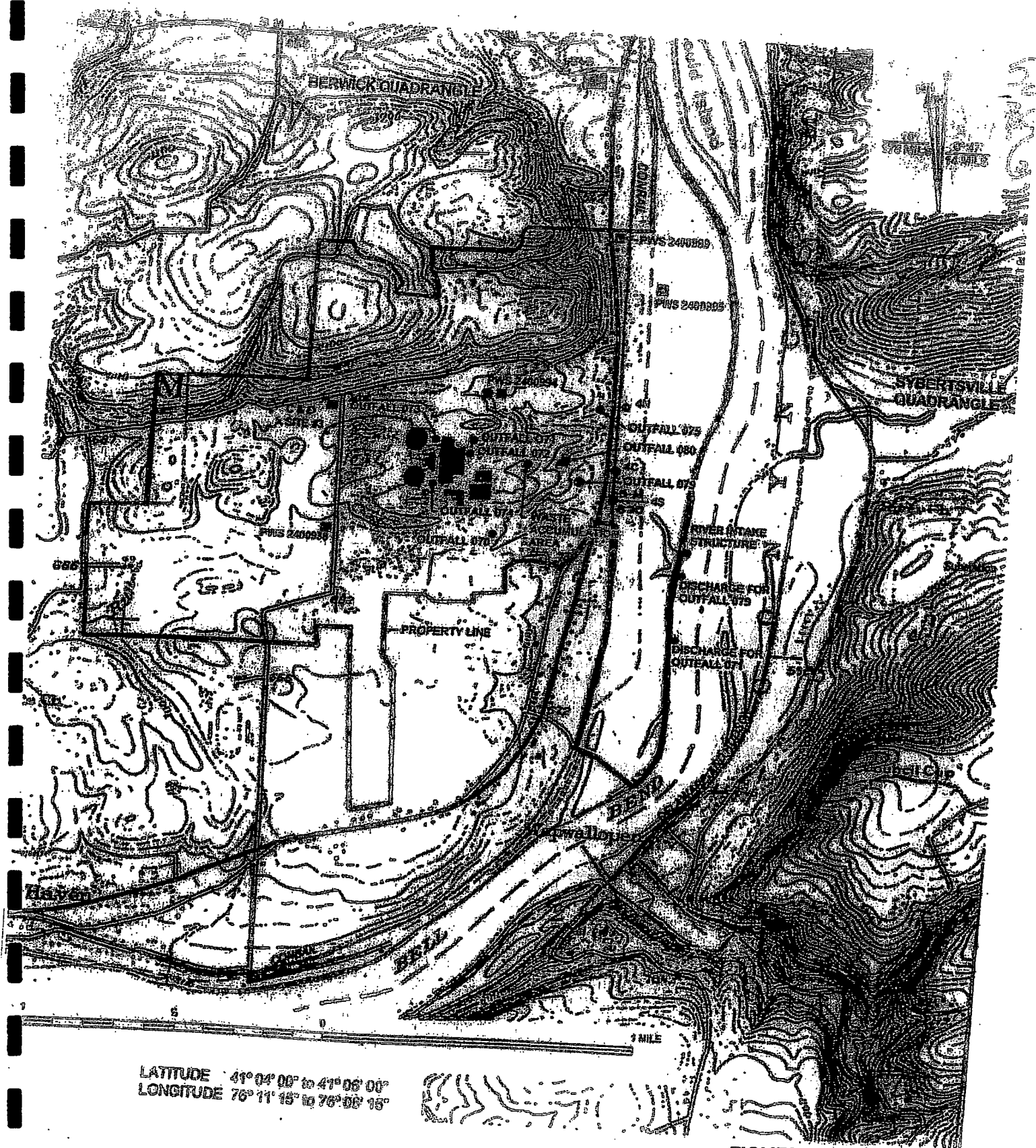


FIGURE 4-1
Topographic Map
SSES

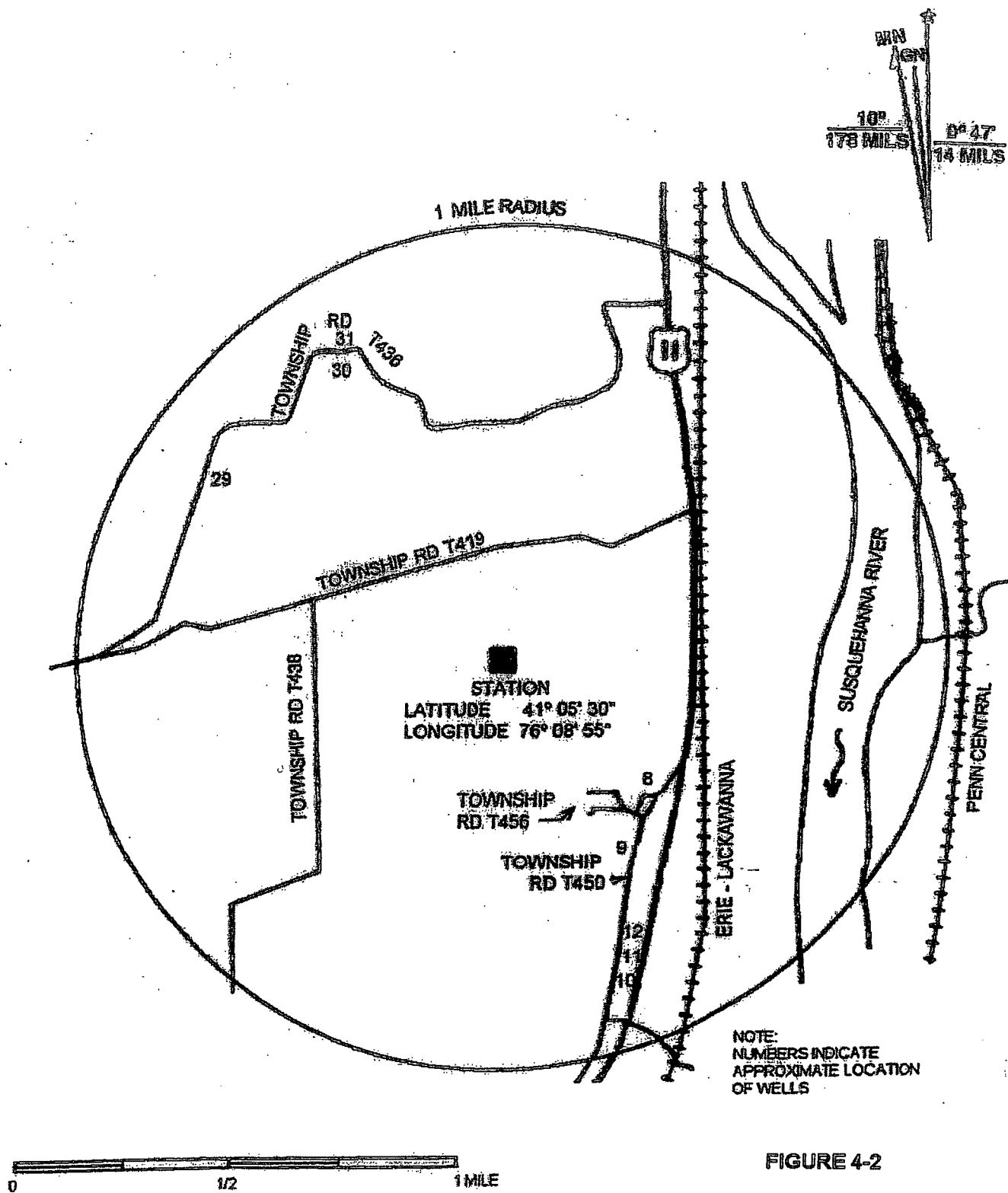


FIGURE 4-2

Springs Used for Water
Supply Within 1 Mile
of SSES

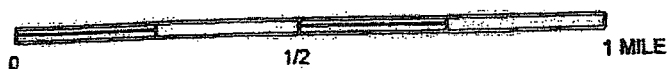
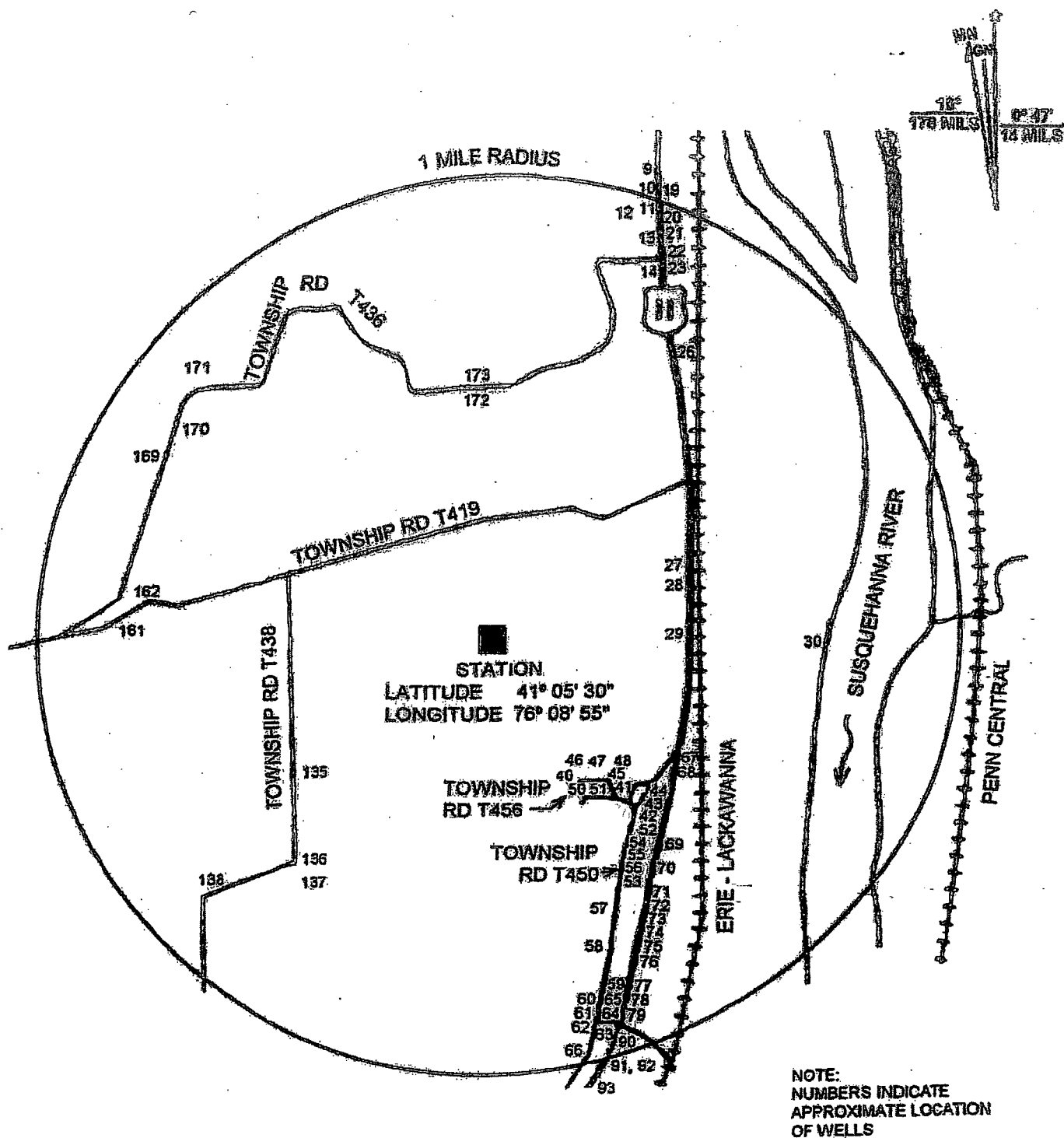
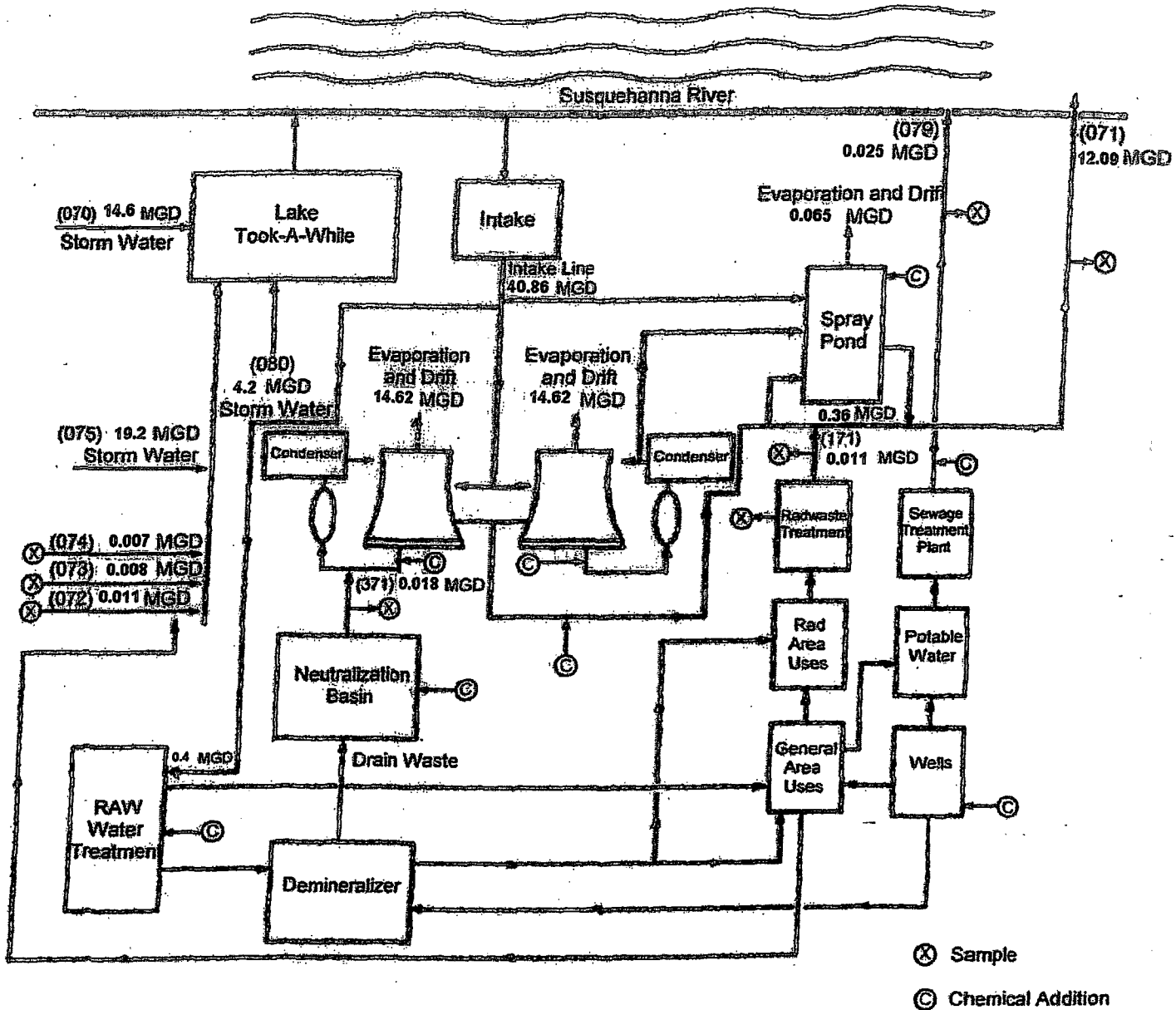


FIGURE 4-3

Water Wells Within
1 Mile of SSSES

Line Drawing per Module 1 of NPDES Permit Application





COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

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.

8

4. REQUIRED AND OPTIONAL ANALYSIS

a. Summary of Required Analysis

Outfall Number	Discharge Contains (see Instructions)						Pollutants or Pollutant Groups which must be sampled for and analyzed	Required Number of Sample Events (see instructions)
	Process Waste	NCCW	Sanitary Waste	Misc. Waste	GW Cleanup	Stormwater		
070 075 080	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Module 13	1
071	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1,2,3,4,5 & PCBs	3
072	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Selected Group 1	1
073. 074	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Selected Group 1	1
079	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group 1	1
River Intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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 Module 9 - Pollutant Group 6 - Pesticides

c. Optional Site-Specific Data

Additional modules may be attached to provide any of the optional site-specific information discussed in Appendix 2. (The modules should be used to report intake water quality, upstream background or ambient water quality, and parameter-specific coefficient of effluent variability. Space is provided at the top of the module to provide description of sampling points used.)

Optional data is attached to application.

☒ YES

☐ NO

5. PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLANNING.

Does the facility have a PPC plan?

☒ YES

☐ NO

Does the facility have any other related plans, such as a Pollution Incident Prevention (PIP) Plan, Spill Prevention Control and Counter Measure (SPCC) Plan or BMP Plan?

☒ YES

☐ NO

If "YES," identify and indicate date(s) implemented.

Type of Plan	Date Implemented
PPC Plan Note: Two (2) copies provided w/Application	(Updated) 1/8/2010
SPCC Plan Note: Two (2) copies provided w/Application	(Updated) 1/8/2010

DEP may require the plan(s) be submitted with this application.

6. OTHER INFORMATION (OPTIONAL): Attach additional sheets describing any additional environmental pollution 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 schedules.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL INFORMATION IS ATTACHED

7. INFORMATION AND ANALYSIS OF EFFLUENT QUALITY FOR OTHER POTENTIALLY TOXIC POLLUTANTS

a. Information on Chemical Additives

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

Outfall	Chemical Substance or Compound Trade Names or Specific Ingredients	Manufacturer Name and Address	Average & Maximum Usage Rate lbs/day	Concentration			Lowest Possible Analytical Detection Level (µg/L)	Whole Product 96 Hr LC50 (mg/L) and species ⁽¹⁾	Whole Product 48 Hr LC50 (mg/L) and species ⁽¹⁾
				In-system	Effluent	Units			
071	Acrylic Acid Sulfonated Acrylic Acid Copolymer Dispersant, 3DT121 32.125	Nalco Company 1601 W. Diehl Rd. Naperville, IL 60563-1189	Avg. 950 Max 2,000 (180,000 lbs/yr)	2,400	2,400	ug/l	1,500	Rainbow Trout (4,900 mg/l)	Daphnia Magna (2,800 mg/l)
071	Hydroxy ethylidene disphosphonic acid (HEDP) Supercool 1393 32.127	"	Avg. 750 Max 1,500 (90,000 lbs/yr)	4,000	4,000	ug/l	83	Rainbow Trout (368 mg/l)	Daphnia Magna (527 mg/l)
071	Solution of Quaternary Alkyl Ammonium Compound Molluscide and General Biocide, 32.126 H-130	"	Avg. 800 Max 2,000 (160,000 lbs/yr)	10,600	100	ug/l	100 ug/l	Bluegill Sunfish (0.32-0.59 mg/l)	Daphnia Magna (0.094 mg/l)
071	Sodium Bromide, 32.114 Acti-Brom 1318	"	Avg. 500 Max 1,000	3,300	3,300	ug/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	GE 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 60563-1189	See Note 4	---	---	---	---	Flathead Minnow (12 mg/l)	Daphnia Magna (12 mg/l)
071	Proprietary Descaling Agent Ferroquest LP7200	GE Betz Dearborn Inc. 4636 Somerton Rd. Trevose, PA 19057	See Note 5	---	---	---	---	Flathead Minnow 1500 mg/L	Daphnia Magna 1000 mg/L
0011 071	Bentonite Clay Slurry, 32.128	Nalco Company 1601 W. Diehl Rd. Naperville, IL 60563-1189	Avg - 2,000 Max - 800 (350,000 lbs/yr)	0	330,000	ug/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	ug/l	400	Ceriodaphnia Dubla (1.23 g/l)	---
071	Rotenone, 32.15	AgroEvo Environmental Health, 95 Chestnut Ridge Rd., Montvale, NJ 07645	See Note 6	---	---	---	---	---	---
071	Fluidone, 32.46	SePro 11550 N. Meridian Carmel, IN 46032	See Note 6	---	---	---	---	---	---
071	Nonoxidizing Biocide, Quaternary Ammonium Chloride, Spectrus CT1300, SAMM 32.126	GE Betz Dearborn Inc. 4636 Somerton Rd., Trevose, PA 19053	Avg. 800 Max 2000 160,000 lbs/yr	10,600	100	ug/l	100	Rainbow Trout 2 mg/L	Daphnia Magna 0.04 mg/L
071	Detoxifier for Nonoxidizing Biocide, Clay Slurry DT1400 SAMM 32.128	"	Avg. 2,000 Max 8,000 350,000 lbs/yr	0	330,000	ug/l	100	Fathead Minnow 435 mg/L	Daphnia Magna 435 mg/L
071	Hydroxy ethylidene disphosphoric acid (HEDP) Depositrol BL5400 SAMM 32.127	"	Avg. 750 Max 1500 90,000 lbs/yr	4000r	4000	ug/l	83	Fathead Minnow 3040 mg/L	Daphnia Magna 755 mg/L
071/079	Sodium Bisulfite 32.113 Nalco 7408	Allied Corp. Chemical Sector PO Box 1139R Morristown, NJ 07960	Avg – 183	0	500	ug/l	125	Mosquito Fish (240/l)	Mosquito Fish (240 mg/L)
071 001	Sulfuric Acid, 32.57	Allied Corp. P.O. Box 2064R Morristown, NJ 079609	(Approx. 435,000 lbs/yr)	---	---	---	---	---	---
071 2	Depositrol PY5206 32.137	GE Betz Dearborn Inc., 4636 Somerton Rd. Trevose, PA 19057	Avg – 96 lbs/day Max – 385 lbs/day	32,000	1,140	ug/l	12,000	Fathead Minnow (1,680 mg/L)	Daphnia Magna (1,635 mg/L)
071	Aquashade 32.135	Applied Biochemists	See Note 6	5,000 mg/l	5	ug/l	100	---	---
071	pHREEdom 5200 Scale Control SAMM 32.133	Calgon Corp. P.O. Box 1346 Pittsburg, PA 15230	Avg 750 Max 1500 90,000 lbs/yr	4000	4000	ug/l	83	---	---

071	pHREEdom T2000 Scale Inhibitor SAMM 32.134	Calgon Corp. P.O. Box 1346 Pittsburg, PA 15230	Avg 750 Max 1500	4000	4000	ug/l	83	Fathead Minnow 125 ppm	Daphnia Magna 140 ppm
071/072/079	Miscellaneous	Various	See Note 7	---	---	---	---	---	---

(1) If LC50 Data for whole product is not available, data for the individual active ingredients may be provided.

0012

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)

[illegible]

c. Are any Table 2 substances identified for which a spill reporting exemption is requested?

☒ YES☐ NO

If "YES," complete the Hazardous Substance Table.

d. Any other toxic chemicals known or expected to be present in the discharge.

Report any additional significant detections in effluent samples on the Other Toxic Chemicals sheets. None

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.
- 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.

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:

<u>Chemical/SAMM #</u>	<u>Est. gal/yr.</u>
Power Coil, A-10.29	a
Coil Rite, C-10.334	a
Acti-Klean, C-10.326	a
By-Pas, E-10.11	220
Organic Orange, E-10.35	110
Citirikleen, E-10.29	a
MSA/Cleaner/Sanitizer II, E-10.8	288, b
H ₂ Orange2, C-10.451	a
Touch It Up, E-10.4	a
Corrshield NT 4204, 32.90	50
Zeta Lyte 15	d
Nalco 9905, 32.81	d
Ethylene Glycol mixture, 16.20	c
Iron Oxalate, 32.129	500 lbs./yr.
Polyfloc CP1160, 32.130	20 lbs./yr.
Polyfloc AP1100, 32.131	20 lbs./yr.
Propylene Glycol Mixture, 16.20	c
EPA 2000 WCI-140, B-10.27	a
Trisodium Phosphate, A-10.24	a
Sodium Hydroxide, 32.59	500
Sodium Nitrite, 32.14	200 lb/yr
Nitric Acid, 38.89	5
Enriched Sodium Pentaborate, 32.138	c
Rhodamine WT Dye 32.68	a

Key

- a. Not available
- b. Ounces
- c. 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.
- d. Flocculent aid used infrequently for dewatering sludge.

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.



MATERIAL SAFETY DATA SHEET

PRODUCT

3D TRASAR(R) 3DT121

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :

Polymer Dispersant
3D TRASAR(R) 3DT121 replaced PCL-401 polymer Dispersant

APPLICATION :

COOLING 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: 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 found that this product is not hazardous under 29 CFR 1910.1200.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause irritation with prolonged contact.

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 suitable protective clothing.

May evolve oxides of carbon (COx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

May cause irritation with prolonged contact.

SKIN CONTACT :

May cause irritation with prolonged contact.

INGESTION :

Not a likely route of exposure. May cause gastrointestinal irritation.

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

For additional copies of an MSDS visit www.nalco.com and request access



MATERIAL SAFETY DATA SHEET

PRODUCT

3D TRASAR(R) 3DT121

EMERGENCY TELEPHONE NUMBER(S)

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INHALATION :

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

HUMAN HEALTH HAZARDS - CHRONIC :

No adverse effects expected other than those mentioned above.

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 :

Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

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 :

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.

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. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible.



MATERIAL SAFETY DATA SHEET

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3D TRASAR(R) 3DT121

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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. Clean contaminated surfaces with water or aqueous cleaning agents. 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. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed.

SUITABLE CONSTRUCTION MATERIAL :

Polypropylene, Polyethylene, PVC, Plasite 7122, Polyurethane, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

UNSUITABLE CONSTRUCTION MATERIAL :

Mild steel, Stainless Steel 316L, Stainless Steel 304, Brass, Buna-N, EPDM, Hypalon, Neoprene, Viton

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 :

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: Multi-contaminant cartridge. with a Particulate pre-filter. 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 :

When handling this product, the use of chemical gloves is recommended., The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from, PVC, Gloves should be replaced immediately if signs of degradation are observed., Breakthrough time not determined as preparation, consult PPE manufacturers.

**MATERIAL SAFETY DATA SHEET****PRODUCT****3D TRASAR(R) 3DT121****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SKIN PROTECTION :**

Wear standard protective clothing. See general advice.

EYE PROTECTION :

When handling this product, the use of safety glasses with side shields is recommended.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Consider the provision in the work area of a safety shower and eyewash. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Yellow
ODOR	Neutral
SPECIFIC GRAVITY	1.13 @ 60.0 °F / 15.5 °C
DENSITY	9.4 lb/gal
SOLUBILITY IN WATER	Complete
pH (100.0 %)	3.0
VISCOSITY	40.0 cst @ 68.0 °F / 20.0 °C
FREEZING POINT	26.6 °F / -3.0 °C
VOC CONTENT	0.0 % Calculated

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 :

Avoid extremes of temperature.

MATERIALS TO AVOID :

Bases Contact with strong alkalis (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.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

**MATERIAL SAFETY DATA SHEET****PRODUCT****3D TRASAR(R) 3DT121****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****11. TOXICOLOGICAL INFORMATION**

No toxicity studies have been conducted on this product. The following results are for a similar product.

ACUTE ORAL TOXICITY :

Species	LD50	Test Descriptor
Rat	5,000 mg/kg	Similar Product

ACUTE DERMAL TOXICITY :

Species	LD50	Test Descriptor
Rabbit	> 2,000 mg/kg	Similar 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).

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for a similar product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	4,900 mg/l	Similar Product
Bluegill Sunfish	96 hrs	> 5,000 mg/l	Similar Product

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	2,800 mg/l		Similar Product

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%

**MATERIAL SAFETY DATA SHEET****PRODUCT****3D TRASAR(R) 3DT121****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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

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 : 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

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

NATIONAL REGULATIONS, USA :**OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

**MATERIAL SAFETY DATA SHEET****PRODUCT****3D TRASAR(R) 3DT121****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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.

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 WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :
This product may contain trace levels (<0.1% for carcinogens, <1% all other substances) of the following substance(s) listed under the regulation:

Substance(s)	Citations
<ul style="list-style-type: none">• Sulfuric Acid• Sodium Bisulfite	Sec. 311

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

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

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

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

NATIONAL REGULATIONS, CANADA :



MATERIAL SAFETY DATA SHEET

PRODUCT

3D TRASAR(R) 3DT121

EMERGENCY TELEPHONE NUMBER(S)

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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 substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

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 substance(s) in this preparation are included in or exempted from 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

This product contains substance(s) which are not in compliance with the Toxic Chemical Control Law (TCCL) and may require additional review.

PHILIPPINES

This product contains substance(s) which are not in compliance with the Republic Act 6969 (RA 6969) and may require additional review.

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.



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3D TRASAR(R) 3DT121

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

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 : 06/19/2008

Version Number : 1.1

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME :

Scale Inhibitor (HEP)
SURE-COOL® 1393 replaced PCL-57 HEP

APPLICATION :

SCALE INHIBITOR

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: 1/1 INSTABILITY: 0/0 OTHER:
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard**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	30.0 - 60.0
Phosphonic Acid	13598-36-2	1.0 - 5.0

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******DANGER**

Corrosive. Risk of serious damage to eyes.

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 :

Severely irritating. If not removed promptly, will injure eye tissue and may result in permanent eye damage.



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SKIN CONTACT :

Can cause moderate irritation.

INGESTION :

There may be irritation to the gastro-intestinal tract with nausea and vomiting.

INHALATION :

Elevated temperatures or mechanical action may form vapors, mists or fumes which may be irritating to the eyes, nose, throat and lungs.

SYMPTOMS OF EXPOSURE :

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

Hydroxyethylenediphosphonic Acid (HEDP) has been reported to alter the development of the bone density by affecting bone mineralization and calcium and phosphate metabolism in animal studies.

AGGRAVATION OF EXISTING CONDITIONS :

A review 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 Hygienists (ACGIH).

No adverse effects expected other than those mentioned above.

4. FIRST AID MEASURES

EYE CONTACT :

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

SKIN CONTACT :

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

INGESTION :

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

INHALATION :

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

NOTE TO PHYSICIAN :

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



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5. FIRE FIGHTING MEASURES

FLASH POINT : > 200 °F / > 93 °C (TCC)

EXTINGUISHING MEDIA :

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, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid generating aerosols and mists. 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 labeled containers. Store separately from bases.

SUITABLE CONSTRUCTION MATERIAL :

Buna-N, EPDM, HDPE (high density polyethylene), Polyurethane, Hypalon, Viton, Neoprene, Polypropylene, Polyethylene, PVC, Stainless Steel 316L

UNSUITABLE CONSTRUCTION MATERIAL :

Brass, Epoxy phenolic resin, Mild steel, Stainless Steel 304



SAFETY DATA SHEET

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SURE-COOL® 1393

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

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

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed. If significant mists, vapors or aerosols are generated an approved respirator is recommended. If significant mists, vapors or aerosols are generated an approved respirator is recommended. An organic vapor/acid gas 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 :

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from Gloves should be replaced immediately if signs of degradation are observed. Breakthrough time not determined as preparation, consult PPE manufacturers. Neoprene gloves PVC gloves Butyl gloves

SKIN PROTECTION :

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

EYE PROTECTION :

Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS :

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

HUMAN EXPOSURE CHARACTERIZATION :

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

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Clear Light yellow
ODOR	None
SPECIFIC GRAVITY	1.41 - 1.47 @ 77 °F / 25 °C

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

DENSITY	11.7 - 12.2 lb/gal
SOLUBILITY IN WATER	Complete
pH (1 %)	< 2
VISCOSITY	40 cps @ 77 °F / 25 °C
FREEZING POINT	-13 °F / -25 °C
BOILING POINT	226 °F / 108 °C
VAPOR PRESSURE	Same as water
EVAPORATION RATE	Same as water

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 alkalis (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 TOXICITY :

Species:	Rat
LD50:	2,400 mg/kg
Test Descriptor:	Product

ACUTE DERMAL TOXICITY :

Species:	Rabbit
LD50:	> 7,940 mg/kg
Test Descriptor:	Product

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SENSITIZATION :**

This product is not expected to be a sensitizer.

CARCINOGENICITY :

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

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	> 1,000 mg/l	Product
Bluegill Sunfish	96 hrs	868 mg/l	Product
Rainbow Trout	96 hrs	368 mg/l	Product
Channel Catfish	96 hrs	695 mg/l	Product
Sheepshead Minnow	96 hrs	2,180 mg/l	Product

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	527 mg/l		Product
Grass Shrimp	96 hrs	1,770 mg/l		Product

PERSISTENCY AND DEGRADATION :

Chemical Oxygen Demand (COD) : 0.263 mg/l

Biological Oxygen Demand (BOD) :

Incubation Period	Value	Test Descriptor
	0 mg/l	

The product is not biodegradable

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.

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

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

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it 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 :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	Hydroxyethylidenediphosphonic Acid, Phosphonic Acid
UN/ID No :	UN 3265
Hazard Class - Primary :	8
Packing Group :	III

Flash Point :	> 93 °C / > 200 °F
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AIR TRANSPORT (ICAO/IATA) :

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Proper Shipping Name :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	Hydroxyethylidenediphosphonic Acid, Phosphonic Acid
UN/ID No :	UN 3265
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) :

Proper Shipping Name :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	Hydroxyethylidenediphosphonic Acid, Phosphonic Acid
UN/ID No :	UN 3265
Hazard Class - Primary :	8
Packing Group :	III

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this 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.

Hydroxyethylidenediphosphonic Acid : Corrosive, Target Organ Effect - Eye
Phosphonic Acid : Corrosive

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:

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

**SAFETY DATA SHEET****PRODUCT****SURE-COOL® 1393****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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.

Limitations: no more than required to produce intended technical effect. For use at levels not to exceed 0.3% of active ingredients by weight of dry pulp or chips, or 0.5% by weight of active ingredients of wet pulp or chips.

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

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

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 :



SAFETY DATA SHEET

PRODUCT

SURE-COOL® 1393

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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 substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

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 Provisions on the Environmental Administration of New Chemical Substances 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 Existing and New Chemical Substances list (ENCS).

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

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

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

16. OTHER INFORMATION

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

* The human risk is: Moderate

* The environmental risk is: Low



SAFETY DATA SHEET

PRODUCT

SURE-COOL® 1393

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

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

REFERENCES

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

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

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

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

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

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

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

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

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

Prepared By : Product Safety Department
Date issued : 07/31/2009
Version Number : 1.10

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME : H-130 Microbiocide

APPLICATION : BIOCIDETWIN-CHAIN QUATERNARY AMMONIUM COMPOUND CONCENTRATE

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 / 2 **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)
Didecyl-Dimethyl-Ammonium chloride	7173-51-5	30 - 60
Ethanol	64-17-5	10 - 30

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******DANGER**

Combustible. May cause tissue damage. Toxic to aquatic organisms. Corrosive. Causes severe eye and skin damage. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. Avoid contamination of food. **KEEP OUT OF REACH OF CHILDREN.** Corrosive to eyes and skin. Do not get in eyes, on skin or clothing. May be fatal if swallowed or inhaled. Do not swallow. Do not breathe vapour or mist.

Do not get in eyes, on skin, on clothing. Do not take internally. Keep away from heat. Keep away from sources of ignition - No smoking. Use with adequate ventilation. Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful if inhaled. Avoid breathing vapor. Remove contaminated clothing and wash before reuse. Harmful or fatal if swallowed. Avoid contamination of food.

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.

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 ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve HCl under fire conditions. May evolve ammonia under fire conditions.



MATERIAL SAFETY DATA SHEET

PRODUCT

H-130 Microbiocide

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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)



MATERIAL SAFETY DATA SHEET

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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.

FIRE AND EXPLOSION HAZARD :

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 ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve HCl under fire conditions. May evolve ammonia 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 :

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.

7. HANDLING AND STORAGE

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 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.

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****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 0.93 @ 77 °F / 25 °C

DENSITY 7.7 lb/gal



MATERIAL SAFETY DATA SHEET

PRODUCT

H-130 Microbiocide

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE ORAL TOXICITY :

Species	LD50	Test Descriptor
Rat	645 mg/kg	Product

ACUTE DERMAL TOXICITY :

Species	LD50	Test Descriptor
Rabbit	> 4 g/kg	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).

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	2.2 mg/l	
Bluegill Sunfish	96 hrs	0.92 mg/l	

ACUTE INVERTEBRATE RESULTS :

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

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.

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 :	DISINFECTANTS, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE
UN/ID No :	UN 1903
Hazard Class - Primary :	8
Packing Group :	II

Flash Point : 43 °C / 109 °F

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL
UN/ID No :	UN 2920
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II
IATA Cargo Packing Instructions :	
IATA Cargo Aircraft Limit :	(Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL
UN/ID No :	UN 2920
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II

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.

Didecyl-Dimethyl-Ammonium chloride : Corrosive
Ethanol : Flammable

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:

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

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****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.

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.

**MATERIAL SAFETY DATA SHEET****PRODUCT****H-130 Microbiocide****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.

16. OTHER INFORMATION

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

REFERENCES

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

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

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

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

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

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

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

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

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

Prepared By : Product Safety Department
Date issued : 12/30/2005
Version Number : 1.7



MATERIAL SAFETY DATA SHEET

PRODUCT

ACTI-BROM® 1318

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME :

Oxidizing Biocide, Sodium Bromide
ACTI-BROM® 1318 replaced H-940

APPLICATION :

BIOCIDE

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	7647-15-6	30.0 - 60.0

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

Causes moderate eye irritation.

Avoid contact with eyes, skin and clothing. Wash with soap and water after handling. Remove contaminated clothing and wash before reuse.

May evolve hydrogen bromide and bromine under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Can cause mild to moderate irritation.

SKIN CONTACT :

May cause irritation with prolonged contact.

INGESTION :

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



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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.

HUMAN HEALTH HAZARDS - CHRONIC :

No adverse effects expected other than those mentioned above.

4. FIRST AID MEASURES

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

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

5. FIRE FIGHTING MEASURES

FLASH POINT : None

EXTINGUISHING MEDIA :

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

FIRE AND EXPLOSION HAZARD :

May evolve hydrogen bromide and bromine under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

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



MATERIAL SAFETY DATA SHEET

PRODUCT

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6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

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

METHODS FOR CLEANING UP :

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

ENVIRONMENTAL PRECAUTIONS :

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

7. HANDLING AND STORAGE

HANDLING :

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

STORAGE CONDITIONS :

Store the containers tightly closed. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

General ventilation is recommended.

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed.

HAND PROTECTION :

Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SKIN PROTECTION :**

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :

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

HUMAN EXPOSURE CHARACTERIZATION :

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

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Colorless
ODOR	None
SPECIFIC GRAVITY	1.45 @ 77 °F / 25 °C
DENSITY	12.1 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	7.9
VISCOSITY	5 cps
FREEZING POINT	7 °F / -14 °C
BOILING POINT	218 °F / 103.5 °C
VAPOR PRESSURE	5.6 mm Hg @ 68 °F / 20 °C
VOC CONTENT	0.00 %

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.

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HAZARDOUS DECOMPOSITION PRODUCTS :**

Under fire conditions: None known

11. TOXICOLOGICAL INFORMATION**ACUTE ORAL TOXICITY :**

Species	LD50	Test Descriptor
Rat	> 5,000 mg/kg	Similar Product
Rating :	Non-Hazardous	

ACUTE DERMAL TOXICITY :

Species	LD50	Test Descriptor
Rabbit	> 2,000 mg/kg	Similar Product
Rating :	Non-Hazardous	

PRIMARY SKIN IRRITATION :

Draize Score	Test Descriptor
0.0 / 8.0	Similar Product
Rating :	Essentially non-irritating

PRIMARY EYE IRRITATION :

Draize Score	Test Descriptor
16.0 / 110.0	Similar Product
Rating :	Mildly irritating

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

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

HUMAN HAZARD CHARACTERIZATION :

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

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product and a similar product. The following results are for the active components. The following results are for the hypobromous acid (as Br₂) generated from sodium bromide and hypochlorite.

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	> 5,000 mg/l	Product
Rainbow Trout	96 hrs	> 1,000 mg/l	Similar Product
Bluegill Sunfish	96 hrs	> 1,000 mg/l	Similar Product
Fathead Minnow	96 hrs	0.097 mg/l	HOBr (Generated from NaBr)
Rainbow Trout	96 hrs	0.23 mg/l	HOBr (Generated from NaBr)
Bluegill Sunfish	96 hrs	0.52 mg/l	HOBr (Generated from NaBr)
Sheepshead Minnow	96 hrs	0.19 mg/l	HOBr (Generated from NaBr)

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	7,900 mg/l		Active Substance (Sodium Bromide)
Ceriodaphnia dubia	48 hrs	> 5,000 mg/l		Product
Daphnia magna	48 hrs	0.038 mg/l		HOBr (Generated from NaBr)
American Oyster	96 hrs	0.54 mg/l		HOBr (Generated from NaBr)
Mysid Shrimp (Mysidopsis bahia)	96 hrs	0.17 mg/l		HOBr (Generated from NaBr)

ADDITIONAL ECOLOGICAL DATA:

AOX information: Product contains no organic halogens.

PERSISTENCY AND DEGRADATION :

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

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

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%

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

BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****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: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Moderate

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.

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.



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(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:

- | | |
|---|-----------------------------------|
| 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.

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., 21 CFR 176.300 Slimicides, The following limitations apply:

This product may be used to treat pulp and papermill water systems in situations requiring FDA sanction provided the bromide concentration in the water is kept below 22 ppm. The product must be used in conjunction with an oxidant such as bleach or gaseous chlorine. Follow instructions for use in pulp and papermill on the product label.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) :

EPA Reg. No. 5185-467-1706

In all cases follow instructions on the product label.

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.



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PRODUCT

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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. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

None of the substances are specifically listed in the regulation.

CALIFORNIA PROPOSITION 65 :

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

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :

This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

Pesticide controlled products are not regulated under WHMIS.

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).

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)



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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

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.

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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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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 : 05/08/2006

Version Number : 1.17



Material Safety Data Sheet

Issue Date: 10-JUL-2008
Supersedes: 02-JUL-2008

SPECTRUS NX1106

1 Identification

Identification of substance or preparation
SPECTRUS NX1106

Product Application Area
Water-based microbial control agent.

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 10-JUL-2008

2 Hazard(s) identification

EMERGENCY OVERVIEW

DANGER

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

DOT hazard: Corrosive to skin
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.

3 Composition / information on ingredients

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

HAZARDOUS INGREDIENTS:

Cas#	Chemical Name	Range (w/w%)
10377-60-3	MAGNESIUM NITRATE Oxidizer; irritant (eyes and skin)	1-5
26172-55-4	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE Corrosive; toxic (by ingestion and skin absorption); sensitizer (skin)	1-5

4 First-aid measures

SKIN CONTACT:

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

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 2-8 fluid ounces (60-240 mL) of 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

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:

oxides of carbon, nitrogen, and sulfur; and hydrogen chloride

FLASH POINT:

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

MISCELLANEOUS:

Corrosive to skin

UN 3265; Emergency Response Guide #153

6 Accidental release measures

PROTECTION AND SPILL CONTAINMENT:

WARNING: Keep spills and clean-up residuals out of municipal sewers and open bodies of water. Adsorb the spill with spill pillows or inert solids such as clay or vermiculite, and transfer contaminated materials to suitable containers for disposal. Deactivate spill area with freshly prepared solution of 5% sodium bicarbonate and 5% sodium hypochlorite in water. Apply solution to the spill area at a ratio of 10 volumes deactivation solution per estimated volume of residual spill to deactivate any residual active ingredient. Let stand for 30 minutes. Flush spill area with copious amounts of water to chemical sewer (if in accordance with local procedures, permits and regulations). DO NOT add deactivation solution to the waste pail to deactivate the adsorbed material.

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 and 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 (-7 to 38C) 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.

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 organic vapor cartridges and any of the following particulate respirators: N95, N99, N100, R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

gauntlet-type butyl gloves, chemical resistant apron and boots-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles, face shield

9 Physical and chemical properties

Specific Grav.(70F,21C)	1.033	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	28	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-2		
Viscosity(cps 70F,21C)	8	% Solubility (water)	100.0
Odor		Slight	
Appearance		Light Yellow To Green	
Physical State		Liquid	
Flash Point	P-M(CC)	> 200F > 93C	
pH As Is (approx.)		3.0	
Evaporation Rate (Ether=1)		< 1.00	
Percent VOC:		0.0	

NA = not applicable ND = not determined

10 Stability and reactivity

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with organics or reducing agents.

DECOMPOSITION PRODUCTS:

oxides of carbon, nitrogen, and sulfur; and hydrogen chloride

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 Toxicological information

Oral LD50 RAT:	>2,350 mg/kg
NOTE - Estimated value	
Teratology :	NEGATIVE
Dermal LD50 RABBIT:	>2,700 mg/kg
NOTE - Estimated value	
Skin Sensitization HUMAN:	POSITIVE
Non-Ames Mutagenicity :	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

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

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
PROPER SHIPPING NAME: CORROSIVE LIQUID, ACIDIC, ORGANIC,
N.O.S. (5-CHLORO-2-METHYL-4-ISOTHIAZOLIN
-3-ONE)
8, UN 3265, PG II
DOT EMERGENCY RESPONSE GUIDE #: 153
Note: Some containers may be DOT exempt, please check BOL for
exact container classification

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:
The ingredients in this product are approved by FDA under 21 CFR
176.300.
USDA FOOD PLANT APPROVALS:
G7
SARA SECTION 312 HAZARD CLASS:
Immediate(acute);Delayed(Chronic)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:

CAS#	CHEMICAL NAME	RANGE
10377-60-3	MAGNESIUM NITRATE	2.0-5.0%

CALIFORNIA REGULATORY INFORMATION

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

No regulated constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other information

NFPA/HMIS		CODE TRANSLATION
Health	3	Serious Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	CORR	DOT corrosive
(1) Protective Equipment	D	Goggles,Face Shield,Gloves,Apron

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

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	03-OCT-1997		** NEW **
	02-DEC-1997	15	03-OCT-1997
	23-DEC-1997	15	02-DEC-1997
	01-MAY-1998	15;EDIT:9	23-DEC-1997
	08-APR-1999	;EDIT:9	01-MAY-1998
	17-MAY-2001	4,16	08-APR-1999
	16-MAY-2006	10	17-MAY-2001
	22-MAR-2007	9	16-MAY-2006
	29-JUN-2007	5,6,8,10,16	22-MAR-2007
	02-JUL-2008	4,8	29-JUN-2007
	10-JUL-2008	7,11	02-JUL-2008

**SAFETY DATA SHEET****PRODUCT****H-550****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** H-550**APPLICATION :** 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 :** 3 / 3* **FLAMMABILITY :** 1 / 1 **INSTABILITY :** 0 / 0 **OTHER :**
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard**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)
Glutaraldehyde	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.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 • (630)305-1000For additional copies of an MSDS visit www.nalco.com and request access

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SAFETY DATA SHEET

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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. Harmful if absorbed through skin.

INGESTION :

Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach. May be fatal if swallowed.

INHALATION :

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

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.

HUMAN HEALTH HAZARDS - CHRONIC :

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

4. FIRST AID MEASURES

If Swallowed: · Call a poison control center or a doctor immediately for treatment advice. · DO NOT INDUCE VOMITING. · Do not give anything to drink.

IF IN EYES: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Call a poison control center or a doctor immediately for treatment advice.

IF ON SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN :

Aspiration may cause lung damage. 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.



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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 :

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.

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. Wash thoroughly with soap and water after handling. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS :

Store the containers tightly closed. Store separately from oxidizers. Store in suitable labeled containers.



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SUITABLE CONSTRUCTION MATERIAL :

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.

Substance(s)	Category:	ppm	mg/m3	Non-Standard Unit
Glutaraldehyde	ACGIH/Ceiling	0.05		

ENGINEERING MEASURES :

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

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. If significant mists, vapors or aerosols are generated an approved respirator is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: Organic vapor cartridge, with a Particulate pre-filter. 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 :

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from Butyl gloves Nitrile Gloves should be replaced immediately if signs of degradation are observed. Breakthrough time not determined as preparation, consult PPE manufacturers.

SKIN PROTECTION :

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

EYE PROTECTION :

Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS :

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

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE Liquid



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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
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 :

High temperatures Avoid extremes of temperature.

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. Amines Strong Bases Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

11. TOXICOLOGICAL INFORMATION

The following results are for the product along with results on the active substances.

ACUTE ORAL TOXICITY :

Species:	Rat
LD50:	1.2 ml/kg
Test Descriptor:	45% Active Ingredient

Species:	Rat
LD50:	1.54 -1.87 ml/kg
Test Descriptor:	25% Active Ingredient



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Species: Rat
LD50: 1.07 - 1.62 ml/kg
Test Descriptor: 10% Active Ingredient

Species: Rat
LD50: 1,468 mg/kg
Test Descriptor: Product

ACUTE DERMAL TOXICITY :

Species: Rabbit
LD50: 2.00 - 2.71 ml/kg
Test Descriptor: 45% Active Ingredient

Species: Rabbit
LD50: 8.0 - 12.8 ml/kg
Test Descriptor: 25% Active Ingredient

Species: Rabbit
LD50: 897 - 1,432 mg/kg
Test Descriptor: Product

ACUTE INHALATION TOXICITY :

Species: Rat
LD50: > 27 mg/l (4 hrs)
Test Descriptor: Product

PRIMARY SKIN IRRITATION :

Remarks: At 10% or greater, glutaraldehyde solutions may cause moderate to severe irritation, with possible necrosis after prolonged contact.

PRIMARY EYE IRRITATION :

Remarks: At levels of 0.2% and below of glutaraldehyde, no eye irritation was noted. Levels above 0.2% of glutaraldehyde produced moderate to severe irritation and corneal injury.

SENSITIZATION :

Levels of greater than 0.2% of glutaraldehyde produced allergic contact dermatitis in human studies. May cause sensitization by inhalation and skin contact.

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).

**SAFETY DATA SHEET****PRODUCT****H-550****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HUMAN HAZARD CHARACTERIZATION :**

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product along with results on the active substances.

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

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

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

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



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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%

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: Moderate

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.

As a pesticide waste, consult the FIFRA label for any additional handling, treatment, or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

Metal Containers or Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or other procedures approved by state and local authorities. Plastic Containers: May be incinerated, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Metal Containers: Must not be incinerated. Do not cut or weld on or near metal containers.

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 :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	GLUTARALDEHYDE
UN/ID No :	UN 3265
Hazard Class - Primary :	8
Packing Group :	II

Flash Point :	None
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AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	GLUTARALDEHYDE
UN/ID No :	UN 3265
Hazard Class - Primary :	8
Packing Group :	II
IATA Cargo Packing Instructions :	812
IATA Cargo Aircraft Limit :	30 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical Name(s) :	GLUTARALDEHYDE
UN/ID No :	UN 3265
Hazard Class - Primary :	8
Packing Group :	II

*Marine Pollutant : GLUTARALDEHYDE

*Note: This product is regulated as a Marine Pollutant when shipped by Rail, Highway, or Air in bulk quantities (greater than 119 gallons) and when shipped by water in all quantities.

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this 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.

Glutaraldehyde : Corrosive, Sensitizer

CERCLA/SUPERFUND, 40 CFR 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.



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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.

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.

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 173.320 Chemicals for controlling microorganisms in cane-sugar and beet-sugar mills.

The following limitations apply:

Maximum dosage

500 PPM

Limitation

as product by weight of the raw cane or raw beets

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) :

EPA Reg. No. 464-704-1706

In all cases follow instructions on the product label.

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

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

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CLEAN AIR ACT, Sec. 112 (Hazardous Air Pollutants, as amended by 40 CFR 63), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

This product contains the following substances listed in the regulation. Additional components may be unintentionally present at trace levels.



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Substance(s)	Citations
• Methanol	Sec. 112

CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

Methanol
Glutaraldehyde

67-56-1
111-30-8

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.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

Substances regulated under the Pest Control Products Act are exempt from CEPA New Substance Notification requirements.

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 Provisions on the Environmental Administration of New Chemical Substances 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 Existing and New Chemical Substances list (ENCS).



SAFETY DATA SHEET

PRODUCT

H-550

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

KOREA

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

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines 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.

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.



SAFETY DATA SHEET

PRODUCT

H-550

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

Prepared By : Product Safety Department
Date issued : 02/11/2010
Version Number : 1.18

- 1100-0496

**GE Betz**

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

Material Safety Data Sheet

Issue Date: 07-JUN-2006

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

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

FERROQUEST LP7200

PRODUCT APPLICATION AREA:

CHEMICAL CLEANING COMPOUND.

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
	TRADE SECRET INGREDIENT(E03G);TSRN 125438 - 11017 Irritant (eyes and skin)
	TRADE SECRET INGREDIENT(E195);TSRN 125438 - 5118P Irritant (eyes and skin)
124-04-9	ADIPIC ACID (HEXANEDIOIC ACID) Potential irritant (eyes)
	TRADE SECRET INGREDIENT(E03L);TSRN 125438 - 11018 Irritant (eyes and 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
------	---------------

0077

7732-18-5

WATER

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING

May cause moderate irritation to the skin. Severe irritant to the eyes. Vapors, gases, mists and/or aerosols cause irritation to the upper respiratory tract.

DOT hazard: Corrosive to steel

Emergency Response Guide #153

Odor: Acid; Appearance: Colorless 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; May cause moderate 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 with possible nausea, vomiting, diarrhea, incoordination, mental confusion, dizziness and lethargy.

TARGET ORGANS:

Prolonged or repeated exposures may cause primary irritant dermatitis and/or toxicity to the lung.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

Inhalation may cause irritation of the respiratory tract. Skin contact may cause itching and/or redness.

4 FIRST AID MEASURES

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing.

Thoroughly wash clothing before reuse. 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:

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:

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, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

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

MISCELLANEOUS:

Corrosive to steel

UN3265;Emergency Response Guide #153

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

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

DISPOSAL INSTRUCTIONS:

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

7 HANDLING & STORAGE

HANDLING:

Contains an oxidizer. Avoid all contact with reducing agents, oils, greases, organics and acids.

STORAGE:

Keep containers closed when not in use. Reasonable and safe chemical storage. Protect from freezing.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

TRADE SECRET INGREDIENT(E03G);TSRN 125438 - 11017

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

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

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

ADIPIC ACID (HEXANEDIOIC ACID)

PEL (OSHA): NUISANCE DUST

TLV (ACGIH): 5 MG/M3

MISC: Note: manufacturer's recommended exposure limit: 10 mg/m3.

TRADE SECRET INGREDIENT(E03L);TSRN 125438 - 11018

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

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 dust/mist filters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav. (70F,21C)	1.070	Vapor Pressure (mmHG)	~ 36.0
Freeze Point (F)	27	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-3		
Viscosity(cps 70F,21C)	9	% Solubility (water)	100.0

Odor	Acid
Appearance	Colorless To Green
Physical State	Liquid
Flash Point	P-M(CC) > 200F > 93C
pH As Is (approx.)	1.4
Evaporation Rate (Ether=1)	< 1.00

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY**STABILITY:**

0080

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

Oral LD50 RAT: 6,829 mg/kg
Dermal LD50 RABBIT: >5,000 mg/kg
NOTE - Estimated value

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Static Screen
0% Mortality= 1000 mg/L
Fathead Minnow 96 Hour Static Screen
0% Mortality= 1500 mg/L

BIODEGRADATION

BOD-28 (mg/g): 447
BOD-5 (mg/g): 336
COD (mg/g): 388
TOC (mg/g): 177

13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

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

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

USDA FOOD PLANT APPROVALS:

This product contains ingredients that have been determined safe

for use as a general cleaning agent, or for use with steam or mechanical cleaning devices. Surfaces must be rinsed with potable water.

SARA SECTION 312 HAZARD CLASS:

Immediate (acute); Delayed (Chronic)

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 constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION**NFPA/HMIS****CODE TRANSLATION**

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

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

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	25-SEP-1997		** NEW **
	27-OCT-1999	3, 4	25-SEP-1997
	07-APR-2006	2, 3, 8	27-OCT-1999
	07-JUN-2006	2, 8	07-APR-2006

**SAFETY DATA SHEET****PRODUCT****NALCO 1315****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** **NALCO 1315****APPLICATION :** **DETOXIFICATION AGENT****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 :** 0 / 0 **INSTABILITY :** 0 / 0 **OTHER :**
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard**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)
Bentonite		1302-78-9	5.0 - 10.0
Quartz		14808-60-7	0.1 - 1.0

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******CAUTION**

May cause irritation with prolonged contact. Inhalation of crystalline silica can cause silicosis. This material or some of its substance(s) has been shown to cause cancer in laboratory animals.

Do not get in eyes, on skin, on clothing. Do not take internally. 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 water. Protect product from freezing.

Not flammable or combustible.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :**EYE CONTACT :**

May cause irritation with prolonged contact.

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SAFETY DATA SHEET

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NALCO 1315

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SKIN CONTACT :

May cause irritation with prolonged contact.

INGESTION :

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

INHALATION :

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

SYMPTOMS OF EXPOSURE :

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

Prolonged inhalation of dust containing amorphous silica can increase lung injury in individuals with emphysema, asthma or other lung disorders.

HUMAN HEALTH HAZARDS - CHRONIC :

Prolonged exposure to amorphous silica aerosols/mists/dusts may cause respiratory disease. Inhalation of crystalline silica can cause silicosis.

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 : > 212 °F / > 100 °C (PMCC)

EXTINGUISHING MEDIA :

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



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FIRE AND EXPLOSION HAZARD :

Not flammable or combustible.

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. Stop or reduce any leaks if it is safe to do so. Do not touch spilled material. Ventilate spill area if possible. 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. 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. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store the containers tightly closed. Protect product from freezing.

SUITABLE CONSTRUCTION MATERIAL :

Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

This product contains amorphous, colloidal or fumed silica. Should the product become dried or misted such that inhalation of the material is possible, standard hygiene practices should be utilized to ensure that exposure to respirable particles is within the regulated limits.

Country/Source	Substance(s)	Category:	ppm	mg/m3
	Inhalable (Total Dust) Nuisance Particulates (Inhalable particles.)	ACGIH/TWA		10
	Inhalable (Total Dust) Nuisance Particulates (Respirable particles.)	ACGIH/TWA		3
	Inhalable (Total Dust) Nuisance Particulates (Respirable	OSHA Z1/PEL		5

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fraction.)		
Inhalable (Total Dust) Nuisance Particulates (Total dust.)	OSHA Z1/PEL	15
Inhalable (Total Dust) Nuisance Particulates (Respirable fraction.)	Z3/TWA	
Inhalable (Total Dust) Nuisance Particulates (Total dust.)	Z3/TWA	
Inhalable (Total Dust) Nuisance Particulates (Respirable fraction.)	Z3/TWA	5
Inhalable (Total Dust) Nuisance Particulates (Total dust.)	Z3/TWA	15
Silica, Crystalline Quartz, Respirable Dust (Respirable fraction.)	ACGIH/TWA	0.025
Silica, Crystalline Quartz, Respirable Dust (Respirable.)	Z3/TWA	
	Z3/TWA	0.1
Silica, Crystalline Quartz, Respirable Dust (Total dust.)	Z3/TWA	0.3

ENGINEERING MEASURES :

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: Particulate filter - HEPA. with a Particulate pre-filter. 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 :

When handling this product, the use of chemical gloves is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. 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. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low



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9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Green Tan
ODOR	None
SPECIFIC GRAVITY	1.04 @ 60 °F / 15.6 °C
DENSITY	8.66 lb/gal
SOLUBILITY IN WATER	Dispersible
pH (100 %)	8.3
BOILING POINT	212 °F / 100 °C

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 :

None known

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: None known

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this 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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HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

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%

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

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Moderate

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

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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

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this 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.

Bentonite : Exposure Limit - Compound Class

Quartz : 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 this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

- 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.

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**SAFETY DATA SHEET****PRODUCT****NALCO 1315****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)

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

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CALIFORNIA PROPOSITION 65 :

This product contains the following substances which require warning under California Proposition 65.

Substance(s)	Concentration	EFFECTS
<ul style="list-style-type: none">QuartzCristobalite	<ul style="list-style-type: none"><= 1 %<= .1 %	Causes Cancer

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

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

Quartz

14808-60-7

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 :

D2B - Materials Causing Other Toxic Effects - Toxic 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.



SAFETY DATA SHEET

PRODUCT

NALCO 1315

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

EUROPE

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

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.

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.



SAFETY DATA SHEET

PRODUCT

NALCO 1315

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.

Prepared By : Product Safety Department

Date issued : 07/31/2009

Version Number : 1.7

Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 07/26/2004

PRODUCT NAME: LIQUICHLOR / SODIUM HYPOCHLORITE 9-16%
MSDS NUMBER: OX622680
EFFECTIVE DATE: 2/16/2004
SUPERSEDES: 1/15/2003
ISSUED BY: 007427

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sodium Hypochlorite Solution (9 - 16%)
CAS#: 7681-52-9
Synonyms: Sodium Hypochlorite Solution - Trade % (9 - 19), Bleach, Javel
Water, Clorox, Sunny Sol 150, Liquid Chlorine Solution, Liquid Bleach,
Hypochlorite Bleach, Hypo
Product Use: Bleach, disinfectant
Emergency Contacts (24 hr.)
A FOR INFORMATION REGARDING ON SITE CHEMICAL EMERGENCIES INVOLVING A SPILL
OR LEAK, CALL
U.S.: 1-800-424-9300 - CHEMTREC
Canada: 1-613-996-6666 - CANUTEC

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	% (w/w)	ACGIH	OSHA	CAS NO.
A Sodium Hypochlorite	9 - 16	Not established 0.5 ppm (as chlorine)	Not established	7681-52-9
Sodium Hydroxide	0.3 - 4	2 mg/m3 (ceiling)	2 mg/m3	1310-73-2

SECTION 3 HAZARD IDENTIFICATION

Emergency Overview: CORROSIVE! Contact with acid liberates toxic chlorine gas. Causes burns to skin, eyes, respiratory tract and mucous membranes.

Harmful or fatal if swallowed. May cause sensitization by skin contact. Toxic to aquatic organisms. Read the entire MSDS for a more thorough evaluation of the hazards.

Potential Health Effects:

Inhalation: Mist can irritate the nose and throat. If mixed with acids, hypochlorite solutions release large amounts of chlorine gas. This gas can cause severe irritation of the nose and throat. Exposure to high levels of chlorine gas may result in severe lung damage.

Skin Contact: Sodium hypochlorite mist and solutions can cause skin irritation. In severe cases, chemical burns may result.

Eye Contact: Can cause severe eye irritation and permanent eye injury.

Ingestion: May cause irritation, pain and inflammation of the mouth and stomach, vomiting, shock, confusion, delirium, coma and, in severe cases, death. Perforation of the esophagus or stomach may occur.

Subchronic Effects: SKIN: Prolonged or repeated skin contact with solutions containing as little as 4-6% sodium hypochlorite can cause allergic contact dermatitis. Symptoms include chronic, itchy eczema. Sensitized people can react to very dilute (0.04-0.06% NaOCl) solutions that touch their skin. Existing Medical Conditions Possibly Aggravated by Exposure: Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or mists may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

Carcinogenicity: Sodium hypochlorite is not classified as a carcinogen by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as a carcinogen by OSHA (Occupational Safety and Health Administration), and not listed as a carcinogen by NTP (National Toxicology Program).

SECTION 4 FIRST AID MEASURES

General: If you feel unwell seek medical advice (show the label where possible).

Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY.

Skin Contact: Immediately flush skin with running water for at least 15 - 20 minutes. Under running water remove contaminated clothing, jewelry, and shoes. If irritation persists, repeat flushing. For burns, obtain medical attention. Discard heavily contaminated clothing and shoes in a manner, which limits further exposure. Otherwise, wash clothing separately before reuse.

Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Ingestion: DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give as much water as possible to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Note to Physicians: Symptomatic. Treatment and supportive therapy as indicated. Do NOT give acidic antidotes such as juice, soft drink, vinegar, etc. This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur.

Pulmonary edema is likely and may be delayed. Steroid therapy, if given early, may be effective in preventing or alleviating edema.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point Not applicable. Not combustible

Flammable Limits (Lower) Not applicable

Flammable Limits (Upper) Not applicable

Auto Ignition Temperature Not applicable

Combustion and Thermal Decomposition Products Chlorine, sodium oxide, oxygen

Rate of Burning Not applicable

Explosive Power Not applicable

Sensitivity to Mechanical Impact Not applicable

Fire and Explosion Hazards: Sodium hypochlorite is a strong chemical oxidant, but solutions do not support combustion. Reaction with nitrogen compounds, chloroorganic compounds, or easily oxidizable compounds (reducing agents) may be explosive. This material is non-flammable but is decomposed by heat and light, causing a pressure build-up, which could result in an explosion. When heated, it may release chlorine gas. Vigorous reaction with oxidizable or organic materials may result in fire. See Section 10.

Extinguishing Media: For large fires use an all purpose type AFFF alcohol foam resistant medium expansion according to foam manufacturer's recommended techniques. The foam supplier should be consulted for recommendations regarding foam types and delivery rates for specific applications. Use carbon dioxide or dry chemical media for small fires. If only water is available, use it in the form of a fog.

Special Information: Water may be used to cool containers of Hypochlorite solution exposed to heat from a fire. This should be done from a safe distance since containers may rupture.

Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material.

Fire involving tanks or trailer loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from the ends of tanks.

Evacuation: If tank or tank truck involved in a fire, ISOLATE and consider evacuation of one-half (1/2) mile radius.

Fire Fighting Protective Equipment: Firefighters should wear protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode in a fire involving this material. Toxic gas and vapors are produced upon decomposition.

NOTE: Also see "Section 10 - Stability and Reactivity"

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spills, Leaks, or Releases:

Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up.

Remove all ignition sources (no smoking, flares, sparks or flames). All equipment should be grounded and non-sparking. Ventilate area.

Wear adequate personal protective equipment. Do not touch spilled material. Stop leak if possible without personal risk.

Small spills: Cover with DRY earth, sand or other non-combustible material. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. Rinse area with water.

Large spills: Prevent entry into sewers and confined areas. Dike with inert material (sand, earth, etc.). Contact fire and emergency services and supplier for advice. Collect product for recovery or disposal by pumping it into polyethylene containers. Consider in-situ neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up.

Collect contaminated soil and water, and absorbent for proper disposal. Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivation for Small Spills: Hypochlorite can be broken down by covering it with a reducing agent such as sodium sulfite or sodium thiosulfate.

Deactivating Chemicals: Use sodium sulfite or diluted hydrogen peroxide to reduce the material. Ensure there is no chlorine residue before neutralizing with a weak solution of hydrochloric or sulfuric acid.

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note: - Clean-up material may be a RCRA Hazardous Waste on disposal.

- Spills are subject to CERCLA reporting requirements: RQ = 100 lbs.

SECTION 7 - HANDLING AND STORAGE

Precautions: Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Wear appropriate Personal Protection Equipment. People working with this chemical should be properly trained regarding its hazards and its safe use.

Handling Procedures and Equipment: Avoid generating mist. Use smallest possible amounts in designated areas with adequate ventilation. Keep containers closed when not in use. Empty containers may contain hazardous residues. Use corrosion-resistant transfer equipment when dispensing.

Storage Requirements: Store in a cool, dry, well-ventilated area, out of direct sunlight. Store containers at 15 - 29 deg C (59 - 84 deg F). Do not store above 30 deg C (86 deg F) or below freezing point. Keep containers tightly closed when not in use and when empty. Protect from damage. Vent caps should be checked with full personal protection. Store away from incompatible materials such as reducing materials, strong acids, nitrogen compounds, copper, nickel and cobalt. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area. This product has a shelf life of up to six months at 60 deg F or lower.

Outdoor storage tanks should be suitably diked or otherwise provided with an adequate means of secondary containment. Appropriate secondary containment measures should be taken to prevent spills or leaks from indoor storage tanks and tank-truck unloading stations from entering sewers or other channels that discharge directly to a water body or a municipal sewage system.

SECTION 8 - EXPOSURE CONTROLS & PERSONAL PROTECTION PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact. Smoking should be prohibited in areas in which sodium hypochlorite solution is stored or handled.

PERSONAL PROTECTIVE EQUIPMENT

Eye Protection: Wear splash resistant chemical goggles and full-face shield. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coveralls, as appropriate, to prevent skin contact.

RECOMMENDED (resistance to breakthrough longer than 8 hours): butyl rubber, natural rubber, neoprene, nitrile rubber, polyethylene, Viton, Saranex™,

ResponderTM

Recommendations are valid for permeation rates reaching 0.1 ug/cm²/min or 1 mg/m²/min and over. Resistance of specific materials can vary from product to product. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain clothing carefully.

Respiratory Protection: A NIOSH/MSHA approved air-purifying respirator equipped with acid mist cartridges for concentrations up to 10 times the TLV. Use a supplied air respirator if concentrations are higher or unknown.

EXPOSURE GUIDELINES PRODUCT:

Sodium Hypochlorite

Workplace environmental exposure level guides (WEELS) / American Industrial Hygiene Association (AIHA) / 2001 short-term time weighted average ;

2 mg/m³: 15 minute

	Sodium Hypochlorite	Chlorine*	Sodium Hydroxide
ACGIH TWA	Not established	0.5 ppm	Not established
OSHA PEL	Not established	0.5 ppm	2 mg/m ³
NIOSH IDLH	Not established	10 ppm	Not established
ACGIH STEL	Not established	1 ppm	Not established
OSHA STEL	Not established	1 ppm as Cl ₂	Not established
NIOSH (15 min. ceiling)	Not established	0.5 ppm	Not established
ACGIH Ceiling	Not established	Not established	2 mg/m ³

* Chlorine may be present as a decomposition product.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name Sodium hypochlorite

Chemical Family Hypochlorous acid salt

Molecular Formula Na-O-Cl

Molecular Weight 74.4

Appearance Green to yellow, watery liquid

Odor Pungent chlorine-like odor

PH 11-13

Vapor Pressure (mm Hg at 21 deg C (69.8 deg F) 12 mmHg

Vapor Density (Air = 1) No data

Boiling Point Decomposes above 40 deg C (104 deg F)

Freezing Point 7.5 deg F (-13.6 deg C)

Solubility (Water) Completely

Specific Gravity About 1.198 (12.5% w/w solution) @ 20 deg C (68 deg F)

Evaporation Rate Not available

% Volatile by Volume Not available

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature.

Hazardous Decomposition Products: Thermal decomposition: Chlorine, sodium oxide, oxygen, oxides of chlorine, sodium chlorate, and hydrogen.

Conditions to Avoid: Keep away from high heat, and sunlight or ultra-violet light. Do not store above 30 deg C (86 deg F). Do not allow solutions to evaporate dry. Keep away from incompatibles.

Incompatibility with other Substances: May react violently with strong acids producing chlorine gas, which is toxic. Other incompatibles include organic material, cellulose, oxidizable materials, ammonia, urea, ammonium salts, ethyleneimine, cyanides, nitrogen compounds, alcohols, metals, and metal oxides. Reacts with metals to produce flammable hydrogen gas. Metal and metal oxide catalysts decompose hypochlorites, evolving oxygen and often causing explosions. May react explosively with nitrogen containing compounds or form chloroamines, which are explosive. Alkaline hypochlorite solutions may react explosively with some chloroorganic compounds.

Corrosivity to Metals: Solutions can be corrosive to many metals.

Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA

Sodium Hypochlorite:

Toxicity Data: TDLo (Lowest published toxic dose) oral-woman- 1 gm/kg
45 mg/kg intravenous-man TDLo
LD50 oral rat- 8910 mg/kg
LD50 oral mouse- 5800 mg/kg
LC50 rat- >10500 mg/m3 (1 hr)

Irritation Data: Eyes: One drop of 15% solution (pH 11.2) caused immediate severe pain. If not quickly washed off with water, it caused bleeding and swelling of the tender tissue surrounding the eye (conjunctiva) and damage with swelling to the front part of the eye (cornea). The eyes sometimes healed in two to three weeks with slight or no scar damage to the cornea. Skin: A solution of 3.5% NaOCl applied to rabbit skin for 15 or 30 minutes caused severe skin damage.

Sodium Hydroxide:

Irritation data: 500 mg/24 hour(s) skin-rabbit severe; 400 pg eyes-rabbit mild; 1 percent eyes-rabbit severe;
Toxicity data: 1350 mg/kg skin-rabbit LD50; 104-340 mg/kg oral-rat LD50
Mutagenicity: Sodium hypochlorite caused mutations in several short-term studies using bacteria and cultured mammalian cells. The significance of these tests is unclear. It was not mutagenic in tests (chromosome aberration and micronucleus) on live animals.
Reproductive Effects: High doses of NaOCl in drinking water caused a small but significant increase in abnormal sperm in mice.
Teratogenicity and Fetotoxicity: No data available
Carcinogenicity: See Section 3, page 2.
Synergistic Materials: None known

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicological Information: Harmful to aquatic life in low concentrations.

Fish Toxicity: LC50 (48 hr) rainbow trout 0.07 mg/l.

LC50 (96 hr) fathead minnow 5.9 mg/l.

Invertebrate and Microbial Toxicity: LOEC Oncorhynchus kisutch 0.02 mg/l.

Persistence and Degradation: No data available.

SECTION 13- DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal. Do not dispose of waste with normal garbage, or to sewer systems.

Whatever cannot be saved for recovery or recycling, including containers should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

RCRA: Test waste material for corrosivity, D002, prior to disposal.

SECTION 14 TRANSPORT INFORMATION

	TDG CLR *	DOT
Shipping Name	Hypochlorite Solution - with more than 7 percent available chlorine	Hypochlorite Solution
Hazard Class / Division	8: Corrosive	8: Corrosive
Identification No.	UN1791	UN1791
	II	III
ERAP/RQ	N/AP	N/AP

Note: * TDG CLR (Clear Language Regulations) became effective August 15, 2002

IATA/ICAO Shipping Description: Hypochlorite solution, Class 8, UN1791, PG II or III is accepted for air transport.

SECTION 15 - REGULATORY INFORMATION

USA CLASSIFICATION

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 372: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40CFR370.21):

ACUTE: Y

CHRONIC: N

FIRE: N

REACTIVE: N

SUDDEN RELEASE: N

OSHA PROCESS SAFETY (29CFR1910.119): N

CERCLA SECTION 103 (40CFR302.4): Y

Reportable Quantity (RQ) under CERCLA: 100 lbs. (45.4 kg)

TSCA Inventory Status: Y

Other Regulations/Legislation which apply to this product:

Right-to-Know/Disclosure Lists: Illinois, Massachusetts, New Jersey, Pennsylvania,

This product does not contain nor is it manufactured with ozone depleting substances.

CANADIAN CLASSIFICATION

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

Controlled Products Regulations (WHMIS) Classification:

D2B: Material causing other toxic effects -Toxic

E: Corrosive

CEPA / Canadian Domestic Substances List (DSL): Y

WHMIS Ingredient Disclosure List: Meets criteria for disclosure at 1% or greater.

EINECS Number: 231-668-3

SECTION 16 - OTHER INFORMATION

National Fire Protection Association (NFPA) Rating

Hazardous Materials Identification System (HMIS) Rating

NFPA HMIS

HEALTH	3	3	4 = Extreme/Severe
FIRE	0	0	3 = High/Serious 2 = Moderate
REACTIVITY	1	1	1 = Slight
			0 = Minimum
			W = Water Reactive

LEGEND

ACGIH - American Conference of Governmental Industrial Hygienists

CAS # - Chemical Abstracts Service Registry Number

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CFR - Code of Federal Regulations

DOT - Department of Transportation

EPA - Environmental Protection Agency

IDLH - Immediately Dangerous to Life and Health

LC50 - The concentration of material in air expected to kill 50% of a group of test animals

LD50 - Lethal Dose expected to kill 50% of a group of test animals
MSHA - Mine Safety and Health Administration
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
PVC - Polyvinyl chloride
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reauthorization Act of the U.S. EPA
STEL - Short Term Exposure Limit
TDG - Transportation of Dangerous Goods Act/Regulations
TLV - Threshold Limit Value
TSCA - Toxic Substances Control Act

For Additional Information:

Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

NOTICE

Univar USA expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.



Material Safety Data Sheet

A company of Hoechst and Schering, Berlin

32.15

Page: 1 of 8

Issue Date: 07/28/98

Supersedes: 02/14/96

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)477-0660

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/m ³ OSHA PEL-TWA 5 mg/m ³	= 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

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

A clear to brown liquid with a mild odor.

- Fatal if inhaled.
- 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

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

EYES

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:

NUSYN-NOXFISH® FISH TOXICANT

SECTION 5. FIRE FIGHTING MEASURES - Continued

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

GENERAL AND DISPOSAL 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 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.

NUSYN-NOXFISH® FISH TOXICANT

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued

SKIN PROTECTION

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.

ODOR

Mild odor.

BASIC PHYSICAL PROPERTIES

PHYSICAL STATE: Liquid

pH: Not available

VAPOR PRESSURE: 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

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.

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:

<u>CAS NUMBER</u>	<u>INGREDIENT NAME</u>	<u>PERCENT BY WEIGHT</u>
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

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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Supersedes: 02/14/96

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.

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

SONAR* SRP Herbicide 32.46

SePRO Corporation • Carmel, IN

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

1-Methyl-3-phenyl-5-(3-(trifluoromethyl)phenyl)-
4(1H)-pyridinone (Fluridone)
CAS# 059756-60-4.....5%
Other Ingredients.....95%

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

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 MAKING 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: 57680-3
Effective Date: August 25, 1994

SONAR* SRP Herbicide

SePRO Corporation • Carmel, IN

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 AGGRAVATED 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 HANDLING 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.

**BETZDEARBORN MATERIAL
SAFETY DATA SHEET****BetzDearborn**EFFECTIVE DATE: 03-MAY-2000
PRINTED DATE: 12-JUL-2000

B

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME : SPECTRUS CT1300****PRODUCT APPLICATION AREA: WATER-BASED MICROBIAL CONTROL AGENT.****COMPANY ADDRESS:**BetzDearborn Inc.
4636 Somerton Road, Trevose, PA 19053
Information phone number: 215 355-3300**EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)****2) COMPOSITION / INFORMATION ON INGREDIENTS**Information for specific product ingredients as required by the
U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to
additional sections of this MSDS for our assessment of the potential
hazards of this formulation.**HAZARDOUS INGREDIENTS:**

CAS#	CHEMICAL NAME
68424-85-1	(C12-16)ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE Corrosive (eyes and skin); toxic (by ingestion)
64-17-5	ETHYL ALCOHOL (ETHANOL) Flammable liquid; irritant (eyes); potential liver and kidney toxin; may cause CNS depression

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 : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

3) HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

Severe irritant to the skin. Potential skin sensitizer. Corrosive to the eyes. Vapors, gases, mists and/or aerosols may cause irritation to upper respiratory tract.

DOT hazard: Combustible liquid

Emergency Response Guide #27

Odor: Mild; Appearance: Colorless To Yellow, Liquid

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; Severe irritant to the skin. Potential skin sensitizer.

ACUTE EYE EFFECTS:

Corrosive to the eyes.

ACUTE RESPIRATORY EFFECTS:

Vapors, gases, mists and/or aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

Toxic;

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 CNS depression, skin sensitization, and/or toxicity to the liver and kidney.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

Inhalation of vapors/mists/aerosols may cause eye, nose, throat and lung irritation. Skin contact may cause severe irritation or burns.

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

4) FIRST AID MEASURES

SKIN CONTACT:

Remove clothing. Wash area with large amounts of soap solution or water for 15 min. Immediately contact physician.

EYE CONTACT:

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

INHALATION:

Remove victim from contaminated area. Apply necessary first aid treatment. Immediately contact a physician.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Dilute contents of stomach. Induce vomiting by one of the standard methods. Immediately contact a physician.

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, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

130F 54C P-M(CC)

MISCELLANEOUS:

Combustible liquid
NA1993; Emergency Response Guide #27

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. Remove ignition sources. Flush area with water. 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 - Dispose of in approved pesticide facility or according to label instructions.

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

7) HANDLING AND STORAGE

HANDLING:

Combustible. Do not use around sparks or flames. Bond containers during filling or discharge when performed at temperatures at or above the product flash point.

STORAGE:

Keep containers closed when not in use. Reasonable and safe chemical storage. Protect from freezing.

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

(C12-16)ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

ETHYL ALCOHOL (ETHANOL)

PEL (OSHA): 1,000 PPM

TLV (ACGIH): 1,000 PPM

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 cartridges and dust/mist prefilters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav. (70F, 21C)	0.965	Vapor Pressure (mmHG)	44.0
Freeze Point (F)	-7	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-22		
Viscosity(cps 70F, 21C)	73	% Solubility (water)	100.0
Odor	Mild		
Appearance	Colorless To Yellow		
Physical State	Liquid		
Flash Point	P-M(CC) 130F 54C		
pH As Is (approx.)	8.9		
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.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	445 mg/kg
Dermal LD50 RABBIT:	>1,800 mg/kg
Skin Sensitization G.PIG:	NEGATIVE

NOTE - Active component was neither a photoallergen nor a skin sensitizer

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 96 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: .72 mg/L
No Effect Level: .41 mg/L

Daphnia magna 48 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: .04 mg/L
No Effect Level: .026 mg/L

Rainbow Trout 96 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: 2 mg/L
No Effect Level: 1.2 mg/L

Mysid Shrimp 96 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: .16 mg/L
No Effect Level: .03 mg/L

Sheepshead Minnow 96 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: 1.76 mg/L
No Effect Level: 1 mg/L

Menidia beryllina (Silversides) 96 Hour Flow-Thru Bioassay
Test concentrations were analytically verified.

LC50: .62 mg/L
No Effect Level: .35 mg/L

Ceriodaphnia 48 Hour Static Renewal Bioassay

LC50: .35 mg/L
No Effect Level: .15 mg/L

BIODEGRADATION

COD (mg/gm): 1470
TOC (mg/gm): 380
BOD-5 (mg/gm): 43
BOD-28 (mg/gm): 156

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D001=Ignitable.

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: Combustible liquid
UN / NA NUMBER: NA1993
DOT EMERGENCY RESPONSE GUIDE #: 27

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:

3876-149

POTABLE WATER APPROVAL:

NSF Certified maximum use for disinfection and oxidation
3.5mg/L. Maximum use for reverse osmosis and distillation 10
mg/L.

FOOD AND DRUG ADMINISTRATION:

21 CFR 176.300 (slimicides for wet end use)
When used in this specified application, 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. G5, G7

SARA SECTION 312 HAZARD CLASS:

Immediate(acute); Delayed(Chronic); Fire

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

PAGE 7

CONTINUED

PRODUCT NAME : SPECTRUS CT1300
EFFECTIVE DATE: 03-MAY-2000

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS

CODE TRANSLATION

Health	3	Serious Hazard
Fire	2	Moderate Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

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

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	18-NOV-1997		** NEW **
	27-FEB-1998	15	18-NOV-1997
	15-MAY-1998	2	27-FEB-1998
	20-MAY-1998	11	15-MAY-1998
	17-AUG-1998	15	20-MAY-1998
	27-OCT-1998	;EDIT:9	17-AUG-1998
	12-NOV-1998	;EDIT:9	27-OCT-1998
	03-MAY-2000	12	12-NOV-1998

**BETZDEARBORN MATERIAL
SAFETY DATA SHEET****BetzDearborn**EFFECTIVE DATE: 28-JUL-1997
PRINTED DATE: 12-JUL-2000

(6)

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME : SPECTRUS DT1400****PRODUCT APPLICATION AREA: A DETOXIFYING AGENT****COMPANY ADDRESS:**BetzDearborn Inc.
4636 Somerton Road, Trevose, PA 19053
Information phone number: 215 355-3300**EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)****2) COMPOSITION / INFORMATION ON INGREDIENTS**Information for specific product ingredients as required by the
U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to
additional sections of this MSDS for our assessment of the potential
hazards of this formulation.**HAZARDOUS INGREDIENTS:**

CAS#	CHEMICAL NAME
14464-46-1	RESPIRABLE CRISTOBALITE (CRYSTALLINE SILICA) Irritant (respiratory); probable human carcinogen (IARC=2A; NTP=anticipated); may cause long term lung disease (silicosis)
14808-60-7	RESPIRABLE QUARTZ (CRYSTALLINE SILICA) Irritant (respiratory); probable human carcinogen (IARC=2A; NTP=anticipated); may cause long term lung disease (silicosis)
15468-32-3	RESPIRABLE TRIDYMITE (CRYSTALLINE SILICA) Irritant (respiratory); probable human carcinogen (IARC=2A; NTP=anticipated); may cause long term lung disease (silicosis)

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

3) HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

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

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Green-Brown, Dispersion

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

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

ACUTE EYE EFFECTS:

May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

May cause gastrointestinal irritation with possible nausea, vomiting, headache, dizziness, unconsciousness and injury to the kidneys and liver. Small amounts aspirated during ingestion/vomiting may cause lung injury, possibly death.

TARGET ORGANS:

Prolonged or repeated exposures may cause toxicity to the liver and/or kidney.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

4) FIRST AID MEASURES

SKIN CONTACT:

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

EYE CONTACT:

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

INHALATION:

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

INGESTION:

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

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

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

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

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

DISPOSAL INSTRUCTIONS:

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

7) HANDLING AND STORAGE

HANDLING:

Normal chemical handling.

STORAGE:

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

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

CHEMICAL NAME EXPOSURE LIMITS

RESPIRABLE CRISTOBALITE (CRYSTALLINE SILICA)

PEL (OSHA): 0.05 MG/M3

TLV (ACGIH): 0.05 MG/M3

RESPIRABLE QUARTZ (CRYSTALLINE SILICA)

PEL (OSHA): 0.1 MG/M3

TLV (ACGIH): 0.1 MG/M3

RESPIRABLE TRIDYMIT (CRYSTALLINE SILICA)

PEL (OSHA): 0.05 MG/M3

TLV (ACGIH): 0.05 MG/M3

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 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)	1.186	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	32	Vapor Density (air=1)	< 1.00
Freeze Point (C)	0		
Viscosity(cps 70F, 21C)	2900	% Solubility (water)	0.0
Odor		Slight	
Appearance		Green-Brown	
Physical State		Dispersion	
Flash Point	P-M(CC)	> 200F > 93C	
pH As Is (approx.)		7.0	
Evaporation Rate (Ether=1)		< 1.00	

NA = not applicable ND = not determined

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

10) STABILITY AND REACTIVITY

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT: >2,000 mg/kg

NOTE - Estimated value

Dermal LD50 RABBIT: >2,000 mg/kg

NOTE - Estimated value

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 96 Hour Static Screen

0% Mortality: 435 mg/L

Daphnia magna 48 Hour Static Screen

0% Mortality: 435 mg/L

BIODEGRADATION

COD (mg/gm): 64 Calculated

TOC (mg/gm): 26 Calculated

BOD-5 (mg/gm): 0 Calculated

BOD-28 (mg/gm): 2 Calculated

13) DISPOSAL CONSIDERATIONS

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

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

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

14) TRANSPORT INFORMATION

DOT HAZARD: Not Applicable
UN / NA NUMBER: Not applicable
DOT 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):

Treat as oil spill

SARA SECTION 312 HAZARD CLASS:

Delayed(Chronic)

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:

This product contains these chemicals known to the state of
California to cause cancer or reproductive toxicity:

CAS#	CHEMICAL NAME
14464-46-1	RESPIRABLE CRISTOBALITE (CRYSTALLINE SILICA)
14808-60-7	RESPIRABLE QUARTZ (CRYSTALLINE SILICA)
15468-32-3	RESPIRABLE TRIDYMITE (CRYSTALLINE SILICA)

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

PRODUCT NAME : SPECTRUS DT1400
EFFECTIVE DATE: 28-JUL-1997

16) OTHER INFORMATION

NFPA/HMIS

Health
Fire
Reactivity
Special
(1) Protective Equipment

CODE TRANSLATION

1 Slight Hazard
1 Slight Hazard
0 Minimal Hazard
NONE No special Hazard
B Goggles, Gloves

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

CHANGE LOG

EFFECTIVE
DATE

REVISIONS TO SECTION:

SUPERCEDES

MSDS status: 28-JUL-1997

*** NEW ***



Material Safety Data Sheet

Issue Date: 10-DEC-2007
Supercedes: 15-MAR-2007

DEPOSITROL BL5400

1 Identification of Product and Company

Identification of substance or preparation
DEPOSITROL BL5400

Product Application Area
Water-based deposit control agent.

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: 215 355-3300

2 Composition / Information On Ingredients

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

HAZARDOUS INGREDIENTS:

Cas#	Chemical Name	Range (w/w%)
2809-21-4	PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS- (HEDP) Corrosive (eyes)	40-70
10294-56-1	PHOSPHOROUS ACID (PHOSPHONIC ACID) Corrosive	1-5

3 Hazards Identification

EMERGENCY OVERVIEW

DANGER

May cause moderate irritation to the skin. Corrosive to the eyes.
Inhalation of vapor or mist may cause severe nose, throat, and
respiratory tract irritation.

DOT hazard: Corrosive to steel
Odor: Mild; Appearance: Colorless To Yellow, Liquid

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

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

ACUTE EYE EFFECTS:

Corrosive to the eyes.

ACUTE RESPIRATORY EFFECTS:

Inhalation of vapor or mist may cause severe nose, throat, and respiratory tract irritation.

INGESTION EFFECTS:

May cause severe irritation or burning of the gastrointestinal tract.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

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

4 First Aid Measures

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

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 2-8 fluid ounces (60-240 mL) of 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

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:

oxides of carbon and phosphorus

FLASH POINT:

> 200F > 93C SETA(CC)

MISCELLANEOUS:

Corrosive to steel

UN 3265;Emergency Response Guide #153

6 Accidental Release Measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container.

Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

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

7 Handling & Storage

HANDLING:

Acidic. Corrosive(Eyes). Do not mix with alkaline material.

STORAGE:

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

8 Exposure Controls / Personal Protection

EXPOSURE LIMITS**CHEMICAL NAME**

PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS- (HEDP)

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

PHOSPHOROUS ACID (PHOSPHONIC ACID)

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 any of the following particulate respirators: N95, N99, N100, R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

rubber, butyl or neoprene gloves -- Wash off after each use.
Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical & Chemical Properties

Specific Grav. (70F, 21C)	1.453	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< -30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -34		
Viscosity (cps 70F, 21C)	85	% Solubility (water)	100.0
Odor	Mild		
Appearance	Colorless To Yellow		
Physical State	Liquid		
Flash Point	SETA(CC)	> 200F > 93C	
pH As Is (approx.)	< 1.0		
Evaporation Rate (Ether=1)	< 1.00		
Percent VOC:	0.0		

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:

oxides of carbon and phosphorus

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 Toxicological Information

Oral LD50 RAT:	2,000 mg/kg
NOTE - RAT LD50:	2,400 mg/kg per alternate source
Dermal LD50 RABBIT:	>7,940 mg/kg
NOTE - RABBIT LD50:	10,000 MG/KG ALTERNATE SOURCE
Skin Irritation Score RABBIT:	0
Eye Irritation Score RABBIT:	CORROSIVE
90 Day Feed Study RAT:	NOEL:10,000 ppm
NOTE - Hemopoietic effects at 30,000 ppm	
90 Day Feed Study DOG:	.062-1%
NOTE - 2 year-feed study. Reversible anemia developed at 1% in diet.	
90 Day Feed Study DOG:	20-60 mg/kg
NOTE - 30-day study. No pathological effects.	
Ames Assay BACTERIA:	NEGATIVE

NOTE - +/- metabolic activation
Non-Ames Mutagenicity : NEGATIVE
NOTE - Mouse Lymphoma Assay +/- metabolic activation

12 Ecological Information

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Acute Bioassay
LC50= 1440; No Effect Level= 880 mg/L
Ceriodaphnia 48 Hour Static Renewal Bioassay (pH adjusted)
No Effect Level= 31.3; LC50= 113 mg/L
Daphnia magna 48 Hour Static Renewal Bioassay (pH adjusted)
LC50= 755; No Effect Level= 420 mg/L
Fathead Minnow 96 Hour Static Renewal Bioassay (pH adjusted)
LC50= 3040; No Effect Level= 1370 mg/L
Grass Shrimp (Palaemonetes pugio) 96 Hour Static Acute Bioassay
LC50= 2675 mg/L
Midge larvae (Chironomus tentans) 48 Hour Static Acute Bioassay
LC50= 14850 mg/L
Mysid Shrimp 48 Hour Static Renewal Bioassay (pH adjusted)
LC50= 319 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay
LC50= 610; No Effect Level= 250 mg/L
Selenastrum (algae) 14 Day Growth Inhibition
EC50= 39 mg/L
Selenastrum (algae) 96 Hour Growth Inhibition
EC50= 3 mg/L
Sheepshead Minnow 96 Hour Static Acute Bioassay
LC50= 3630; No Effect Level= 170 mg/L

BIODEGRADATION

BOD-28 (mg/g): 1
BOD-5 (mg/g): 1
COD (mg/g): 300
TOC (mg/g): 70

13 Disposal Considerations

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

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

14 Transport Information

DOT HAZARD: Corrosive to steel
PROPER SHIPPING NAME: CORROSIVE LIQUID, ACIDIC, ORGANIC,
 N.O.S. (ORGANIC PHOSPHONIC ACID)
 8, UN 3265, PG III
DOT EMERGENCY RESPONSE GUIDE #: 153
Note: Some containers may be DOT exempt, please check BOL for exact container classification

15 Regulatory Information

TSCA:

All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

SARA SECTION 312 HAZARD CLASS:

Immediate(acute)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

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

No regulated constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other Information

NFPA/HMIS

CODE TRANSLATION

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

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

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	28-JAN-1997		** NEW **
	23-JUN-1997		28-JAN-1997
	03-MAY-2000	12	23-JUN-1997
	27-SEP-2000	4,11	03-MAY-2000
	30-MAY-2001	2,8,11	27-SEP-2000
	31-MAY-2001	15	30-MAY-2001
	02-AUG-2001	12	31-MAY-2001
	23-AUG-2001	4,12	02-AUG-2001
	09-JUL-2002	12	23-AUG-2001
	19-DEC-2006	2,5,7,10	09-JUL-2002
	15-MAR-2007	8	19-DEC-2006
	10-DEC-2007	4,8	15-MAR-2007



SAFETY DATA SHEET

PRODUCT

NALCO® 7408

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : *Detoxifier for Oxidizing Acids, Sodium Bisulfite*
NALCO® 7408 replaced 3316

APPLICATION : CHLORINE SCAVENGER

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 INSTABILITY : 0/0 OTHER :
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

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 Bisulfite	7631-90-5	30.0 - 60.0

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING

Harmful if swallowed. Contains Sulfite. Causes asthmatic signs and symptoms in hyper-reactive individuals. 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. Protect product from freezing. Wear suitable protective clothing. May evolve oxides of sulfur (SOx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Skin, Eye, Inhalation

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
Can cause mild irritation.

SKIN CONTACT :
Can cause mild irritation.



SAFETY DATA SHEET

PRODUCT

NALCO® 7408

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.

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.

HUMAN HEALTH HAZARDS - CHRONIC :

Ingestion of sulfite can cause a severe allergic reaction in asthmatics and some sulfite sensitive individuals. The 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.

4. FIRST AID MEASURES

EYE CONTACT :

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

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.

INHALATION :

Get medical attention. Remove to fresh air, treat symptomatically. If breathing is difficult, administer oxygen.

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



SAFETY DATA SHEET

PRODUCT

NALCO® 7408

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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 labeled. Keep the containers closed when not in use. Use with adequate ventilation.

STORAGE CONDITIONS :

Protect product from freezing. Store the containers tightly closed. Store separately from acids. Store in suitable labeled 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), Brass, Neoprene, Polyurethane, Viton, Hypalon, EPDM, Polypropylene, Polyethylene, PVC, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

UNSUITABLE CONSTRUCTION MATERIAL :

Stainless Steel 304, Buna-N, Epoxy phenolic resin, 100% phenolic resin liner

**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****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.

Country/Source	Substance(s)	Category:	ppm	mg/m3
	Sodium Bisulfite	ACGIH/TWA		5
	Sulfur Dioxide	ACGIH/STEL OSHA Z1/PEL	0.25 5	13

ENGINEERING MEASURES :

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

RESPIRATORY PROTECTION :

If significant mists, vapors or aerosols are generated an approved respirator is recommended. An approved respirator must be worn if the occupational exposure limit is likely to be exceeded.

HAND PROTECTION :

Neoprene gloves Nitrile gloves Butyl gloves PVC gloves

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :

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

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is:
Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Yellow
ODOR	Pungent
SPECIFIC GRAVITY	1.37 @ 77 °F / 25 °C
DENSITY	11.4 lb/gal
BULK DENSITY	11.4 lb/ft ³



SAFETY DATA SHEET

PRODUCT

NALCO® 7408

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

SOLUBILITY IN WATER	Complete
pH (1 %)	4.1
VISCOSITY	2.8 cps @ 77 °F / 25 °C
FREEZING POINT	34 °F / 1.1 °C
BOILING POINT	219 °F / 104 °C
VAPOR PRESSURE	32 mm Hg @ 77 °F / 25 °C 76 mm Hg @ 99.9 °F / 37.7 °C
VAPOR DENSITY	2.2 (Air = 1)
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 :

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: Rat.
LD50: 4.1 g/kg
Test Descriptor: Similar Product

ACUTE DERMAL TOXICITY :

Species: Rabbit
LD50: 3 g/kg
Test Descriptor: Similar Product

PRIMARY SKIN IRRITATION :

**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Species: Rabbit
Draize Score: 1.0 /8.0
Test Descriptor: Similar Product

PRIMARY EYE IRRITATION :

Species: Rabbit
Draize Score: 9.4 /110.0
Test Descriptor: Similar Product

SENSITIZATION :

Sulfites can cause an allergic reaction in sensitive individuals.

CARCINOGENICITY :

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

HUMAN HAZARD CHARACTERIZATION :

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

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product, unless otherwise indicated.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	> 100 mg/l	Product
Fathead Minnow	96 hrs	382 mg/l	Similar Product
Mosquito Fish (Gambusia spp.)	96 hrs	240 mg/l	Active Substance

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	275 mg/l		Product
Daphnia magna	48 hrs	728 mg/l		Similar Product
Daphnia magna	48 hrs	119 mg/l		Active Substance

CHRONIC FISH RESULTS :

Species	Exposure	NOEC / LOEC	End Point	Test Descriptor
Fathead Minnow	7 Days	250 mg/l / 500 mg/l	Growth	Product

CHRONIC INVERTEBRATE RESULTS :

Species	Test Type	NOEC / LOEC	End Point	Test Descriptor
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**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Ceriodaphnia dubia	3 Brood	250 mg/l / 500 mg/l	Reproduction	Product
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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%

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

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

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

13. DISPOSAL CONSIDERATIONS

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

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 :	BISULPHITES, AQUEOUS SOLUTION, N.O.S.
Technical Name(s) :	SODIUM BISULPHITE
UN/ID No :	UN 2693
Hazard Class - Primary :	8
Packing Group :	III

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**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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) :

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

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

NATIONAL REGULATIONS, USA :**OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium 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.

RQ Substance
Sodium Bisulfite

RQ
12,000 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.

**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****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
- 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.

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

NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :

NSF Registration number for this product is : 140967

This product is acceptable for treating boilers or steam lines where steam produced may contact edible products and/or cooling systems where the treated water may not contact edible products in and around food processing areas, excluding such use in areas where meat and poultry are processed (G9).

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

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. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
• Sodium Bisulfite	Sec. 311

**SAFETY DATA SHEET****PRODUCT****NALCO® 7408****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

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

Sodium Bisulfite
Water

7631-90-5
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 substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

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 Provisions on the Environmental Administration of New Chemical Substances 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 Existing and New Chemical Substances list (ENCS).



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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

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

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

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.



SAFETY DATA SHEET

PRODUCT

NALCO® 7408

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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 : 07/31/2009



Version Number : 1.16



Material Safety Data Sheet

SULFURIC ACID

A. PRODUCT INFORMATION

TRADE NAME (PRODUCT IDENTIFIER): SULFURIC ACID		CLASSIFICATION & SYMBOL:   Class E, D1A	
CHEMICAL NAME AND/OR SYNONYM: Sulfuric Acid (oil of Vitrol; battery acid; Hydrogen Sulfate)		FORMULA: H ₂ SO ₄	CAS NO: 7664-93-9
PRODUCT USE: In the manufacture of fertilizers, explosives, dyestuffs, other acids and chemicals, textiles, paper, glue, purification of petroleum, pickling of metal and hydrometallurgy.			
MANUFACTURER/IMPORTER: General Chemical Performance Products Ltd. 201 City Centre Drive Mississauga, Ontario L5B 3A3		SUPPLIER/DISTRIBUTOR: General Chemical Performance Products Ltd. 201 City Centre Drive Mississauga, Ontario L5B 3A3	
EMERGENCY TELEPHONE NO: 866-543-3896			

B. PREPARATION INFORMATION

PREPARED BY: General Chemical Corporation Product Safety Department 973-515-1840	PREVIOUS ISSUE DATE: 6/2001 CURRENT ISSUE DATE: 03-18-04
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C. TOXICOLOGICAL PROPERTIES

INHALATION: Inhalation of fumes or acid mist can cause irritation or corrosive burns to the upper respiratory system, including nose, mouth, and throat. Lung irritation and pulmonary edema can also occur. LC ₅₀ (mist, animals): 20-60 mg/m ³ . See Section J.	
INGESTION: Can cause irritation and corrosive burns to mouth, throat, and stomach. Can be fatal if swallowed.	
SKIN: Can cause severe burns and destruction of tissue.	
EYES: Liquid contact can cause irritation, corneal burns, and conjunctivitis. Blindness may result, or severe or permanent injury. Mist contact may irritate or burn. Eye (rabbit): 1380 ug, severe damage.	
ACUTE TOXICITY: LD ₅₀ (rat): 255 mg/m ³ /4hr.	EXPOSURE LIMITS: TLV: 1 mg/m ³ STEL 3 mg/m ³ Proposed change 1987 / 88
CHRONIC TOXICITY: Erosion of teeth, lesions of the skin, tracheobronchitis, mouth inflammation, conjunctivitis, gastritis. See section J.	
OTHER:	BIOLOGICAL EXPOSURE INDICES (BEI): NA

D. PHYSICAL DATA

MATERIAL IS AT NORMAL CONDITIONS: LIQUID <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> GAS <input type="checkbox"/> <input type="checkbox"/> _____	APPEARANCE AND COLOR: Oily, colorless to slightly yellow, clear to turbid liquid.	ODOR THRESHOLD: Odorless
BOILING POINT: 310 °C FREEZING POINT: -27 °C for 94% (MELTING POINT):	SPECIFIC GRAVITY: (H ₂ O = 1) 1.842 (liquid)	VAPOR DENSITY: (AIR =1) NA
SOLUBILITY IN WATER: complete	pH 1 % solution pH = 0.9	VAPOR PRESSURE: (MM Hg @ 20°C negligible @ ambient (PSIG)
EVAPORATION RATE: (Ether = 1.0) NA	% VOLATILES BY VOLUME: (AT 20°C) NA	MOLECULAR WEIGHT: 98.08

E. REACTIVITY DATA

STABILITY: UNSTABLE <input type="checkbox"/> STABLE <input checked="" type="checkbox"/>	CONDITIONS TO AVOID: Temperatures of 300 deg. C or higher: yields sulfur trioxide gas, which is toxic, corrosive, and an oxidizer..
INCOMPATIBILITY (MATERIALS TO AVOID): Nitro compounds, carbides, dienes, alcohols (when heated): cause explosions. Oxidizing agents, such as chlorates and permanganates: cause fires and possibly explosions. Allyl compounds and aldehydes: undergo polymerization, possibly violent. Alkalis, amines, water, hydrated salts, carboxylic acid anhydrides, nitrites, olefinic organics, glycols, aqueous acids: cause strong exothermic reactions. Carbonates, cyanides, sulfides, sulfites, metals such as copper: yield toxic gases.	
HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur trioxide gas: See above. Also this is a fire risk if in contact with organic materials.	
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR <input checked="" type="checkbox"/> MAY OCCUR <input type="checkbox"/>	OTHER PRECAUTIONS:

F. FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Not flammable.	FLASH POINT: METHOD <u>Not applicable</u>
HAZARDOUS COMBUSTION PRODUCTS: See Section E. Also concentrated sulfuric acid can ignite combustible materials on contact.	
% BY VOL. IN AIR UPPER FLAMMABLE LIMIT: Not applicable LOWER FLAMMABLE LIMIT: AUTOIGNITION TEMPERATURE:	EXPLOSION HAZARDS: Flammable and potentially explosive hydrogen gas can be generated inside metal drums and storage tanks. Also see Section E for other explosion hazards.
SENSITIVITY TO MECHANICAL IMPACT: Not applicable	
SENSITIVITY TO STATIC DISCHARGE: Not applicable	
FIRE EXTINGUISHING PROCEDURES: Use water spray or other suitable agent for fires adjacent to non-leaking tanks or containers of acid. If only a small amount of combustibles is present smother fire with dry chemical. Do not use solid water streams near ruptured tanks or spills of sulfuric acid. Acid reacts violently with water and can spatter acid onto personnel. Wear self-contained, NIOSH-approved breathing apparatus with full facepiece. Add chemical safety goggles if eye protection is not provided. Wear full protective clothing.	

G. HAZARDOUS INGREDIENTS (MIXTURES ONLY)

MATERIAL OR COMPONENT/C.A.S. #	CONCENTRATION	HAZARD DATA
Not applicable		

H. PREVENTIVE MEASURES**PERSONAL PROTECTIVE EQUIPMENT:****RESPIRATORY PROTECTION:**

Generally not required when using a closed ventilation system. Where required e.g. in an emergency or a misting situation, wear NIOSH-approved respirator for sulfuric acid. If above mg/m³ acid mist wear (a) gas mask with acid gas canister and also with high efficiency particulate filter; (b) high efficiency particulate respirator or (c) self-contained breathing apparatus with full facepiece.

EYES AND FACE:

As a minimum, wear safety goggles with non-perforated side shields. Add a shield if pouring liquid. For leak, spill, other emergency and heavy handling, use chemical safety goggles and hat or optionally a full face shield and hat. Do not wear contact lenses.

HANDS, ARMS, AND BODY:

As a minimum wear acid-resistant apron and gloves (preferably rubber). For leak, spill, other emergency and heavy handling, use chemical safety goggles and hat or optionally a full face shield and hat. Do not wear contact lenses.

STORAGE:

Protect from physical damage. Store in cool, well-ventilated area away from combustibles and reactive chemicals. Keep out of sun and away from heat. Keep container's upright. If stored in metal containers, vapors can contain explosive hydrogen gas. No smoking in storage area.

NORMAL HANDLING:

Do not get in eyes, on skin or clothing. Do not breathe vapor or mist. Use protective equipment outlined in Section H. Do not add water to acid. When diluting, always add acid to water cautiously and with agitation. Use only with adequate ventilation. Loosen closures carefully. For carrying glass bottles, use rubber protective enclosures.

ENGINEERING CONTROLS:

Closed ventilation systems (e.g. exhausted hood) for handling such as pouring liquid. Use corrosion proof construction. Provide sufficient ventilation to reduce vapor and acid mists to permissible levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems. Provide eyewash and quick-drench shower facilities convenient to work areas.

ENVIRONMENTAL:**DEGRADABILITY:**

Not available.

AQUATIC TOXICITY:

42 mg / l / 96 hr. / mosquito fish / TL_m / fresh water

42.5 mg / l / 48 hr. / prawn / LC₅₀ / salt water

In general a pH of 5.0 or less is lethal.

SPILL OR LEAK (ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT):

Dilute small spills or leaks cautiously with plenty of water. Neutralize residue with alkali such as soda ash or lime. Adequate ventilation is required for soda ash due to release of CO₂ gas. No smoking in spill area. Major spills must be handled by a predetermined plan. Diking with soda ash is recommended. Attempt to keep out of sewer.

WASTE DISPOSAL:

Dispose of diluted a/o neutralized waste consistent with the requirements of local a/o provincial waste disposal authorities.

CANADIAN SHIPPING INFORMATION:**TDGA CLASS:**

8 packing group II

PIN:

UN 1830

LABEL:

corrosive

I. FIRST AID MEASURES**INHALATION:**

Remove to fresh air. Observe for possible delayed reaction. If breathing has stopped, give artificial respiration. If breathing with difficulty, give oxygen, provided a qualified operator is available. Get immediate medical attention.

INGESTION:

Do not induce vomiting. If conscious, give several glasses of milk (preferred) or water. Get immediate medical attention.

SKIN:

Immediately flush with plenty of water, continuing for at least 15 minutes. Remove contaminated clothing while washing. Get medical attention if skin irritation persists or there are burns. Wash clothing thoroughly before reuse.

EYES:

Immediately flush with plenty of water, lifting eyelids occasionally to facilitate irrigation, and continue for at least 15 minutes. Get prompt medical attention. Continue flushing with water if medical attention is not immediately available.

J. Chronic Toxicity (continued)-

The International Agency for Research on Cancer (IARC) classified "strong inorganic acid mists containing sulfuric acid" as category 1 carcinogen, a substance that is "carcinogenic to humans". This classification is for inorganic acid mists only and does not apply to sulfuric acid or sulfuric acid solutions. The basis for the IARC classification rests on several epidemiology studies which have several deficiencies. These studies did not account for exposure to other substances, some known to be animal or potential human carcinogens, social influences (smoking or alcohol consumption) and included small numbers of subjects. Based on the overall weight of evidence from all human and chronic animal studies, no definitive causal relationship between sulfuric acid mist exposure and respiratory tract cancer has been shown.

THIS MATERIAL SAFETY DATA SHEET IS OFFERED FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION AS REQUIRED BY FEDERAL HAZARDOUS PRODUCTS ACT AND RELATED LEGISLATION. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT GENERAL CHEMICAL CANADA LTD. PROVIDES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED.



GE Betz

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

Material Safety Data Sheet

Issue Date: 08-SEP-2003

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

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

DEPOSITROL PY5206

PRODUCT APPLICATION AREA:

WATER-BASED CORROSION INHIBITOR/DEPOSIT 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.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
1305-62-0	CALCIUM HYDROXIDE Corrosive (eyes and respiratory); severe irritant, possibly corrosive (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 OSHA thresholds for carcinogens.

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

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

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: 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 moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

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

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

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:

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:

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, 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

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.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

CALCIUM HYDROXIDE

PEL (OSHA): 5 MG/M3

TLV (ACGIH): 5 MG/M3

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 dust/mist filters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

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

pH As Is (approx.) 13.1
Evaporation Rate (Ether=1) < 1.00

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

Oral LD50 RAT: 3,050 mg/kg
28 Day Oral RAT: 1,000 mg/kg/day
NOTE - No clear indications of treatment related toxicity (dose adjusted to 100% active)
Dermal LD50 RABBIT: >1,000 mg/kg
NOTE - Estimated value
Skin Irritation Score RABBIT: 0.3
NOTE - DOT HM181: noncorrosive
Eye Irritation Score RABBIT: 3.3
NOTE - Maximum score at 48 hrs; completely reversible by day 4
Non-Ames Mutagenicity MOUSE: NEGATIVE
NOTE - In Vivo Bone Marrow Micronucleus Assay

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Static Acute Bioassay
LC50= 1635; No Effect Level= 870 mg/L
Fathead Minnow 96 Hour Static Acute Bioassay
LC50= 1680; No Effect Level= 1350 mg/L
Mysid Shrimp 48 Hour Static Renewal Bioassay
LC50= 9900; 5% Mortality= 4000 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay (pH adjusted)
LC50= 837; No Effect Level= 648 mg/L
Sheepshead Minnow 96 Hour Static Renewal Bioassay
LC50= 28300; No Effect Level= 20000 mg/L

BIODEGRADATION

BOD-28 (mg/g): 9
BOD-5 (mg/g): 9
COD (mg/g): 130
TOC (mg/g): 70

13 DISPOSAL CONSIDERATIONS

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
UN / NA NUMBER: Not applicable
DOT 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

USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS:

This product is composed of ingredients previously approved by USDA to meet G5 and G7 classification and may be used in water for cooking/cooling or in boiler or cooling systems with no food contact.

SARA SECTION 312 HAZARD CLASS:

Immediate(acute)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC

ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	ALK	pH above 12.0
(1) Protective Equipment	B	Goggles,Gloves

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

CHANGE LOG

EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
-----	-----	-----

MSDS status: 29-JAN-1997
08-MAR-1999 12
03-MAY-2000 12
18-MAY-2001 2
08-SEP-2003 15

** NEW **
29-JAN-1997
08-MAR-1999
03-MAY-2000
18-MAY-2001

Material Safety Data Sheet

EMERGENCY

FOR CHEMICAL EMERGENCY: SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL
CHEMTREC - DAY or NIGHT - (800) 424-9300

Product Name:

AB AQUASHADE

SECTION I - GENERAL INFORMATION

Manufacturer's Name:

Applied Biochemists
A division of Advantis Technologies, Inc.
W175 N11163 Stonewood Dr., Suite 234
Germantown, WI 53022
(262) 255-4449

Chemical Name & Synonyms:

Water Soluble Dye

Generic Description:

Pond and Lake Dye

Formula:

Proprietary

D.O.T. Proper Shipping Name:

Not Regulated

D.O.T. Hazard Class:

Not Regulated

U.N. or N.A. Identification No.:

None Assigned

Emergency Response Guide No.:

None Assigned

Hazardous Mat'l's ID System Values (HMIS): Health - 1 Flammability - 0 Reactivity - 0 Personal Protection - B
Nat'l Fire Protection Assn. (NFPA 704M): Health - 1 Flammability - 0 Reactivity - 0 Specific Hazard - None

SECTION II - HAZARDOUS INGREDIENTS

Hazardous Component(s)	CAS#	PEL	TLV
Acid Blue 9	3844-45-9	Not established	Not established
Acid Yellow 23	1934-21-0	Not established	Not established

Ingredients listed in this section have been determined to be hazardous as defined in 29CFR1910.1200. 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 29CFR1910.1200 (i) (1).

SECTION III - PHYSICAL DATA

Boiling Point: 212°F (100°C) Specific Gravity (water = 1): 1.0-1.1
Vapor Pressure: Not determined % Volatile (by volume): Not determined
Vapor Density (air = 1): >1 Evaporation Rate: Not determined
Melting Point: Not applicable pH: 5-7
Solubility in Water: Miscible in water.
Appearance & Odor: Deep blue liquid, with no noticeable odor

SECTION IV - FIRE & EXPLOSION DATA

Flash Point (F): Non-flammable Method: Not applicable
Extinguishing Media: Water, carbon dioxide, or foam.
Special Fire Fighting Procedures: Cool area to prevent product containers from bursting or melting. Firefighters should be equipped with self-contained breathing apparatus.
Unusual Fire & Explosion Hazards: None

SECTION V - REACTIVITY DATA

Stability - Unstable ☒ Stable
Conditions to Avoid: None known
Incompatibility (Materials to Avoid): None known
Hazardous Decomposition Products: None known
Hazardous Polymerization: Will Occur ☒ Will Not Occur
Conditions to Avoid: None

AB AQUASHADE

SECTION VI - HEALTH HAZARD DATA

Acute Health Hazards: Will stain tissue. May cause eye irritation.
Chronic Health Hazards: None known
Signs & Symptoms of Exposure: May cause slight eye irritation and redness. May cause slight skin irritation. Inhalation may cause slight nausea. Ingestion may result in gastric disturbances.
Medical Conditions Generally Aggravated by Exposure: None known
Emergency & First Aid Procedures: See appropriate emergency procedures below for principle route of entry. Never give anything by mouth to an unconscious person.
Route of Entry: Inhalation: Remove to fresh air.
Eyes: Flush with large amounts of water for at least 15 minutes. Contact a physician if irritation occurs.
Skin: Wash the area with large amounts of soap and water for at least 15 minutes. Wash clothes thoroughly before reuse.
Ingestion: Induce vomiting. Call a physician.

SECTION VII - SPILL OR LEAK PROCEDURES

Personal Precautions: Wear personal protective equipment appropriate for the situation.
Methods for Cleaning Up: Contain spill. Soak up with absorbent. Place in a suitable container for disposal. Wash area with soap and water. Care should be taken when handling this product as it can stain.
Waste Disposal Methods: Dispose of in accordance with methods approved by local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION AND CONTROL MEASURES

Respiratory Protection: Not normally required.
Ventilation: Not normally required.
Gloves: Rubber or plastic
Eye Protection: Goggles
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

Handling and Storage: Keep away from intense heat and open flame.

Other: **KEEP OUT OF REACH OF CHILDREN**

THESE DATA ARE OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.

Date of Last Revision: 09/05/04 by: JHW/NPB

Material Safety Data Sheet

EMERGENCY

FOR CHEMICAL EMERGENCY: SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL
CHEMTREC - DAY or NIGHT - (800) 424-9300

Product Name:

AB AQUASHADE

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Manufacturer's Name:

Applied Biochemists
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(262) 255-4449

Chemical Name & Synonyms:

Water Soluble Dye

Generic Description:

Pond and Lake Dye

Formula:

Proprietary

D.O.T. Proper Shipping Name:

Not Regulated

D.O.T. Hazard Class:

Not Regulated

U.N. or N.A. Identification No.:

None Assigned

Emergency Response Guide No.:

None Assigned

Hazardous Mat'ls ID System Values (HMIS): Health - 1 Flammability - 0 Reactivity - 0 Personal Protection - B
Nat'l Fire Protection Assn. (NFPA 704M): Health - 1 Flammability - 0 Reactivity - 0 Specific Hazard - None

SECTION II - HAZARDOUS INGREDIENTS

Hazardous Component(s)	CAS#	PEL	TLV
Acid Blue 9	3844-45-9	Not established	Not established
Acid Yellow 23	1934-21-0	Not established	Not established

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SECTION III - PHYSICAL DATA

Boiling Point: 212°F (100°C) Specific Gravity (water = 1): 1.0-1.1
Vapor Pressure: Not determined % Volatile (by volume): Not determined
Vapor Density (air = 1): >1 Evaporation Rate: Not determined
Melting Point: Not applicable pH: 5-7
Solubility in Water: Miscible in water.
Appearance & Odor: Deep blue liquid, with no noticeable odor

SECTION IV - FIRE & EXPLOSION DATA

Flash Point (F): Non-flammable Method: Not applicable
Extinguishing Media: Water, carbon dioxide, or foam.
Special Fire Fighting Procedures: Cool area to prevent product containers from bursting or melting. Firefighters should be equipped with self-contained breathing apparatus.
Unusual Fire & Explosion Hazards: None

SECTION V - REACTIVITY DATA

Stability - Unstable ☒ Stable
Conditions to Avoid: None known
Incompatibility (Materials to Avoid): None known
Hazardous Decomposition Products: None known
Hazardous Polymerization: Will Occur ☒ Will Not Occur
Conditions to Avoid: None

AB AQUASHADE

SECTION VI - HEALTH HAZARD DATA

Acute Health Hazards: Will stain tissue. May cause eye irritation.
Chronic Health Hazards: None known
Signs & Symptoms of Exposure: May cause slight eye irritation and redness. May cause slight skin irritation. Inhalation may cause slight nausea. Ingestion may result in gastric disturbances.
Medical Conditions Generally Aggravated by Exposure: None known
Emergency & First Aid Procedures: See appropriate emergency procedures below for principle route of entry. Never give anything by mouth to an unconscious person.
Route of Entry: Inhalation: Remove to fresh air.
Eyes: Flush with large amounts of water for at least 15 minutes. Contact a physician if irritation occurs.
Skin: Wash the area with large amounts of soap and water for at least 15 minutes. Wash clothes thoroughly before reuse.
Ingestion: Induce vomiting. Call a physician.

SECTION VII - SPILL OR LEAK PROCEDURES

Personal Precautions: Wear personal protective equipment appropriate for the situation.
Methods for Cleaning Up: Contain spill. Soak up with absorbent. Place in a suitable container for disposal. Wash area with soap and water. Care should be taken when handling this product as it can stain.
Waste Disposal Methods: Dispose of in accordance with methods approved by local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION AND CONTROL MEASURES

Respiratory Protection: Not normally required.
Ventilation: Not normally required.
Gloves: Rubber or plastic
Eye Protection: Goggles
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

Handling and Storage: Keep away from intense heat and open flame.

Other: **KEEP OUT OF REACH OF CHILDREN**

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Date of Last Revision: 09/05/04 by: JHW/NPB

32-1330
pHREEdom™ 5200MP.O. Box 1346
Pittsburgh, PA 15230-1346
Phone-(412)494-8000**MATERIAL SAFETY DATA SHEET****Section 1. PRODUCT IDENTIFICATION**

PRODUCT NAME: pHREEdom™ 5200M

CHEMICAL DESCRIPTION: Aqueous polymer/organic phosphonate solution

PRODUCT CLASS: Scale control

MSDS CODE: 0D98-11-09-93

Section 2. INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS Number</u>	<u>% by Weight</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Sodium salt of phosphonomethylated diamine	103016*		None established	None established
Phosphorous acid	13598-36-2	~ 1	None established	None established

*TSCA Accession number.

The specific identity of some ingredients is being withheld for confidential business purposes. However, all known potential health effects from exposure to these ingredients are being addressed.

Section 3. HAZARDS IDENTIFICATION

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

WARNING!
May cause eye irritation.

PRIMARY ROUTES OF ENTRY: Eye and skin contact, inhalation

TARGET ORGANS: Eyes, skin, central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Unknown

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product may produce irritation upon contact with the eye.

MSDS Code: 0D98-11-09-93
Issue Date: 11/9/93Page 1 of 5
Continued on Page 2

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pHREEdom™ 5200M

SKIN CONTACT: This product may produce mild irritation upon contact with the skin.

INGESTION: Swallowing this product may cause gastrointestinal upset with nausea, vomiting, and diarrhea.

INHALATION: Inhalation of product mist or vapor may irritate the nose, throat, and respiratory tract.
Prolonged exposures to high levels may cause weakness, CNS depression, and drowsiness.

SUBCHRONIC, CHRONIC:

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

CARCINOGENICITY:

NTP:

No ingredients listed in this section

IARC:

No ingredients listed in this section

OSHA:

No ingredients listed in this section

Section 4. FIRST AID MEASURES

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

SKIN CONTACT: Not expected to require first aid measures.

INGESTION: Not an expected route of overexposure.

INHALATION: Not an expected route of overexposure.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: > 200°F

This product is not by definition a "flammable liquid" or a "combustible liquid".

LOWER FLAMMABLE LIMIT: Not available

UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use water spray or fog, alcohol-type foam, dry chemical or carbon dioxide.

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

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

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

MSDS Code: 0D98-11-09-93

Issue Date: 11/9/93

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Continued on Page 3

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pHREEdom™ 5200M

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

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

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container.

Section 7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes.
Avoid breathing vapor or mist.
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the product and ensure prompt removal from skin and clothing.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: No specific information.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles

SKIN PROTECTION: Chemical resistant gloves recommended as a good industrial hygiene practice.

RESPIRATORY PROTECTION: If airborne concentrations become irritating, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

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

WORK PRACTICES: An eye wash station should be accessible in the immediate area of use.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not available

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: Not available

SPECIFIC GRAVITY: 1.16 - 1.20 @ 25°C

VAPOR DENSITY (air=1): Not available

pH: 4.2 - 5.2 @ 25°C

%VOLATILE BY WEIGHT: ~ 74

FREEZING POINT: Not available

APPEARANCE AND ODOR: Clear, pale yellow liquid.

MSDS Code: 0D98-11-09-93

Issue Date: 11/9/93

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Continued on Page 4

c32-133

pHREEdom™ 5200M**Section 10. STABILITY AND REACTIVITY**

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: No specific information.

INCOMPATIBILITY: Strong oxidizers

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

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:

No information available on the formulated product.

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

No information available on the formulated product.

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would not be considered a RCRA Hazardous Waste.

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

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

Class/Division: Not restricted

Proper Shipping Name: Not applicable

Label: None

Packing Group: Not applicable

ID Number: Not applicable

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous

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

MSDS Code: 0D98-11-09-93

Issue Date: 11/9/93

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Continued on Page 5

32-133-

pHREEdom™ 5200M

CERCLA reportable quantity of EPA hazardous substances in product:

Chemical NameRQ

No ingredients of this product have CERCLA reportable quantities.

Product RQ: Not applicable

(Notify EPA of product spills exceeding this amount.)

SARA TITLE III:**Section 302 Extremely Hazardous Substances:**Chemical NameCAS #RQTPQ

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

Section 311 and 312 Health and Physical Hazards:

Immediate

Delayed

Fire

Pressure

Reactivity

[yes]

[no]

[no]

[no]

[no]

Section 313 Toxic Chemicals:Chemical NameCAS #% by Weight

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

Section 16. OTHER INFORMATION**HMIS RATINGS:**

Health = 1

Flammability = 0

Reactivity = 0

Personal Protective Equipment = X (to be specified by user depending on use conditions)

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

MSDS REVISION SUMMARY: Not applicable

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

PREPARED BY: P.J. Maloney**MSDS Code:** 0D98-11-09-93**Issue Date:** 11/9/93

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Last Page

Document
32.134
(98)

pHREedom T2000



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

MATERIAL SAFETY DATA SHEET

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: pHREedom T2000

CHEMICAL DESCRIPTION: Alkaline aqueous solution of organic phosphonates, acrylate terpolymer, and monoethanolamine.

PRODUCT CLASS: Scale inhibitor

MSDS CODE: 0H28-02-26-96

Section 2. INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS Number</u>	<u>% by Weight</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Sodium salt of phosphonomethylated diamine	103016*	8 - 10	None established	None established
Disodium hydroxyphosphonoacetate	128192-25-6	4 - 6	None established	None established
Monoethanolamine (MEA)	141-43-5	5	TWA 3 ppm, 8 mg/m ³ ; STEL 6 ppm, 15 mg/m ³	TWA 3 ppm, 7.5 mg/m ³ ; STEL 6 ppm, 15 mg/m ³

*TSCA Accession number.

Section 3. HAZARDS IDENTIFICATION

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

WARNING!

May cause eye and respiratory tract irritation.

May cause allergic skin reaction.

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

TARGET ORGANS: Eye, skin, central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Unknown

MSDS Code: 0H28-02-26-96
Issue Date: 03/06/96

Page 1 of 6
Continued on Page 2

0163

32.134

'98'

pHREEdom T2000**POTENTIAL HEALTH EFFECTS:**

EYE CONTACT: This product may produce irritation upon contact with the eye.

SKIN CONTACT: Prolonged or repeated exposure may cause irritation resulting in rashes and dermatitis. By OSHA definition, pure monoethanolamine is toxic by skin absorption. Prolonged or widespread skin contact may result in the absorption of harmful amounts of material. There is no evidence that the ethanolamines can cause allergic contact dermatitis. However, neutralized hydroxyphosphonoacetic acid has recently been reported to be a skin sensitizer in a guinea pig study. Therefore, the product, which contains 4 - 6% disodium hydroxyphosphonoacetate, may cause an allergic skin reaction in sensitive individuals.

INGESTION: Swallowing this product may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

INHALATION: Inhalation of product mist or vapor may result in irritation with coughing and discomfort of the nose, throat, and chest. Prolonged exposures to elevated concentrations may cause weakness, CNS depression and drowsiness. In animal experiments, subacute high level exposures to monoethanolamine vapor and mist produced pulmonary damage, lethargy, and some non-specific degenerative changes in the liver and kidneys. Lab tests have found monoethanolamine to be a central nervous system (CNS) stimulant at low doses, and a CNS depressant at lethal doses.

SUBCHRONIC, CHRONIC:

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

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

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

CARCINOGENICITY:

NTP:

No ingredients listed in this section

IARC:

No ingredients listed in this section

OSHA:

No ingredients listed in this section

Section 4. FIRST AID MEASURES

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

SKIN CONTACT: In case of contact, immediately wash skin with soap and plenty of water. Remove contaminated clothing. Seek medical aid if symptoms occur. Wash clothing before reuse.

INGESTION: Not an expected route of overexposure.

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

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: Not determined
The flash point is expected to be > 200 °F.

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

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use water spray or fog, alcohol-type foam, dry chemical or carbon dioxide.

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

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

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

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

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

Section 6. ACCIDENTAL RELEASE MEASURES

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

Section 7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes, skin and clothing.
Avoid breathing vapor or mist.
Use with adequate ventilation.
Drums should be opened in well-ventilated areas.
Wash thoroughly after handling.
Keep container closed when not in use.

STORAGE: No specific information.

32.134

48'

pHREEdom T2000

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:**EYE/FACE PROTECTION:** Chemical splash goggles**SKIN PROTECTION:** Chemical resistant gloves and protective clothing**RESPIRATORY PROTECTION:** If airborne concentrations exceed published exposure limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).**ENGINEERING CONTROLS:** Provide ventilation to minimize exposure. Use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not available**SOLUBILITY IN WATER:** Complete**VAPOR PRESSURE:** Not available**SPECIFIC GRAVITY:** 1.174 - 1.194 @ 25° C**VAPOR DENSITY (air = 1):** Not available**pH:** 10.0 - 11.0 @ 25° C**%VOLATILE BY WEIGHT:** ~ 78**FREEZING POINT:** Not available**APPEARANCE AND ODOR:** Clear to slightly hazy, dark gold to brown liquid with pungent odor.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable**HAZARDOUS POLYMERIZATION:** Will not occur**CONDITIONS TO AVOID:** No specific information.**INCOMPATIBILITY:** Strong oxidizers and acids**DECOMPOSITION PRODUCTS:** Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, ammonia, nitrogen oxides, sulfur oxides, and phosphorus oxides.

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:

No information available on the formulated product.

pHREEdom T2000

ON INGREDIENTS:

<u>Chemical Name</u>	<u>Oral LD₅₀</u> <u>(rat)</u>	<u>Dermal LD₅₀</u> <u>(rabbit)</u>	<u>Inhalation LC₅₀</u> <u>(rat)</u>
Sodium salt of phosphonomethylated diamine	Not available	Not available	Not available
Disodium hydroxyphosphonoacetate	Not available	Not available	Not available
Monoethanolamine (MEA)	1720 mg/kg	1000 mg/kg	Not available

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

No information available on the formulated product.

ON INGREDIENTS:

<u>Chemical Name</u>	<u>Aquatic Toxicity Data</u>
Monoethanolamine	96 hr LC ₅₀ (fathead minnow): 125 ppm 24 hr LC ₅₀ (Daphnia magna): 140 ppm 96 hr LC ₅₀ (bluegill sunfish): 75 ppm 96 hr LC ₅₀ (rainbow trout): 150 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: Discarded product, as sold, would not be considered a RCRA Hazardous Waste.

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

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

Class/Division: Not restricted
Proper Shipping Name: Not applicable
Label: None
Packing Group: Not applicable
ID Number: Not applicable

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous

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

CERCLA reportable quantity of EPA hazardous substances in product:

<u>Chemical Name</u>	<u>RQ</u>
No ingredients of this product have CERCLA reportable quantities.	

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

32134

98'

pHREEdom T2000

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

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

Section 311 and 312 Health and Physical Hazards:

Immediate [yes]	Delayed [no]	Fire [no]	Pressure [no]	Reactivity [no]
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Section 313 Toxic Chemicals:

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

Section 16. OTHER INFORMATION

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

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

MSDS REVISION SUMMARY: Not applicable

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

PREPARED BY: P.J. Maloney

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 Bifluoride	<10.0	1341-49-7
Water	>80.0	7732-16-5
Non hazardous surface active agents	<10.0	Trade Secret

III. PHYSICAL DATA

BOILING POINT: 212°F	SPECIFIC GRAVITY: 1.00 – 1.10 at 25°C
FREEZING POINT: 32°F. May turn milky at <40°F.	VAPOR PRESSURE: (mm Hg) = 17.5
VAPOR DENSITY: Not known	APPEARANCE: Clear
PH@ 25°C: 4.5 – 5.0	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: Carbon dioxide, dry chemical or foam. Do not use sand.	SPECIAL FIRE HAZARDS: None

V. REACTIVITY DATA

STABILITY: Stable	Hazardous polymerization will not occur.
INCOMPATIBILITY: Strong acids, bases and glass containers.	
HAZARDOUS DECOMPOSITION PRODUCTS: NH ₃ if in contact with alkalis. Hydrogen Fluoride if heated to decomposition or exposed to acids.	
CONDITIONS TO AVOID: Do not use with any other cleaning agent or household chemicals, including ammonia, acids, alkalis, bleaches, or chlorine cleaners	

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Absorb with saw dust or dry lime and sweep. Do not use sand. Do not flush into sewer or bodies of water.
DISPOSAL METHOD: Deposit in containers and dispose in an approved landfill.

VII. HEALTH HAZARD DATA

ACUTE TOXICITY: Oral LD₅₀ > 1,900 mg/Kg of body weight. Dermal LD₅₀ >2,000 mg/Kg of body weight.
Inhalation LC₅₀ >2.0 mg/L

CARCINOGENICITY: Not a known carcinogen.

EFFECTS OF OVEREXPOSURE: Will irritate eyes. Will dry skin with frequent or prolonged contact

INGESTION: May cause irritation. Do not induce vomiting. Give milk of Magnesia or Milk. Call physician if discomfort persists.

EYE: Flush with water for 15 minutes. Call a physician, if irritation persists.

SKIN: Can cause irritation or burns. Rinse off with plenty of water immediately following contact

INHALATION: May cause irritation of upper respiratory tract.

VIII. PROTECTIVE EQUIPMENT

VENTILATION Use with adequate ventilation.

RESPIRATORY PROTECTION The use of an N95 rated respirator is recommended.

PROTECTIVE CLOTHING Protective gloves (plastic or rubber).

EYE PROTECTION Wear goggles when handling this product.

IX. OTHER SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Keep from freezing and excessive heat. Do not store below 40°F.

SPECIAL COMMENTS When applying the product to the coils in gas furnaces, the burners should be covered to avoid dripping on the burner tubes. If this precaution is not observed, ionization type smoke detectors may go off on the first use of the furnace after application.

PREPARED BY: Dr. Vladimir Mischutin, PhD

DATE: January 31, 2003
AMENDED: June 4, 2003

MATERIAL SAFETY DATA SHEET

MSDS 0221

Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	Coil-Rite	HMIS CODES	
		Health	2
		Flammability	0
		Reactivity	0
PRODUCT CODES	82612, 82614, 82618	PPI	B
CHEMICAL FAMILY	Organic/Inorganic		
USE	Coil Cleaner		
MANUFACTURER'S NAME	The RectorSeal Corporation	EMERGENCY TELEPHONE NO.	
	2601 Spenwick Drive	Chemtrec 24 Hours	
	Houston, Texas 77055 USA	(800) 424-9300	
DATE OF PREPARATION	August 13, 2002	TECHNICAL SERVICE TELEPHONE NO.	
		(800) 231-3345	

Section 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT	UNITS
1-5	111-76-2	Glycol Ether EB	
		ACGIH TLV	25 ppm
		OSHA PEL	25 ppm

Section 3 -- HAZARDS IDENTIFICATION

SUMMARY OF ACUTE HAZARDS

Irritation to eyes, nose, and throat; drowsiness, narcosis, tremors, and other CNS effects at high concentrations. Skin irritation, dermatitis, and defatting.

ROUTE OF EXPOSURE, SIGNS AND SYMPTOMS

INHALATION

Nasal and respiratory irritation, dizziness, narcosis, headache, nausea, CNS depression, and unconsciousness.

EYE CONTACT

Watering, blurred vision, inflammation, and irritation which can result in corneal injury.

SKIN CONTACT

Irritation, dermatitis.

INGESTION

Nausea, vomiting; CNS depression; irritation of gastrointestinal tract, liver and peritoneal wall; lung congestion.

SUMMARY OF CHRONIC HAZARDS

Skin irritation, contact dermatitis, and defatting.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Individuals with pre-existing or chronic diseases of the eyes, skin, respiratory system, cardiovascular system, gastrointestinal system, liver, or kidneys may have increased susceptibility to excessive exposure.

Section 4 -- FIRST AID MEASURES

If INHALED:	If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt
-------------	--

action is essential.

If on SKIN: Immediately wash with soap and water. Remove and wash any contaminated clothing.

If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention if irritation persists.

If SWALLOWED: If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Section 5 -- FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
None	N/D	N/D

EXTINGUISHING MEDIA

Non-flammable. Use agents appropriate for surrounding fires.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained full face piece breathing apparatus and other protective clothing. Hazardous decomposition products possible (see Section 10).

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

Section 6 -- ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Use absorbent materials to prevent footing hazard and to contain. Ventilate area with natural or explosion-proof, forced air ventilation. Avoid flushing into sewers, drains, waterways, and soil. Wear protective clothing and respiratory protection during cleanup.

Section 7 -- HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep container closed and upright when not in use. Do not store near heat, sparks, or open flames.

OTHER PRECAUTIONS: Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues; treat as if full and observe all products precautions. Do not reuse empty containers.

Section 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION (SPECIFY TYPE): In confined, poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air respirators during soldering operations until fumes have dissipated.

VENTILATION - LOCAL EXHAUST: Acceptable

SPECIAL: Explosion proof

MECHANICAL (GENERAL): Acceptable

OTHER: N/A

PROTECTIVE GLOVES: Wear rubber gloves.

EYE PROTECTION: Safety glasses (ANSI Z-87.1 or equivalent)

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Chemical resistant coveralls recommended.

WORK/HYGIENIC PRACTICES: Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area.

Laundry contaminated clothing before reuse.

Section 9 -- PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	212 F (100 C) @ 760mm Hg
SPECIFIC GRAVITY (H2O = 1):	0.99
VAPOR PRESSURE (mm Hg):	17 @ 68 F (20 C)
MELTING POINT:	N/A
VAPOR DENSITY (AIR = 1):	<1

EVAPORATION RATE (ETHYL ACETATE = 1): >1
APPEARANCE/ODOR: Green Liquid / Mild Odor
SOLUBILITY IN WATER: Soluble

=====
Section 10 -- STABILITY AND REACTIVITY
=====

STABILITY: Stable
CONDITIONS TO AVOID: None
INCOMPATIBILITY (MATERIALS TO AVOID): Heat, sparks and open flames.
HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO, and fragmented hydrocarbons.
HAZARDOUS POLYMERIZATION: Will not occur.

=====
Section 11 -- TOXICOLOGY INFORMATION
=====

CHRONIC HEALTH HAZARDS

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

TOXICOLOGY DATA

Ingredient Name

Glycol Ether EB

Oral-Rat LD50:470 mg/kg
Inhalation-Rat TCLo:200 ppm/6H

=====
Section 12 -- Ecological Information
=====

ECOLOGICAL DATA

Ingredient Name

Glycol Ether EB

Food Chain Concentration Potential	None
WATERFOWL TOXICITY	N/A
BOD	26%
AQUATIC TOXICITY	1000 ppm/24 hr/brine shrimp/TLm

=====
Section 13 -- DISPOSAL CONSIDERATIONS
=====

Waste Classification: Non-regulated liquid waste.
Disposal Method: Dispose of in accordance with local, state and federal regulations.

=====
Section 14 -- TRANSPORTATION INFORMATION
=====

DOT: Non-regulated
OCEAN (IMDG): Non-regulated
AIR (IATA): Non-regulated
WHMIS (CANADA): Non-regulated

=====
Section 15 -- REGULATORY INFORMATION
=====

REGULATORY DATA

Ingredient Name

Glycol Ether EB

SARA 313	Yes
TSCA Inventory	Yes
CERCLA RQ	N/A
RCRA Code	N/A

=====
Section 16 -- OTHER INFORMATION
=====

This document is prepared pursuant to the OSHA Hazard Communication
Standard (29 CFR 1910.1200). The information herein is given in good faith,
but no warranty, expressed or implied is made. Consult RectorSeal for further
information: (713) 263-8001

ACTI-KLEAN

Material Safety Data Sheet

SECTION I - PRODUCT IDENTIFIER

PRODUCT: ACTI-KLEAN AK-1, AK-5, AK-55

SUPPLIER: Virginia KMP
4100 Platinum Way
Dallas, Texas 75237

Phone: 800-527-7960
Emergency Phone: 800-527-7960
Prepared: 6/91

NFPA Ratings:
Health: 1
Fire: 0
React: 0
Special: --
0=LEAST to 4=EXTREME

HMIS PERSONAL PROT: C

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS (CAS Number) EXPOSURE LIMITS

Ethylene glycol monobutyl ether (111-76-2)-----OSHA TWA (SKIN) 25 ppm, ACGIH (SKIN) 25 ppm

Dodecylbenzene sulfonic acid (27176-87-0)-----NO DATA ESTABLISHED

SECTION III- PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 212° F
SPECIFIC GRAVITY (H₂O=1): 1.02
VAPOR DENSITY (Air=1): ND
SOLUBILITY IN WATER: Complete
APPEARANCE AND ODOR: Green liquid.

MELTING POINT: NA
VAPOR PRESSURE: ND
EVAPORATION RATE (BuAc=1): <1
pH: 11 - 12

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method): None at boiling point.

FLAMMABLE LIMITS: Lower(NA) Upper(NA)

EXTINGUISHING MEDIA: Dry powder, carbon dioxide (CO₂), water fog or spray. Use extinguishing media appropriate for surrounding conditions.

SPECIAL FIRE FIGHTING PROCEDURES: Approach fire from upwind side. Avoid breathing smoke, fumes, mist, or vapors on the downwind side. Firefighters wear protective clothing, and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Firefighters wear protective clothing, and self contained breathing apparatus.

SECTION V - REACTIVITY INFORMATION

STABILITY: PRODUCT IS, Stable

INCOMPATIBILITY: --

MATERIALS TO AVOID: Oxidizing Materials

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: From combustion: smoke, carbon monoxide, carbon dioxide, oxides of phosphorus, oxides of sulfur.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY

INHALATION? possible - irritant
SKIN ABSORPTION? possible if skin is broken
SKIN/EYES? yes - irritant
INGESTION? possible - irritant

HEALTH HAZARDS

ACUTE: Inhalation of vapor or mist is irritating to respiratory tract. Liquid or vapors are irritating to skin or eyes. Ingestion will cause gastrointestinal distress.

CHRONIC: Damage to kidneys and liver (Ethylene Glycol Monobutyl Ether).

CARCINOGENICITY: LISTED IN NTP? No IARC MONOGRAPHS? No OSHA REGULATED? No

SIGNS AND SYMPTOMS OF EXPOSURE: Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

ACTI-KLEAN

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: No data established.

FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water 15 minutes. Get medical attention if symptoms develop and persist.

SKIN CONTACT: Flush with water or soap and water for 15 minutes or until all traces have been removed. Seek medical attention if symptoms develop and persist.

INGESTION: Do NOT induce vomiting, get immediate medical attention.

INHALATION: Remove victim to fresh air and, if needed, immediately begin artificial respiration. Give oxygen if breathing is labored. Get emergency medical help. Contact a physician immediately.

SECTION VII- PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For small spills - pick up with absorbent media. Store as industrial waste.

WASTE DISPOSAL METHOD: Approved industrial waste facility. Follow all applicable regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store away from foodstuffs. Store away from basic materials.

OTHER PRECAUTIONS: Clean up leaks/spills immediately to prevent soil or water contamination.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: (If concentration reaches or exceeds TLV), wear NIOSH approved respirator.

VENTILATION: LOCAL EXHAUST -Recommended, SPECIAL -Not necessary,
MECHANICAL-Recommended, OTHER - Not necessary

PROTECTIVE GLOVES: heavy rubber type

EYE PROTECTION: Full face shield.

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, drench showers, eye wash as needed for protection against spills and/or splashes.

WORK HYGIENIC PRACTICES: Avoid contact with skin, eyes, and clothing. After handling this product, wash hands before eating, drinking, or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action shown in section VI. Launder contaminated clothing before reuse.

SECTION IX - TRANSPORTATION INFORMATION

ACTI-KLEAN, Not-Regulated

SECTION X - REGULATORY

EPA HAZARDS: ACUTE-yes, CHRONIC-yes, FLAMMABILITY-no,
SUDDEN RELEASE OF PRESSURE-no, REACTIVE-no

SARA Title III

Section 313, Toxic Materials:

Chemical Name	CAS #	Percentage
Ethylene Glycol		
Monobutyl Ether	111-76-2	1 - 5%

CLEAN AIR ACT: not listed

CLEAN WATER ACT: section 311

STATES LISTS: Massachusetts, New Jersey, Pennsylvania

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710 Sources of the raw materials used in this mixture assure that all chemical ingredients present are in compliance with Sect. 8(b) Chemical Substance Inventory, or are otherwise in compliance with TSCA.

Footnotes:

NA-Not applicable ND-Data not available CS-Cancer Suspect Agent OX-Oxidizer
Cor-Corrosive CALC-Calculated EST-Estimated STEL-Short Time Exposure Limit
TLV-Threshold Limit Value PEL-Permissible Exposure Limit TWA-Time Weighted Average, 8 hours
HMIS, PPI-Hazardous Material Identification System, Personal Protection Index
The data presented is true and correct to the best of our knowledge and belief, however, neither seller nor preparer makes any warranties, express or implied, concerning the information presented. The user is cautioned to perform his own hazard evaluation and to rely upon his own determinations.

SCIENTIFIC INFORMATION SERVICES
CHEMICAL ASSESSMENT, RESPONSE AND EVALUATION CORPORATION
Telephone (817) 560-4631
Form essentially the same as OSHA Form 174 dated September 1985
Preparation Date: July 11, 1991

MATERIAL SAFETY DATA SHEET					
SECTION 1 - PRODUCT SOURCE AND IDENTITY					
Supplier Identity and address			Product description: Date: May 17, 2004		
By*Pas International 3333 Production Ct Zeeland, MI 49464 Fax: 616-772-5400			Name: BY*PAS 1500 Series Purpose: Multi purpose hard surface cleaner		
Emergency telephone: 1-800-424-9300			Proprietary Formula Code: BP1500 Product Information: 616-772-5100		
SECTION 2 - SHIPPING CLASSIFICATION					
Proper Shipping Name, Hazard Class, UN/NA Number Packing Group, Emergency Response Guide Number					
NOT REGULATED					
Labels required per 49 CFR 172.101:			None		
Size for "Limited quantity" per 49 CFR 173.150-155:			Not applicable		
Reportable Quantity ("RQ") per 49 CFR 172.101:			None or not possible in one non-bulk package		
SECTION 3 - SAFETY RATINGS AND HAZARDOUS INGREDIENT INFORMATION					
Reporting required by Title III Sec 313, 40 CFR 372, 29 CFR 1910.1200					
CAS#	313	Material or Component	%	RQ#	Exposure Limit Values TWA STEL
7732-18-5		Water	>75		
6834-92-0		Silic Acid, Disodium Salt	1		
blend		Chelating Agent	3		
proprietary		Alcohol Ethoxylate Blend	6		
015821-83-7		Propylene PNB	4		
No component is listed in "THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE INDICES FOR 2001" from ACGIH except as noted above. Components listed in TITLE III SEC 313 (EPCRA) are indicated by "Yes" above.					
California criteria: Constituents qualifying as hazardous materials, substances or waste, other than above, if any, have been neutralized or denatured to a non hazardous condition. Regulations referenced: California Health & Safety Code Ch 6.95 Sec 25501(k) & (l), CCR Title 22, Sec 66261.21- .24, and Appendix X of 22 CCR Chapter 11, Article 4.					
Emergency overview: Water based degreaser and floor cleaner. Follow label directions. Use standard industrial good practices.					
Hazard Categories:	Health	Fire	Pressure	Reactivity	Reference 49 CFR 171.8 & 173,
Immediate	Yes	No	No	No	OSHA 29 CFR 1910.1200 and
Delayed	No	XXX	XXX	XXX	SARA 302/311/312/313.
HMIS Hazard Ratings: Health 1 Fire 0 Instability 0 Other NA					
NFPA Hazard Ratings: Health 1 Flammability 0+B63 Reactivity 0 Special NA					
Hazard Ratings: Least: 0 Slight: 1 Moderate: 2 High: 3 Extreme: 4					
Threshold limit value: Not established on product.					
TOSCA Status: All ingredients listed			CERCLA RQ: See Sec 2.		
California Prop. 65: None					
SECTION 4 - PHYSICAL AND CHEMICAL PROPERTIES					
Appearance:	Blue Liquid			Flash point deg. F (cc):	>200
Odor:	Slight Cherry			Initial boiling point deg. C:	NA
Specific gravity:	Approx. 1			Vapor pressure 20 deg C:	NA
pH reaction:	11.50			Freezing point deg. C:	NA
% phosphorous:	0.00			Solubility in water:	100%
VOC content:	<50 g/l				
California Rule 102 (66): Contains no photochemically active materials.					
Reproductive implications:		None			
Ingredients on cancer lists:		None			

SECTION 5 - SAFE HANDLING AND STORAGE		
General	Avoid contact with eyes and skin. Wash off if came in contact with. Avoid breathing mists. Keep lid on containers when not in use. Keep away from children.	
Protective equipment		
Eyes	Safety glasses or goggles should be worn if there is possibility of eye contact.	
Skin	Impermeable gloves such as rubber, PVC or neoprene are recommended.	
Respiratory protection	None normally required. If risk of inhalation occurs, select and use equipment according to OSHA/NIOSH guidelines for nuisance mists.	
Ventilation	As required for worker comfort.	
Other	None	
SECTION 6 - HEALTH SAFETY DATA		
Effects of chronic over exposure		
Eyes	Detergents may cause severe irritation.	
Skin	Can cause irritation from defatting the skin.	
Inhalation	Dust and mists may be irritating to breathing passages.	
Ingestion	Not a likely source of chronic exposure.	
SECTION 7 - PHYSICAL STABILITY AND REACTIVITY DATA		
Explosive limits	Flash point: See Sec 4	
Lower None	Upper None	Conditions to avoid: contact with oxidizers and acids
Chemical stability	Stable	Hazardous decomposition products: None known.
Hazardous polymerization	Cannot occur	Incompatibility: None known.
SECTION 8 - EMERGENCY RESPONSE PROCEDURES		
Fire	Extinguishing media	Use media appropriate to source of fire.
	Unusual hazards	None
First Aid	Eyes	Flush with water for at least 15 min. Seek medical attention.
	Skin	Flush exposed skin with water until gone. Remove affected clothes and rinse off product. Wash clothes before reuse.
	Inhalation	If affected, remove individual to fresh air, get medical attention at once if there is any discomfort.
	Ingestion	Dilute by giving large amounts of water or milk. Get medical attention. Do not induce vomiting.
Spills	Small / large spill	Small amounts may be flushed to drain. Comply with federal, state and local regulations on reporting spills. Keep out of waterways.
Product as supplied has none of the characteristics of a "Hazardous waste".		
Information presented herein has been compiled from sources considered to be accurate and reliable, but is not guaranteed to be so. Since conditions of use are beyond our control we make no warranties, expressed or implied.		
MSDS prepared by: R.N. Miller 1-800-342-3577		

MATERIAL SAFETY DATA SHEET

ORGANIC ORANGE

SECTION I - IDENTIFICATION

COMPANY NAME	Barnell, Inc.
COMPANY ADDRESS	5101 Comly Street Philadelphia, PA 19135
PHONE NUMBER	215-333-5700
EMERGENCY PHONE NUMBER	800-255-3924
EFFECTIVE DATE	09/01/2008
REVISED DATE	09/01/2008
CHEMICAL NAME	Orange Distillate
TRADE NAME	Organic Orange

SECTION II - INGREDIENTS

COMPONENTS	PERCENT	TLV (Units)	PROD. CAS #
1, 8 (9)-p-Methadiene	60>95%	Not Established	5989-27-5
Nonylphenoxy	5<40%	Not Established	26027-38-3

SECTION III - PHYSICAL DATA

BOILING POINT (F)	175.5°C
SOLUBILITY IN H2O	Emulsifiable
APPEARANCE/ODOR	Clean colorless liquid, citrus odor
SPECIFIC GRAVITY (H2O=1)	.85
PH	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	115° Closed Cup.
EXTINGUISH MEDIA FOR FIRE	Use foam, dry chemical or CO ₂ Minimize breathing vapor or fumes. Cool fire exposed containers. Do not enter confined fire spaces without proper protective clothing, including self-contained air supply.
USUAL FIRE HAZARD	Burning liberates carbon monoxide, carbon dioxide and smoke.

SECTION V - HEALTH HAZARD DATA

OVER EXPOSURE EFFECTS	Liquid may be irritating to eyes and skin. Vapor is irritating to throat and lungs.
-----------------------	--

FIRST AID PROCEDURES

EYES: Flush with plenty of water for at least 15 minutes. Seek medical attention immediately.
INGESTION: DO NOT INDUCE VOMITING. Give large quantities of water. Seek medical attention immediately.
INHALATION: Remove to fresh air.
SKIN: Wash with water. If irritation develops or persists seek medical attention.

MATERIAL SAFETY DATA SHEET

ORGANIC ORANGE

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY	Stable
CONDITIONS TO AVOID	Excessive heat and flames. Avoid strong oxidizing agents.
INCOMPATIBLE MATERIALS	Strong acids, strong oxidizers
DECOMPOSITION PRODUCTS	Carbon dioxide, carbon monoxide
HAZARDOUS POLYMERIZATION	Will not occur
POLYMERIZATION AVOID	

SECTION VII - SPILL OR LEAK PROCEDURE

FOR SPILL	Absorb with inert material and dispose of in accordance with applicable regulations.
WASTE DISPOSAL METHOD	Dispose of according to all local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

RESPIRATORY PROTECTION	None required under normal use.
VENTILLATION	Local
PROTECTIVE GLOVES	Rubber
EYE PROTECTION	Chemical goggles
OTHER PROTECTIVE EQUIPMENT	
HANDLING AND STORAGE	STORE IN A COOL, DRY, WELL-VENTILLATED AREA. KEEP CONTAINER CLOSED WHEN NOT IN USE. KEEP AWAY FROM HEAT AND FLAMES. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN. WEAR SAFETY GOGGLES AND RUBBER GLOVES WHEN HANDLING THIS PRODUCT.

SECTION IX - SPECIAL PRECAUTIONS

DOT SHIPPING NAME	Combustible Liquid, n.o.s., NA 1993, PG III
DOT LABEL REQUIRED	None Required
REPORTABLE QUANTITY (RQ)	N/A
NA NUMBER	NA 1993
UN NUMBER	N/A

COMMENTS	The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them to assure proper use of these materials and the safety and health of employees.
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E10.29

1949

MATERIAL SAFETY DATA SHEET

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

CITRIKLEEN®

Page: 1 of 4

Date Prepared: July 26, 1994

MSDS No.: 1850-4076

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION**PRODUCT NAME:** CITRIKLEEN**GENERAL USE:** Cleaning, degreasing**PRODUCT DESCRIPTION:** Solvent emulsion**GENERIC INGREDIENTS:** Water, d-limonene, surfactants, coupling agents, alkanolamine**EMERGENCY TELEPHONE NUMBERS:** PENETONE 201-567-3000
CHEMTREC 800-424-9300**SECTION 2 HAZARDOUS INGREDIENT SECTION**

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

OSHA HAZARD: FLAMMABLE, CORROSIVE

OSHA HAZARDOUS INGREDIENTS

	CAS#	EXPOSURE LIMITS 8 hrs. TWA (ppm)		
		OSHA PEL	ACGIH TLV	Supplier
D-limonene	5989-27-5	not established	not established	---
Monoothanolamine	141-43-5	3	3	---

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 irritation or burns to eyes on prolonged contact. High vapor concentrations may be irritating.

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 irritating 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

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CHRONIC:

Inflammation of mucous membranes and respiratory tract may occur upon prolonged breathing of mist. Ingestion of large amounts of diimonene has caused kidney and liver 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:

Flush skin with large amounts of water. Remove contaminated clothing and launder before reuse. If skin irritation develops or persists, consult physician.

INHALATION:

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

INGESTION:

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

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, rubber 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 particulate mask if the product is sprayed. DO NOT MIST THIS PRODUCT. Use coarse spray only.

SECTION 4 FIRE & EXPLOSION HAZARDS

FLASH POINT: 125°F PMCC, 165°F COC**FLAMMABLE LIMITS:** not determined**AUTOIGNITION TEMPERATURE:** not determined**GENERAL HAZARD:**

Flammable liquid. Can form flammable mixtures at or above the flash point.

Containers can rupture and explode under fire conditions due to pressure and vapor buildup.

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.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, fumes, 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 lid tightly covered. Solvent soaked materials may spontaneously combust. For larger spills, dike spill, recover free liquid, and use absorbent material to dry area. Rinse area with water. Put all material into appropriate waste containers.

CITRIKLEEN

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Date Prepared: July 28, 1994

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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:

emulsifies

SPECIFIC GRAVITY at 75°F:

0.98

ODOR AND APPEARANCE:

clear amber liquid with citrus 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 oxidizing agents.

SECTION 9 REGULATORY INFORMATION**DEPARTMENT OF TRANSPORTATION (DOT):****PROPER SHIPPING NAME:**

FLAMMABLE LIQUID, CORROSIVE, N.O.S.
(contains d'ilmonene and ethanolamine)

HAZARD CLASS: 3**IDENTIFICATION NUMBER: UN 2924****PACKING GROUP: III****LABEL: FLAMMABLE, CORROSIVE**

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.

CITRIKLEEN

Page: 4 of 4

Date Prepared: July 26, 1994

MSDS No.: 1050-4076

RCRA HAZARD CLASS:

D001 Ignitable hazardous waste
D002 Corrosive hazardous waste

SARA TITLE III:**311/312 HAZARD CATEGORIES:**

Acute health, Chronic health, Fire

313 REPORTABLE INGREDIENTS:

Diethylene glycol monobutyl ether CAS# 112-34-5 <5 wt%

NEW JERSEY RIGHT-TO-KNOW INFORMATION:

This product contains water (CAS# 7732-18-5), d-limonene (CAS# 5989-27-5), monoethanolammonium dodecylbenzene sulfonate (CAS# 26836-07-7), nonylphenol ethoxylate (CAS# 9016-45-9), diethylene glycol monobutyl ether (CAS# 112-34-5), and monoethanolamine (CAS# 141-43-5).

CALIFORNIA PROPOSITION 65 INFORMATION:

This product does not contain any chemicals recognized by the state of California to cause cancer and/or birth defects or reproductive harm.

SCAQMD INFORMATION:

Is there a photochemically reactive material present? Yes/
What is the % by volume of photochemically reactive material? about 30
What is the VOC content? 310 g/l
What is the vapor pressure of VOC's? 0.14 mm Hg @ 20°C

SECTION 10 NOTES**HAZARD RATING SYSTEMS:**

	HMIS	NFPA
HEALTH	1	1
FLAMMABILITY	2	2
REACTIVITY	0	0

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

REVISION SUMMARY:

Change in Section 6

SUPERSEDES ISSUE DATE:

September 28, 1993

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR SALES ENGINEER
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 201-567-2000

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND ACCURATE TO THE BEST OF PENETONE'S KNOWLEDGE. THE INFORMATION RELATES TO THIS SPECIFIC MATERIAL. IT MAY NOT BE VALID FOR THIS MATERIAL IF USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY ONESELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OWN PARTICULAR USE.

MATERIAL SAFETY DATA SHEET 1042

(Essentially Similar to Form OSHA-20)

J.D. & E-10.8
✓ Ident. 644

SECTION I

PRODUCT NAME	MSA CLEANER-SANITIZER II		
MANUFACTURER	Mine Safety Appliances Company 600 Penn Center Boulevard Pittsburgh, PA 15235	FORMULA CODE	8599-03
		COMPLETED BY	L. P. Dewosky
		TITLE	Mgr. Product Safety
EMERGENCY PHONE NO.	412-273-5500	DATE	3-17-81

SECTION II - INGREDIENTS

	CAS NUMBER	WEIGHT. %
ACTIVE INGREDIENTS:		54.7
SODIUM CARBONATE	497-19-8	42.2
TRISODIUM PHOSPHATE	7601-54-9	10.0
ALKYL (C14, 50%; C12, 40%; C16, 10%)		
DIMETHYL BENZYL AMMONIUM CHLORIDES	139-08-2	2.5
INERT INGREDIENTS:		45.3
SODIUM TRIPOLYPHOSPHATE	7758-29-4	
SODIUM BICARBONATE	144-55-8	
WATER	7732-18-5	
ISOMERIC LINEAR ALCOHOLS (C11-C15)		
POLYETHOXY ETHANOLS	68131-40-8*	
ETHANOL	64-17-5	
ISOBORNYL ACETATE	125-12-2	

SECTION III - PHYSICAL DATA

BILING POINT (° F.)	NA	SPECIFIC GRAVITY (H ₂ O=1)	0.8
VAPOR PRESSURE (mm Hg.)	NA	%VOLATILE BY VOLUME	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER	20%	pH 1% AQUEOUS SOLUTION	9.5 - 10.5
APPEARANCE AND ODOR	FRAGRANT BLEND OF WHITE POWDERS		

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (Method used)	NO FLASH TO 240 F	FLAMMABLE LIMITS	Lo: NA	Hi: NA
EXTINGUISHING MEDIA	WATER SPRAY (FOG), FOAM, DRY CHEMICAL, CARBON DIOXIDE			
SPECIAL FIRE FIGHTING PROCEDURES	BLANKET FIRE WITH EXTINGUISHING MEDIUM			
UNUSUAL FIRE AND EXPLOSION HAZARDS	PRODUCT IS NONREACTIVE AND DOES NOT READILY SUPPORT COMBUSTION			

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SECTION V - HEALTH HAZARD DATA

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Ident 644

SKIN CONTACT WITH POWDER MAY CAUSE BURNS. FLUSH AFFECTED AREA WITH CLEAN WATER.

EYE CONTACT WITH POWDER MAY CAUSE CORNEAL BURNS. AVOID RUBBING EYES BECAUSE WATER INSOLUBLE PARTICLES MAY SCRATCH CORNEA. IMMEDIATELY FLUSH EYES WITH CLEAN WATER WHILE HOLDING EYELIDS APART. CONTINUE FLUSHING FOR AT LEAST 15 MINUTES OR UNTIL IRRITATION SUBSIDES. CONSULT PHYSICIAN AS SOON AS POSSIBLE.

INHALATION OF A LARGE ENOUGH QUANTITY TO POSE A SIGNIFICANT HEALTH HAZARD IS IMPROBABLE.

INGESTION OF POWDER IS HARMFUL OR FATAL. SHOULD INGESTION OCCUR, DRINK MILK, RAW EGG WHITE, OR GELATIN SOLUTION, OR LARGE QUANTITIES OF WATER. AVOID ALCOHOL. CONSULT PHYSICIAN AS SOON AS POSSIBLE.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID	NONE
	STABLE	X		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID	NONE
	WILL NOT OCCUR	X		

HAZARDOUS DECOMPOSITION PRODUCTS	UNDETERMINED			
--	--------------	--	--	--

INCOMPATIBILITY (MATERIALS TO AVOID)	OXIDIZING AGENTS SOAP AND ANIONIC SURFACTANTS DEACTIVATE GERMICIDE			
---	---	--	--	--

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	SWEEP UP			
---	----------	--	--	--

WASTE DISPOSAL METHOD	REMOVE TO SANITARY LANDFILL AWAY FROM WATER SUPPLIES DESTROY EMPTY CONTAINERS			
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SECTION VIII - SPECIAL PROTECTION INFORMATION

SPECIAL RESPIRATORY PROTECTION	NOT REQUIRED			
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SPECIAL SKIN PROTECTION	NOT REQUIRED			
-------------------------------	--------------	--	--	--

SPECIAL EYE PROTECTION	NOT REQUIRED			
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SECTION IX - SPECIAL PRECAUTIONS

SPECIAL HANDLING PRECAUTIONS	NOT REQUIRED			
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SPECIAL STORAGE PRECAUTIONS	NOT REQUIRED. MINIMUM SHELF LIFE 6 MONTHS. FOR MAXIMUM SHELF LIFE AVOID HIGH HUMIDITY AND STORE IN A CLEAN, DRY PLACE.			
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OTHER SPECIAL	NOT REQUIRED			
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EnviroX LLC

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT INFORMATION

PRODUCT NAME: **H₂Orange₂ Concentrate 117**

PRODUCT CLASSIFICATION: Water Soluble Cleaner

MANUFACTURER: EnviroX LLC P.O.Box 2327, Danville, IL 61834-2327
1938 E. Fairchild St. Danville, IL. 61832

TELEPHONE: 217-442-8596 EMERGENCY TELEPHONE: 217-431-1911

SECTION II - INGREDIENTS

HAZARDOUS INGREDIENTS: Hydrogen Peroxide < 4% - CAS No. 7722-84-1

SECTION III - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

FLAMMABLE EXPLOSIVE LIMITS % BY VOLUME: Lower: None
Upper: None

FIRE EXTINGUISHING MEDIA: CO₂ or Dry Chemical

SPECIAL FIRE-FIGHTING PROCEDURES: None known

UNUSUAL FIRE AND EXPLOSION HAZARD: None known

SECTION IV - PHYSICAL DATA

BOILING POINT: 212 Degrees F.

SPECIFIC GRAVITY (Water=1): 1.019

SOLUBILITY IN WATER: Complete

MELTING POINT: Unknown

PH: 3.6

APPEARANCE: Clear

ODOR: Citrus

SECTION V - PRODUCT HEALTH HAZARD DATA

PRINCIPAL ROUTES OF ABSORPTION:

- Inhalation - Not Applicable
- Ingestion - May cause stomach upset
- Skin - May cause skin irritation if left on for long periods of time.
- Eye - May cause eye irritation

POSSIBLE SYMPTOMS OF OVEREXPOSURE: Dry skin or stinging sensation

EMERGENCY AND FIRST AID PROCEDURES:

- Inhalation - Not Applicable
- Ingestion - Call a doctor or get medical attention. Do not induce vomiting or give anything by mouth to an unconscious person. Drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink quantities of water. Avoid alcohol.
- Skin - If irritation occurs, rinse thoroughly with water for at least 5 minutes. Apply moisturizing cream. If irritation persists, consult physician.

SECTION V - PRODUCT HEALTH HAZARD DATA (continued)

Eye - Flush eyes with water for at least 15 minutes holding lids apart to ensure complete irrigation. If irritation persists, consult physician.

SECTION VI - REACTIVITY DATA

STABLE: Yes

STABILITY CONDITIONS TO AVOID: None known

INCOMPATIBILITY (Materials to Avoid): Strong Reducing Agents

HAZARDOUS DECOMPOSITION PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Will not occur

SECTION VII - SPILL, LEAK OR DISPOSAL PROCEDURES

WASTE DISPOSAL METHOD: Biodegradable Product. Dispose of container according to state, federal and local laws.

PRECAUTIONS IN HANDLING AND STORING: Store indoors. Store away from strong reducing agents.

OTHER PRECAUTIONS TO BE TAKEN: None known

SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS: Local Exhaust OK

PROTECTIVE EQUIPMENT: None

OTHER PROTECTIVE PRECAUTION: None

HMIS Codes:

Health: 0
Flammability: 0
Reactivity: 0

The exact composition of this material is a trade secret. The information contained herein is correct to the best of our knowledge. The recommendations or suggestions contained in this Data Sheet are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory prior to use. Our responsibility for claims arising from breach of warranty, negligence, or otherwise is limited to the purchase price of the material. Freedom to use any patent owned by anyone is not to be inferred from any statement contained herein. WITH REGARD TO THE MATERIAL, SELLER MAKES NO WARRANTY OF ANY KIND WHATEVER, EXPRESS OR IMPLIED, AND ALL WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY SELLER.

DATE: 01/04

By Denise Vollmer

1996

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1 of 2

SynTech Products Corporation**520 E. Woodruff Avenue****Toledo, Ohio 43624****(419) 241-1215****Material Safety Data-Sheet****24 Hour - Call INFOTRAC****1-800-535-5053****HMIS Rating H-1 F-0 R-0****Section I - Product Identification****Product Name:** Touch It Up[®] De-Contaminant***Effective Date:** 4-96

* 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
Propane/Butane	74-98-6/106-97-8	6-10%	1000ppm	1000ppm	No

*All constituents are listed on the TSCA inventory.

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 by Volume in Can:	85
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 Extension Test:	Non-Flammable
Flammable Limits:	LEL: N/A UEL: N/A
Extinguishing Media:	Foam, dry chemical, carbon dioxide.
Special Fire Fighting Procedures:	Keep containers 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

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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.
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 and 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 ventilation adequate.
Protective Gloves: None required, protective gloves may be worn.
Eye Protection: None required, chemical splash goggles may be worn.

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 your best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

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 _____



GE Betz

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

Material Safety Data Sheet

Issue Date: 29-JAN-1997

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

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

CORRSHIELD NT4204

PRODUCT APPLICATION AREA:

WATER-BASED CORROSION INHIBITOR.

2 COMPOSITION / INFORMATION ON INGREDIENTS

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

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
7632-00-0	SODIUM NITRITE Oxidizer; toxic (by ingestion); potential blood toxin

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.

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.

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.

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:

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 & 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.

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 & 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	% Solubility (water)	100.0
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

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

Oral LD50 RAT:	570 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>5,000 mg/kg
NOTE - Estimated value	

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Acute Toxicity (Estimated)

LC50= 1210; No Effect Level= 790 mg/L

BIODEGRADATION

COD (mg/g): 42

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: ORS (when container > RQ)
UN / NA NUMBER: NA3082
DOT EMERGENCY RESPONSE GUIDE #: 31

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

72 gallons due to SODIUM NITRITE;

SARA SECTION 312 HAZARD CLASS:

Immediate (acute); Delayed (Chronic)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

CAS#	CHEMICAL NAME	RANGE
7632-00-0	SODIUM NITRITE	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	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

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

CHANGE LOG

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

Custom Environmental Technology, Inc.
8 Iron Bridge Drive
Collegeville, PA 19426
(610) 409-8210

24-Hour Health/Environmental Emergency Phone: 1-800-873-1138

Effective Date: 4/19/00

Material Safety Data Sheet

MSDS No: 16091

SECTION 1. PRODUCT IDENTIFICATION

ZETA LYTE 15

Chemical Family: Copolymer of a quaternary acrylate salt and acrylamide.

Health	1
Flammability	1
Reactivity	0
Protective Equipment	X

HMIS RATING

Intended Use or Product Type: Flocculant

SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	124-04-9	ADIPIC ACID	5 mg/m3	NE	NE	NE	NE	NR	NR	NR
*	69418-26-4	COPOLYMER ACRYLAMIDE: DMAEA Q (MeCl)	NE	NE	NE	NE	NE	NR	NR	NR

NE = Not Established NR = Not Reviewed * = OSHA Hazardous Ingredient

SECTION 3. HAZARDS IDENTIFICATION

Emergency Overview:

Description: White, free flowing powder with little or no odor.

Statement of Hazards: Eye irritant

Effective Date: 4/19/00

Precautionary Measures: Do not get in eyes, on skin, on clothing. Wash thoroughly after handling. Avoid prolonged or repeated inhalation of dust or skin contact. Slip hazard when wet.

Primary Route(s) of Entry: Inhalation

Signs and Symptoms of Exposure: Contact with the eye may produce irritation and/or redness. Inhaled dust may cause some respiratory irritation.

Carcinogenicity: Not listed as a carcinogen by IARC, NTP, OSHA or ACGIH

Medical Conditions Aggravated by Exposure: Existing respiratory conditions.

Target Organ(s): Eyes, lungs

SECTION 4. FIRST AID MEASURES

Ingestion: Do not give an emetic unless directed by a physician. Never give anything by mouth to an unconscious person.

Skin: Remove contaminated clothing and launder before reuse. Wash affected area with soap and water.

Inhalation: Remove to fresh air.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: Not Applicable

Autoignition: Not Evaluated

Sensitivity to Mechanical Impact: None

Sensitivity to Static Discharge: Dust in sufficient concentration may result in an explosive mixture in air.

Fire Fighting Extinguishing Media: Carbon dioxide, dry chemical or foam.

Fire Fighting Equipment: No special procedures. However, wetted product presents a slip hazard. Pedestrian and vehicular traffic must proceed with caution where wet product may exist.

Fire and Explosion Hazards: Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting, and eliminate open flame and other sources of ignition.

Hazardous Combustion Products: Oxides of carbon and nitrogen.

Combustibility: May burn in fire.

Dust Explosivity: Dust in sufficient concentration may result in an explosive mixture in air.

Emergency Response Guidebook Information: No ERG Guide cited. Handle as combustible material.

Effective Date: 4/19/00

SECTION 6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Product becomes slippery and difficult to handle when wet; spills are best handled while still dry. Sweep up and collect dry product. Absorb wet product with vermiculite or other inert material. Then water wash area to waste treatment to eliminate slip hazard.

SECTION 7. HANDLING AND STORAGE

Precautions: Good personal hygiene practices can reduce potential exposure. Wash with soap and water following any contact with this product, as well as before breaks and meals. Shower and change clothing at end of work shift. If clothing becomes contaminated, remove and launder or dry-clean before reuse.

Storage Information: Store in cool dry location.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin Protection: Not normally required.

Respiratory Protection: Use NIOSH approved dust respirator as required to control exposure. Follow ANSI Z88.2.

Eye Protection: Goggles (ANSI Z87.1 std; safety glasses alone do not protect from dust).

Engineering Controls: Provide mechanical ventilation to prevent dust concentrations, and to reduce potential exposure.

Additional Information: Provide eyewash station(s). Select additional protective equipment (eg apron, face shield, etc.), depending on conditions of use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form:	Granular Powder
Color:	White
Odor:	Odorless
Odor Threshold:	Not applicable
Physical State:	Solid
Solubility in Water:	Soluble, solubility limited by viscosity
Vapor Pressure:	Not Applicable
Specific Gravity:	0.8 - 1
Boiling Point:	Not Applicable
Melting Point:	Not Applicable
Freezing Point:	Not Applicable
Decomposition Temperature:	Not Evaluated
Evaporation Rate:	Not Applicable
Vapor Density:	Not Applicable
VOC:	Not Applicable
pH:	~ 3.3 For 1 % solution.
Coefficient of water/oil:	Not Evaluated

Percent Volatile:
None expected above trace levels

Effective Date: 4/19/00

SECTION 10. STABILITY AND REACTIVITY

Conditions to Avoid: Avoid wet and humid conditions.

Stability: Stable.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Thermal decomposition or combustion may produce oxides of carbon and nitrogen, various hydrocarbons, ammonia and/or hydrogen chloride vapor. Vapor may be irritating or harmful.

Incompatibility: Strong oxidants such as liquid chlorine, enriched gaseous or liquid oxygen, and sodium or calcium hypochlorite.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:

Low oral toxicity. By analogy to similar materials, the acute LD50 (rat) is expected to be > 2000 mg/kg.

Carcinogenicity:

Not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

Reproductive Toxicity:

No data for product. No effects anticipated.

Teratogenicity:

No data for product. No effects anticipated.

Mutagenicity:

No data for product. No effects anticipated.

Eye Irritation:

124-04-9 ADIPIC ACID

Severe.

Acute Eye Exposure Effects:

69418-26-4 COPOLYMER ACRYLAMIDE: DMAEA Q.(MeCl)

Product may cause temporary irritation which should cease upon removal of product. May require extensive irrigation to remove product from eye.

Sub-Chronic:

124-04-9 ADIPIC ACID

Male and female rats exposed to adipic acid in the form of aerosol dust (126 ug/L) for 6 hours a day for 15 days showed no signs of toxicity.

Intravenous LD 50:

124-04-9 ADIPIC ACID

LD50(Mice): 680 mg/kg.

Intraperitoneal LD 50:

124-04-9 ADIPIC ACID

LD50(Mice): 275 mg/kg.

Effective Date: 4/19/00

Toxicologically Synergistic Products:
None known.

SECTION 12. ECOLOGICAL INFORMATION

Ecological Information:

This product contains cationic polymer(s) that may be toxic to aquatic organisms when tested in pure (distilled) water. Toxicity is greatly reduced by particles in natural water.

Fish Toxicity:

124-04-9 ADIPIC ACID

24 hr LC50 (Bulegill sunfish): <330 mg/L.

96 hr LC50 (Fathead minnow): 97 mg/L.

69418-26-4 COPOLYMER ACRYLAMIDE: DMAEA Q.(MeCl)

Contains a cationic polyacrylamide. Cationic polyacrylamides are very toxic to aquatic organisms (LC50 values usually < 1 ppm); however, aquatic toxicity is reduced by factors of 10 to 100 times in the presence of 5 to 10 mg/l organic carbon as is found in most surface waters.

Bioaccumulation:

124-04-9 ADIPIC ACID

BCF = 0.68

SECTION 13. DISPOSAL CONSIDERATIONS

RCRA Hazard Class: This product, when unadulterated, is not a RCRA regulated hazardous waste.

Waste Disposal Method: Disposal must be arranged in accordance with local, state and federal regulations. Care must be taken to prevent environmental contamination from the disposal of material, residues and containers.

SECTION 14. TRANSPORT INFORMATION

DOT:

Proper Shipping Name:

NOT A DOT/IMO HAZARDOUS MATERIAL

SECTION 15. REGULATORY INFORMATION

US Federal Regulations:

Chemical Weapons Convention (CWC): This product does not contain any chemicals listed under the Chemical Weapons Convention Schedules of Chemicals.

Clean Air Act -Hazardous Air Pollutants (HAP): The following chemical(s) are listed as hazardous air pollutants (HAP) under the U.S. Clean Air Act Section 12 (40 CFR 61):

Chemical Name: 2-Propenamide

Common Name: Acrylamide

CASRN: 79-06-1

Percent in Composition: < 0.1 % by wt

Effective Date: 4/19/00

Clean Air Act - Ozone Depleting Substances (ODS): This product neither contains, nor was manufactured with, a Class I or Class II ozone depleting substance (ODS), as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A+B).

Clean Water Act - Priority Pollutants (PP): This product does not contain any priority pollutants listed under the U.S. Clean Water Act Section 307 (2)(1) Priority Pollutant List (40 CFR 401.15).

Occupational Safety and Health Act (OSHA): This product is considered to be a hazardous chemical under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Resource Conservation and Recovery Act (RCRA): This product is not considered to be a P or U listed hazardous waste under RCRA (40 CFR 261).

SARA Title III: Section 302 - Extremely Hazardous Substances (EHS): This product contains the following chemicals regulated under Section 302 (40 CFR 355) as extremely hazardous substances:

Chemical Name: ACRYLAMIDE

CASRN: 79-06-1

Percent in Composition: < 0.1 % by wt

SARA Title III: Section 304 - CERCLA: This product contains the following chemicals regulated under Section 304 (40 CFR 302) as hazardous substance(s) for emergency release notification ("CERCLA" List):

Chemical Name: ADIPIC ACID

CASRN: 124-04-9

Percent in Composition: <5% by wt

Component RQ: 5000

Chemical Name: ACRYLAMIDE

CASRN: 79-06-1

Percent in Composition: < 0.10 % by wt

Component RQ: 5000

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS): This product is regulated under Section 311-312 (40 CFR 370). Acute health hazard.

SARA Title III: Section 313 Toxic Chemical List (TCL): This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

TSCA Section 5(e) - Consent Order / SNUR: This product is not subject to a Section 5(e) Consent Order or Significant New Use Rule (SNUR).

TSCA Section 8(b) - Inventory Status: All chemical(s) comprising this product are either exempt or listed on the TSCA inventory.

TSCA Section 12(b) - Export Notification: This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

State Regulations:

California Proposition 65: The following is required composition information. This product contains the following chemical(s) which are currently listed on the California list of Known Carcinogens and Reproductive Toxins:

Effective Date: 4/19/00

Chemical Name: ACRYLAMIDE

CASRN: 79-06-1

Percent in Composition: < 0.10 % by wt

Massachusetts Right-to-Know: The following is required composition information:

Chemical Name: ADIPIC ACID

CASRN: 124-04-9

Percent in Composition: <5% by wt

Chemical Name: ACRYLAMIDE

CASRN: 79-06-1

Percent in Composition: < 0.10 % by wt

New Jersey Right-to-Know: The following is required composition information:

Chemical Name: COPOLYMER ACRYLAMIDE: DMAEA Q.(MeCl)

CASRN: 69418-26-4

Chemical Name: WATER

CASRN: 7732-18-5

Chemical Name: ADIPIC ACID

CASRN: 124-04-9

Pennsylvania Right-to-Know: The following is required composition information:

Chemical Name: COPOLYMER ACRYLAMIDE: DMAEA Q.(MeCl)

CASRN: 69418-26-4

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: WATER

CASRN: 7732-18-5

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: ADIPIC ACID

CASRN: 124-04-9

Comment: Environmental Hazardous Substance

SECTION 16. OTHER INFORMATION

MSDS No: 16091

Reason Issued: New format

Prepared By: Leon Knight

Approved By:

Sections Modified: All sections. Revised format.

Disclaimer: The following supercedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable

Effective Date: 4/15/00

for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 9905 FLOCCULANT****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** **NALCO 9905 FLOCCULANT****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****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

Based on our hazard evaluation, none of the substances in this product are hazardous.

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******CAUTION**

May cause irritation with prolonged contact. Toxic to aquatic organisms.

Do not get in eyes, on skin, on clothing. Do not take internally. Do not breathe dust. Water in contact with the product will cause slippery floor conditions. 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.

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve ammonia under fire conditions. Water in contact with the product will cause slippery floor conditions. May form explosive dust-air mixtures.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :**EYE CONTACT :**

May cause irritation with prolonged contact.

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)305-1000For additional copies of an MSDS visit www.nalco.com and request access



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

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.

HUMAN HEALTH HAZARDS - CHRONIC :

No adverse effects expected other than those mentioned above.

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. May evolve ammonia under fire conditions. Water in contact with the product will cause slippery floor conditions. May form explosive dust-air mixtures.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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 :

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

ENVIRONMENTAL PRECAUTIONS :

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

7. HANDLING AND STORAGE

HANDLING :

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

STORAGE CONDITIONS :

Store separately from oxidizers. Keep in dry place.

SUITABLE CONSTRUCTION MATERIAL :

Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use., Do not use aluminum or mild steel., Copper

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)

Respirable Nuisance TWA: 3 mg/m3

Particulates

Inhalable (Total) Nuisance TWA: 10 mg/m3

Particulates

OSHA/PEL :

Substance(s)

Respirable Nuisance TWA: 5 mg/m3

Particulates

Inhalable (Total) TWA: 15 mg/m3 (total dust)

Nuisance Particulates



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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.

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
APPEARANCE	White
ODOR	Slight, Ammoniacal
SPECIFIC GRAVITY	0.75
DENSITY	6.2 lb/gal
SOLUBILITY IN WATER	Partial
pH (5 %)	2.5 - 4.5
VOC CONTENT	1.0 % Calculated

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.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

CONDITIONS TO AVOID :

Avoid extremes of temperature. 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, ammonia

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE ORAL TOXICITY :

Species	LD50	Test Descriptor
Rat	> 5,000 mg/kg	Product
Rating :	Non-Hazardous	

ACUTE DERMAL TOXICITY :

Species	LD50	Test Descriptor
Rabbit	> 2,000 mg/kg	Product
Rating :	Non-Hazardous	

SENSITIZATION :

The results of testing on guinea pigs showed this material to be non-sensitizing.

CARCINOGENICITY :

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

HUMAN HAZARD CHARACTERIZATION :

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

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The tests for (products or similar products) were performed in clean water as set forth by USEPA (EPA/600/4-90/027). In order to evaluate the potential toxicity mitigation, the tests for (representative polymers) were performed in environmentally relevant water with dissolved organic carbon (DOC: 4.5 mg/l). The toxicity of this product is due to an external mode of action, e.g., suffocation or immobilization. In the presence of suspended material, e.g., DOC, the polymers are bound to suspended material and the bioavailability is substantially reduced. As a result, the toxicity is expected to be lower. Under normal use and discharge conditions, the LC50 values of the representative polymers tested in the presence of DOC are expected to apply to this product. However, for large spills, the clean water data is more applicable.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 9905 FLOCCULANT****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	0.21 mg/l	Similar Product
Zebra Danio	96 hrs	1 - 10 mg/l	Representative polymer tested in water with DOC

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	0.34 mg/l	0.26 mg/l	Similar Product

PERSISTENCY AND DEGRADATION :

Chemical Oxygen Demand (COD) : 225,000 mg/l

Biological Oxygen Demand (BOD) :

Incubation Period	Value	Test Descriptor
	5,000 mg/l	Product

The organic portion of this preparation is expected to be poorly biodegradable.

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%	5 - 10%	> 90%

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: 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.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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.

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.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

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 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. 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 :

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.

INTERNATIONAL CHEMICAL CONTROL LAWS



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

AUSTRALIA

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

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)

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

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 Low

* The environmental risk is: High 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.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 9905 FLOCCULANT

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

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 : 10/24/2006
Version Number : 1.10



THERMALTAKE TECHNOLOGY USA

525 Parriott Place

City of Industry, CA 91745

TEL: 626-968-9189 FAX: 626-968-1138

<http://www.thermaltakeusa.com/>

MATERIAL SAFETY DATA SHEET

CUSTOMER : _____

MODEL NO. : COOLANT (PC USE)

DESCRIPTION : _____

CUSTOMER PART NO. : _____

ISSUE DATE : MAR. 11, 2006

REVISED DATE : _____

VERSION : B

CONTENT

CUSTOMER APPROVAL SIGNATURE

APPROVED BY	VERIFIED BY	AUTHOR

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product name	PG-USP (Propylene Glycol USP)
Synonyms	1, 2-Propanediol; 1,2-Dihydroxypropane; 2-Hydroxypropanol; Isopropylene Glycol; Methylethylene Glycol; Methylethyl Glycol; Monopropylene Glycol; 2,3- Propanediol; Alpha-Propylene Glycol; 1,2- Propylene Glycol.
Chemical Formula	CH ₃ CH(OH)CH ₂ OH
Chemical Family	Glycol
Product Codes	
Supplier Information	Thermaltake Technology
Emergency phone numbers	800-988-1088

2. Composition / Information on Ingredients

Ingredient	CAS Number	Percent (by weight)
Propylene Glycol	57-55-6	GT 99.9
Dipropylene Glycol, Others	-	LT 0.01

3. Hazards Identification

Physical State and Appearance	Liquid
Emergency Overview:	<u>NFPA RATINGS (SCALE 0-4): HEALTH=0 FIRE=1 REACTIVITY=0</u> Odorless, clear, colorless, hygroscopic, viscous liquid with a slightly acrid taste avoid contact with eyes. Keep container tightly closed. Wash thoroughly after handling. Handle with caution.
Potential Health Effects:	

Route of Entry	
Effects	
Eyes	Short term effects: May cause minor eye irritation. Long term effects: No information is available.
Skin	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Inhalation	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Ingestion	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Carcinogen Status	OSHA: N; NTP:N; IARC:N

4. First-Aid Measures	
Eye Contact	Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes).
Inhalation	No expected to present a significant inhalation hazard under anticipated conditions of normal use.
Ingestion	Treat symptomatically and supportively.
Note to physician	No specific antidote. Treat symptomatically and supportively.

5. Fire-Fighting Measures	
Fire and Explosion Hazard	Slight fire hazard when exposed to heat or flame. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapor can burn in open or explode if confined. Vapors may travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Aqueous solutions containing less than

	95% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapor. Only aqueous solutions of propylene glycol less than 22% should be used in sprinkler systems or other fire-fighting equipment. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.
Extinguishing Media	Dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For larger fires, use water spray, fog or alcohol-resistant foam. Alcohol foam.
Firefighting	Move container from fire area if you can do it without risk. Do not enter fire area without proper protection. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed container/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/steam explosion. Do not scatter spilled material with high-pressure water streams. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Dike fire-control water for later disposal. Avoid breathing hazardous vapors, keep upwind. Notify authorities immediately if liquid enters sewer/public waters.
Flash Point	210 F (99 C) (CC)
Lower Flammable Limit	2.6%
Upper Flammable Limit	12.5%
Autoignition	700 F (371 C)
Flammability Class (OSHA)	IIIB
Hazardous Combustion Products	Thermal decomposition products may include toxic oxides of carbon.

6. Accidental Release Measures

Occupational spill	May contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Restrict water use for cleanup. Slippery walking. Spread
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	<p>granular cover. Impound/recover large land spill. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. May biodegrade. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm.</p> <p>Report per regulatory requirements. Keep unnecessary people away; isolate hazard area and restrict entry.</p>
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7. Handling and Storage	
Handling	Hygroscopic. Use dry nitrogen or low dew point air for tank padding. Keep drums tightly closed to prevent contamination.
Storage	Store at 18-32 C. store away from incompatible substances.

8. Material condition / Personal Protection	
Product condition	Liquid
Exposure Limits	No occupational exposure limits established by OSHA, ACGIH, or NIOSH.
Ventilation	No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.
Eye Protection	<p>Employee wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.</p> <p>Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.</p>
Skin Protection	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking and when leaving work.
Respirator	No special respirator protection is recommended under anticipated conditions of normal use with adequate ventilation.

9. Physical and Chemical Properties			
Description	Clear, colorless; little or no odor; Aromatic, sweet odor	Specific Gravity	1.0361
Molecular Weight	76.11	Water Solubility	Soluble
Molecular Formula	C-H3-C-H-(O-H)-C-H2O	Volatility	100%
Boiling Point	370-372 F (188-189 C)	PH	No data available
Freezing Point	-75 F (-59C)	Odor Threshold	No data available
Vapor Pressure	<0.1mmHg @ 20 C	Evaporation Rate	0.005 (butyl acetate=1)
Vapor Density	2.62	Viscosity	58.1 cP@20 C
Solvent Solubility	Soluble in alcohol, acetone, chloroform, ether, benzene many organic solvents; insoluble in fixed oils.		

10. Stability and Reactivity			
Reactivity	Stable under normal temperatures and pressures.		
Conditions to Avoid	May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks, or open flame.		
Hazardous Decomposition	Thermal decomposition products may include toxic oxides of carbon.		
Polymerization	Hazardous polymerization has not been reported to occur under normal temperatures and pressures.		
INCOMPATIBILITIES			
Acid Anhydrides	Incompatible	Ethylene Oxide	Possible explosion
Acid Chlorides	Incompatible	Nitrogen Tetroxide	Possible explosion
Chloroformates	Incompatible	Perchloric Acid (Hot)	Dangerous interaction
Reducing Agents	Incompatible	Tri-Iso-Butyl Aluminum	Violent reaction
OXidizers	Fire and explosion	Plastics	May be attacked
Nitric Acid, Hydrofluoric Acid and Silver Nitrate	Mixture forms explosive silver fulminate.	Metals (Light)	Reaction forms flammable hydrogen gas.
Acetaldehyde	Violent condensation reaction	Barium Perchlorate	Formation of highly explosive perchloric ester on refluxing.

Chlorine	Formation of highly explosive alkyl hypochlorites.	Diethyl Aluminum Bromide	Spontaneous ignition
Hexamethylene Diisocyanate	Possible explosion in absence of solvent.	Hydrogen Peroxide-Sulfuric Acid	Possible explosion
Hypochlorous Acid	Formation of highly explosive perchloric ester on refluxing.	Isocyanates	Possible explosion in absence of solvent.
Lithium Aluminum Hydride	Vigorous reaction	Permonosulfuric Acid	Possible explosion on contact with primary or secondary alcohols.

11. Toxicological Information	
Propylene Glycol	<p><u>Irritation Data:</u> 500 mg/7 days skin-human mild; 104mg/3 days intermittent skin-human moderate; 10%/2 days skin-man; 100mg eye-rabbit mild; 500mg/24 hours eye-rabbit mild.</p> <p><u>Toxicity Data:</u> 20,800 mg/kg skin-rabbit LD50; 22 gm/kg oral-mouse LD50; 18,500 mg/kg oral-rabbit LD50; 6300 mg/kg intramuscular-rabbit LDLo; 10 gm/kg/3 days continuous parenteral- infant TDLo; 2180 mg/m3/6hours/90 days intermittent inhalation-rat TCLo.</p>
Carcinogen Status	None
Acute Toxicity Level	Relatively non-toxic by dermal absorption and ingestion.
Target Effects	No data available
At Increased Risk from Exposure	No data available
Additional Data	No data available

12. Ecological Information	
Environmental Impact Rating (0-4)	No data available
Acute Aquatic Toxicity	No data available
Degradability	No data available
Log Bioconcentration Factor (BCF)	No data available

Log Octanol/Water partition Coefficient	No data available
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13. Disposal Considerations

Disposal Considerations	Contaminated product, soil, or water should not be designated hazardous waste. Landfill solids at permitted sites. Use registered transports. Burn concentrated liquids, diluting with clean, low viscosity fuel. Avoid flame-outs. Assure emissions comply with applicable regulations. Dilute aqueous waste may. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.
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14. Transport Information

Transport Information	No classification currently assigned.
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15. Regulatory Information

TSCA INVENTORY STATUS	Y	SARA HAZARD CATEGORIES: SARA SECTIONS 311/312 (40CFR 370.21)	
CERCLA SECTION 103 (40CFR302.4)	N	ACUTE HAZARD	N
SARA SECTION 302 (40CFR355.30)	N	CHRONIC HAZARD	N
SARA SECTION 304 (40CFR355.40)	N	FIRE HAZARD	N
SARA SECTION 313 (40CFR372.65)	N	REACTIVITY HAZARD	N
OSHA PROCESS SAFETY (29CFR1910.119)	N	SUDDEN RELEASE HAZARD	N
CALIFORNIA PROPOSITION 65	N		

16. Other Information

Authorized for internal use only

Prepared By:	Weller Chen (Product Manager)
Date:	2006/4/6

END OF DOCUMENT

MATERIAL SAFETY DATA SHEET
IRON (III) OXALATE HEXAHYDRATE, 20% Solution
C.A.S. No.: 2944-66-3 (Solid)

PAGE 1 OF 2

DATE PREPARED: 5/14/1999

SECTION I - Manufacturer's Information

BARKER INDUSTRIES, INC.
2841 OLD STEELE CREEK RD.
CHARLOTTE, NC. 28208
EMAIL: BARKERIND@MSN.COM

EMERGENCY TELEPHONE NUMBER
1-800-424-9300
TELEPHONE NUMBER FOR INFORMATION
1-704-391-1023

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Iron (III) Oxalate Hexahydrate, 20% Solution

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: N/A
VAPOR PRESSURE (mm Hg): N/A
VAPOR DENSITY (AIR = 1): N/A
SOLUBILITY IN WATER: Soluble
APPEARANCE AND COLOR: Brownish-yellow Solution

SPECIFIC GRAVITY: 1.12-1.14 @20°C
MELTING POINT: N/A
EVAPORATION RATE: N/A
pH: Acidic (PPL Chem Lab: pH = 2.0)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A
LEL: N/A
EXTINGUISHING MEDIA: Water spray or carbon dioxide.
SPECIAL FIRE FIGHTING PROCEDURES: AVOID BREATHING ANY FUMES OR DUST. WEAR SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Emits toxic fumes under fire conditions.

FLAMMABLE LIMITS: N/A
UEL: N/A

SECTION V - REACTIVITY DATA

STABILITY UNSTABLE: CONDITIONS TO AVOID:
STABLE: X

INCOMPATIBILITY (MATERIALS TO AVOID)
Strong oxidizing agents.

HAZARDOUS DECOMPOSITION:
HAZARDOUS: MAY OCCUR: X CONDITIONS TO AVOID:
Toxic fumes of Carbon Monoxide or Carbon Dioxide.
POLYMERIZATION WILL NOT OCCUR: Not available.

SECTION VI - HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INHALATION? X SKIN? N/A INGESTION? X
HEALTH HAZARDS (ACUTE AND CHRONIC):

Acute effects: May be harmful by inhalation, ingestion, or skin absorption. Causes eye and skin irritation. Material is irritating to mucous membranes and upper respiratory tract.

Chronic effects: Damage to the kidneys, target organ(s): Kidneys, nerves

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: IF EXPOSED TO IRON (III) OXALATE FUMES, REMOVE PERSON TO A WELL VENTILATED AREA. TREAT ACCORDING TO SYMPTOMS AND SEEK MEDICAL ATTENTION.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHES. WASH CONTACTED AREA WITH MILD SOAP AND WATER FOR AT LEAST 15 MINUTES. DRY AND SEEK MEDICAL ATTENTION IF SKIN IRRITATION OCCURS AND PERSISTS.

EYE CONTACT: RINSE EYES IMMEDIATELY WITH WATER MAKING SURE TO OCCASIONALLY LIFT THE EYELIDS (15-20 MINUTES). CONSULT A PHYSICIAN.

INGESTION: IF THE VICTIM IS CONSCIOUS, GIVE THEM TWO TO FOUR GLASSES OF WATER AND PROVOKE VOMITING BY PLACING A FINGER DEEP IN THE THROAT. KEEP VICTIM WARM AND RESTED. CONSULT A PHYSICIAN.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

RECOVER THE PRODUCT AND PLACE IN APPROPRIATE CONTAINERS. THE CONTAINERS SHOULD BE LABELED, CLEAN, DRY AND FITTED WITH A COVER. SWEEP AND/WASH DOWN THE SURFACE EXPOSED TO THE PRODUCT. VENTILATE THE AREA WHILE CLEANING.

WASTE DISPOSAL METHOD:

DISPOSE OF ACCORDING TO LOCAL, STATE AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

STORE AS FAR AS POSSIBLE FROM NON-COMPATIBLE SUBSTANCES. PLACE IN A COOL, DRY AND WELL VENTILATED AREA. KEEP CONTAINERS CLOSED WHEN NOT IN USE. OBSERVE AND FEDERAL, PROVINCIAL OR LOCAL RULES RELATIVE TO THE STORAGE OF THIS PRODUCT.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION:

WEAR NIOSH APPROVED DUST MASK.

PROTECTIVE GLOVES:

PVC CHEMICAL RESISTANT

EYE PROTECTION:

SAFETY GLASSES/GOGGLES

VENTILATION: IT IS RECOMMENDED TO USE POSITIVE DISPLACEMENT AIR EXTRACTOR AND/OR A MECHANICAL VENTILATION SYSTEM AND/OR A VENTILATION SYSTEM COMPLETE WITH AN AIR TREATMENT ENCLOSURE TO MEET THE PUBLISHED EXPOSURE LIMITS NORMS.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: IF THE CONCENTRATION IS OVER 250 MILLIGRAMS/CUBIC METER- REQUIRES AN AIR PURIFIER RESPIRATOR WITH FULL FACIAL UNIT COMPLETE WITH HIGH EFFICIENCY PARTICLE FILTER, POSITIVE PRESSURE OR STANDARD RESPIRATOR COMPLETE WITH FULL FACIAL UNIT.

SECTION IX - DOT INFORMATION

Corrosive Liquid, acidic, inorganic, n.o.s., (Ferric Oxalate 20%)
8, UN3264, PGIII, Corrosive

The information provided herein has been given in good faith by Barker Industries, Inc. No warranty, either expressed or implied is given for the information contained in this report.

Company logo

GE Betz Canada, Inc.
3451 Erindale Station Road
Mississauga, Ontario L5C 2S9
Business telephone: (905) 279-2222

Material Safety Data Sheet

Issue Date: 20-AUG-2003

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 WHMIS Regulations is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

Product contains no hazardous ingredients reportable under WHMIS regulation

No component is considered to be a carcinogen by the U.S. National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or under WHMIS.

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

May cause slight irritation to the skin. Potential eye irritant due to mechanical action only. Dusts may cause irritation to the upper respiratory tract.

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, 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:

Potential eye irritant due to mechanical action only.

ACUTE RESPIRATORY EFFECTS:

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.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

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 medical attention if irritation persists after flushing.

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:

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, 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:

The waste characteristics of the absorbed material, or any contaminated soil, should be determined in accordance with provincial regulations. Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement or discharged under provincial regulations. Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:

Normal chemical handling.

STORAGE:

Keep containers closed when not in use. Keep dry.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Consult local authorities for acceptable provincial values.

Product contains no hazardous ingredients reportable under WHMIS regulation

ENGINEERING CONTROLS:

Adequate ventilation to maintain dust concentrations below the exposure limit of 10 mg/m³ (PEL/TLV) for nuisance dusts.

RESPIRATORY PROTECTION:

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)	NA	Vapor Density (air=1)	< 1.00
Freeze Point (C)	NA		
Viscosity(cps 70F,21C)	NA	% Solubility (water)	~ 2.0

Odor	None
Appearance	White
Physical State	Powder
Flash Point	P-M(CC) > 200F > 93C
pH 0.5% Sol. (approx.)	4.2
Evaporation Rate (Ether=1)	< 1.00

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:

"A"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT: >5,000 mg/kg
Carcinogenicity DOG: NEGATIVE
NOTE - One year dog study had no adverse effects.
Carcinogenicity RAT: NEGATIVE
NOTE - Two year rat study had no adverse effects.
Dermal LD50 RABBIT: >2,000 mg/kg
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

BIODEGRADATION

BOD-28 (mg/g): 165
BOD-5 (mg/g): 122
COD (mg/g): 1100
TOC (mg/g): 200

13 DISPOSAL CONSIDERATIONS

Incinerate or bury in approved landfill. Please be advised that there may be additional local or provincial requirements relating to the disposal of waste. Consult provincial and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

Transportation of Dangerous Goods:

Proper Shipping Name: Not Regulated

15 REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

CEPA:

All components of this product comply with substance notification requirements under CEPA.

WHMIS CLASSIFICATION:

NOT REGULATED

FOOD AND DRUG ADMINISTRATION:

21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods)

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	B	Goggles, Gloves

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

CHANGE LOG

EFFECTIVE DATE		REVISIONS TO SECTION:	SUPERCEDES
-----		-----	-----
MSDS status:	07-MAY-1997		** NEW **
	20-APR-1998	;EDIT:9	07-MAY-1997
	26-MAY-1999	12	20-APR-1998
	01-JUN-1999	15	26-MAY-1999
	24-AUG-2000	4	01-JUN-1999
	20-AUG-2003		24-AUG-2000



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.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

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

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.

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.

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:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

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:

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:

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.

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:

airtight chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Density	42.000 lb/cu.	Vapor Pressure (mmHG)	< 0.1
Freeze Point (F)	NA	Vapor Density (air=1)	< 1.00
Freeze Point (C)	NA		
Viscosity(cps 70F,21C)	NA	% Solubility (water)	1.0
Odor	None		
Appearance	White		
Physical State	Powder		
Flash Point	P-M(CC)	> 200F > 93C	
pH 5% Sol. (approx.)	7.0		
Evaporation Rate (Ether=1)	< 1.00		

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:

"A"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT: >5,000 mg/kg

28 Day Oral RAT/DOG: NEGATIVE

NOTE - Rat two-year feed: no adverse effects. Dog one-year feed: no adverse effects.

Dermal LD50 RABBIT: >2,000 mg/kg

NOTE - Non-toxic at high dose levels

Skin Irritation Score RABBIT: NEGATIVE

Eye Irritation Score RABBIT: SLIGHT

Skin Sensitization G.PIG: NEGATIVE

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Screen

0% Mortality= 300 mg/L

Ceriodaphnia 48 Hour Static Acute Bioassay

LC50= 5; No Effect Level= 1.6 mg/L

Daphnia magna 48 Hour Static Screen

0% Mortality= 500 mg/L

Fathead Minnow 96 Hour Static Screen

0% Mortality= 500 mg/L

Rainbow Trout 72 Hour Static Screen

0% Mortality= 100 mg/L

BIODEGRADATION

BOD-28 (mg/g): 22

BOD-5 (mg/g): 1

COD (mg/g): 2970

TOC (mg/g): 680

13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

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

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	B	Goggles,Gloves

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

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MSDS status:	28-JAN-1997		** NEW **
	01-JUL-1997	15	28-JAN-1997
	27-MAY-1999	15	01-JUL-1997
	24-AUG-2000	4	27-MAY-1999



THERMALTAKE TECHNOLOGY USA

525 Parriott Place

City of Industry, CA 91745

TEL: 626-968-9189 FAX: 626-968-1138

<http://www.thermaltakeusa.com/>

MATERIAL SAFETY DATA SHEET

CUSTOMER : _____

MODEL NO. : COOLANT (PC USE)

DESCRIPTION : _____

CUSTOMER PART NO. : _____

ISSUE DATE : MAR. 11, 2006

REVISED DATE : _____

VERSION : B

CONTENT

CUSTOMER APPROVAL SIGNATURE

APPROVED BY	VERIFIED BY	AUTHOR

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product name	PG-USP (Propylene Glycol USP)
Synonyms	1, 2-Propanediol; 1,2-Dihydroxypropane; 2-Hydroxypropanol; Isopropylene Glycol; Methylethylene Glycol; Methylethyl Glycol; Monopropylene Glycol; 2,3- Propanediol; Alpha-Propylene Glycol; 1,2-Propylene Glycol.
Chemical Formula	CH3CH(OH)CH2OH
Chemical Family	Glycol
Product Codes	
Supplier Information	Thermaltake Technology
Emergency phone numbers	800-988-1088

2. Composition / Information on Ingredients

Ingredient	CAS Number	Percent (by weight)
Propylene Glycol	57-55-6	GT 99.9
Dipropylene Glycol, Others	-	LT 0.01

3. Hazards Identification

Physical State and Appearance	Liquid
Emergency Overview	<u>NFPA RATINGS (SCALE 0-4): HEALTH=0 FIRE=1 REACTIVITY=0</u> Odorless, clear, colorless, hygroscopic, viscous liquid with a slightly acid taste avoid contact with eyes. Keep container tightly closed. Wash thoroughly after handling. Handle with caution.
Potential Health Effects	

Route of Entry:	
Effects:	
Eyes	Short term effects: May cause minor eye irritation. Long term effects: No information is available.
Skin	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Inhalation	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Ingestion	Short term effects: No information available on significant adverse effects. Long term effects: No information available on significant adverse effects.
Carcinogen Status	OSHA: N; NTP:N; IARC:N

4. First-Aid Measures	
Eye Contact	Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes).
Inhalation	No expected to present a significant inhalation hazard under anticipated conditions of normal use.
Ingestion	Treat symptomatically and supportively.
Note to physician	No specific antidote. Treat symptomatically and supportively.

5. Fire-Fighting Measures	
Fire and Explosion Hazard	Slight fire hazard when exposed to heat or flame. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapor can burn in open or explode if confined. Vapors may travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Aqueous solutions containing less than

	95% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapor. Only aqueous solutions of propylene glycol less than 22% should be used in sprinkler systems or other fire-fighting equipment. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.
Extinguishing Media	Dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For larger fires, use water spray, fog or alcohol-resistant foam. Alcohol foam.
Firefighting	Move container from fire area if you can do it without risk. Do not enter fire area without proper protection. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed container/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/steam explosion. Do not scatter spilled material with high-pressure water streams. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Dike fire-control water for later disposal. Avoid breathing hazardous vapors, keep upwind. Notify authorities immediately if liquid enters sewer/public waters.
Flash Point	210 F (99 C) (CC)
Lower Flammable Limit	2.6%
Upper Flammable Limit	12.5%
Autoignition	700 F (371 C)
Flammability Class (OSHA)	IIIB
Hazardous Combustion Products	Thermal decomposition products may include toxic oxides of carbon.

6. Accidental Release Measures

Occupational spill	May contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Restrict water use for cleanup. Slippery walking. Spread
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	<p>granular cover. Impound/recover large land spill. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. May biodegrade. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm.</p> <p>Report per regulatory requirements. Keep unnecessary people away; isolate hazard area and restrict entry.</p>
--	---

7. Handling and Storage

Handling	Hygroscopic. Use dry nitrogen or low dew point air for tank padding. Keep drums tightly closed to prevent contamination.
Storage	Store at 18-32 C. store away from incompatible substances.

8. Material condition / Personal Protection

Product condition	Liquid
Exposure Limits	No occupational exposure limits established by OSHA, ACGIH, or NIOSH.
Ventilation	No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.
Eye Protection	<p>Employee wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.</p> <p>Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.</p>
Skin Protection	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking and when leaving work.
Respirator	No special respirator protection is recommended under anticipated conditions of normal use with adequate ventilation.

9. Physical and Chemical Properties			
Description	Clear, colorless; little or no odor; Aromatic, sweet odor	Specific Gravity	1.0361
Molecular Weight	76.11	Water Solubility	Soluble
Molecular Formula	C-H3-C-H-(O-H)-C-H2O	Volatility	100%
Boiling Point	370-372 F (188-189 C)	PH	No data available
Freezing Point	-75 F (-59C)	Odor Threshold	No data available
Vapor Pressure	<0.1mmHg @ 20 C	Evaporation Rate	0.005 (butyl acetate=1)
Vapor Density	2.62	Viscosity	58.1 cP@20 C
Solvent Solubility	Soluble in alcohol, acetone, chloroform, ether, benzene many organic solvents; insoluble in fixed oils.		

10. Stability and Reactivity			
Reactivity	Stable under normal temperatures and pressures.		
Conditions to Avoid	May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks, or open flame.		
Hazardous Decomposition	Thermal decomposition products may include toxic oxides of carbon.		
Polymerization	Hazardous polymerization has not been reported to occur under normal temperatures and pressures.		
INCOMPATIBILITIES			
Acid Anhydrides	Incompatible	Ethylene Oxide	Possible explosion
Acid Chlorides	Incompatible	Nitrogen Tetroxide	Possible explosion
Chloroformates	Incompatible	Perchloric Acid (Hot)	Dangerous interaction
Reducing Agents	Incompatible	Tri-Iso-Butyl Aluminum	Violent reaction
OXidizers	Fire and explosion	Plastics	May be attacked
Nitric Acid; Hydrofluoric Acid and Silver Nitrate	Mixture forms explosive silver fulminate.	Metals (Light)	Reaction forms flammable hydrogen gas.
Acetaldehyde	Violent condensation reaction	Barium Perchlorate	Formation of highly explosive perchloric ester on refluxing.

Chlorine	Formation of highly explosive alkyl hypochlorites.	Diethyl Aluminum Bromide	Spontaneous ignition
Hexamethylene Diisocyanate	Possible explosion in absence of solvent.	Hydrogen Peroxide+ Sulfuric Acid	Possible explosion
Hypochlorous Acid	Formation of highly explosive perchloric ester on refluxing.	Isocyanates	Possible explosion in absence of solvent.
Lithium Aluminum Hydride	Vigorous reaction	Permonosulfuric Acid	Possible explosion on contact with primary or secondary alcohols.

11. Toxicological Information	
Propylene Glycol	<p><u>Irritation Data:</u> 500 mg/7 days skin-human mild; 104mg/3 days intermittent skin-human moderate; 10%/2 days skin-man; 100mg eye-rabbit mild; 500mg/24 hours eye-rabbit mild.</p> <p><u>Toxicity Data:</u> 20,800 mg/kg skin-rabbit LD50; 22 gm/kg oral-mouse LD50; 18,500 mg/kg oral-rabbit LD50; 6300 mg/kg intramuscular-rabbit LDLo; 10 gm/kg/3 days continuous parenteral- infant TDLo; 2180 mg/m3/6hours/90 days intermittent inhalation-rat TCLo.</p>
Carcinogen Status	None
Acute Toxicity Level	Relatively non-toxic by dermal absorption and ingestion.
Target Effects	No data available
At Increased Risk from Exposure	No data available
Additional Data	No data available

12. Ecological Information	
Environmental Impact Rating (0-4)	No data available
Acute Aquatic Toxicity	No data available
Degradability	No data available
Log Bioconcentration Factor (BCF)	No data available

Log Octanol/Water partition Coefficient	No data available
---	-------------------

13. Disposal Considerations	
Disposal Considerations	Contaminated product, soil, or water should not be designated hazardous waste. Landfill solids at permitted sites. Use registered transports. Burn concentrated liquids, diluting with clean, low viscosity fuel. Avoid flame-outs. Assure emissions comply with applicable regulations. Dilute aqueous waste may. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.

14. Transport Information	
Transport Information	No classification currently assigned.

15. Regulatory Information			
TSCA INVENTORY STATUS	Y	SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR 370.21)	
CERCLA SECTION 103 (40CFR302.4)	N	ACUTE HAZARD	N
SARA SECTION 302 (40CFR355.30)	N	CHRONIC HAZARD	N
SARA SECTION 304 (40CFR355.40)	N	FIRE HAZARD	N
SARA SECTION 313 (40CFR372.65)	N	REACTIVITY HAZARD	N
OSHA PROCESS SAFETY (29CFR1910.119)	N	SUDDEN RELEASE HAZARD	N
CALIFORNIA PROPOSITION 65	N		

16. Other Information	
Authorized for internal use only	

Prepared By:	Weller Chen (Product Manager)
Date:	2006/4/6

END OF DOCUMENT

WESTERN CHEMICAL INTERNATIONAL, INC.
2939 N. 67TH PLACE, SCOTTSDALE, AZ 85251
Tel.: 480-990-9487 Fax: 480-946-6174

MATERIAL SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD (HSC) 29

CFR 1910.1200, STANDARD MUST BE CONSULTED FOR SPECIFIC REQUIREMENTS

D.O.T. CLASSIFICATION: Liquid Cleaning Compound

HAZARD RATING

HEALTH	1	REACTIVITY	0
FLAMMABILITY	2	SPECIAL	0

D.O.T. CLASSIFICATION: Liquid Cleaning Compound

SECTION I - Identification

Product Name: EPA 2000" #WCI-140
Preparer: M. Michaels

Emergency Phone: CHEM TEL, INC 1-800-255-3924
Date Prepared: 12/10/06

SECTION II - Hazardous Ingredients/Identity Information

NONE OF THE INGREDIENTS IN THIS FORMULATION ARE FOUND ON ANY LISTS OF HAZARDOUS, CARCINOGENIC OR BANNED CHEMICAL AGENTS OR MATERIALS GENERATED BY THEM. AGENCIES INVESTIGATED INCLUDE THE E.P.A., F.D.A., NATIONAL CANCER INSTITUTE, NATIONAL SCIENCE FOUNDATION, ADMINISTRATION, AND THE NATIONAL TOXICOLOGY PROGRAM. THE FORMULATION IS A TRADE SECRET AND COMPLIES WITH 29CFR XV11-1910.1200, SECTION(I), "TRADE SECRETS."

Principle Components	CAS #	OSHA PEL	ACGIH TLV	Other
ALIPHATIC HYDROCARBONS	64742-47-8	200	200	
PARAFFINIC HYDROCARBONS	64742-88-7	200	200	
D-LIMONENE (CITRUS TERPENES)	5989-27-5	100	100	

EPA -2000" formula is a trade secret and complies with 29 CFR 1910.1200, Section (i) Trade Secrets.

VOC (Volatile organic compounds) is within Air Quality Emission Standards (California-All Districts).

No ingredients listed under Cal. State Drinking & Toxic Chemical Enforcement Act (1986).

OSHA Hazard Class 29 CFR 1910.1200 - NON HAZARDOUS LIQUID. RCRA Hazardous Waste Class 40

CFR 261.2 - NON HAZARDOUS WASTE. TCLP Waste Class 40 CFR 261.4 - NON HAZARDOUS WASTE.

TCLP Waste Class 40 CFR 261.4 - NON - HAZARDOUS WASTE.

SECTION III - Physical/Chemical Characteristics

Boiling Point:	320-360 DEG. F	Specific Gravity	0.81
Vapor Pressure (mm Hg):	at 25 DEG. C <1	Ph	6.8-7.6
Vapor Density (Air=1):	>1	Evaporation Rate:	Butyl Acetate = 1 <1
Solubility in Water:	Insoluble		
Appearance and Odor:	Non viscous liquid-clear color. Pleasant citrus odor.		

SECTION IV - Fire and Explosion Hazard Data

Flash Point: 154 DEG. F
(145 DEG. F TCC/Pensky-Martens)

Flammable Limits: Lower: N/D Upper: N/D

Extinguishing Media: CO2, Dry Powder, Foam

Special Fire Fighting Procedure: Class B Procedures

Unusual Fire and Explosion Hazards: Keep away from sparks & open flames.
Do not use welding torch on or near drum.

SECTION V - Reactivity Data

Stability: Stable
Conditions to Avoid: Open flames, welding arcs, or other high temperature sources.

Incompatibility (Materials to avoid): Oxidizing agents Hazardous Polymerization: Will not occur

Hazardous Decomposition or By Products: None Known Conditions to Avoid: None known

SECTION VI - Health Hazard Data

Route(s) of Entry:

INHALATION: Not in normal use SKIN: Possible, if prolonged INGESTION: Not in normal use

Health Hazards (Acute and Chronic): Product has low vapor pressure and should not present a hazard under normal working conditions.

Signs and Symptoms of Exposure: Product considered safe under normal usage.

Overexposure, however, may result in the following:

EYES: Irritation. SKIN: Irritation INGESTION: Gastro-intestinal irritation

INHALATION: Dizziness

Carcinogenicity: Not listed in NTP or IARC Monograph. Not regulated by OSHA.

Medical Conditions Generally Aggravated by Exposure: None Known

Emergency and First Aid Procedures:

SKIN: Wash with soap and water.

EYES: Flush with water for 15 minutes. If irritation persists, seek medical attention.

INHALATION: Remove to fresh air; if breathing difficult, get medical attention.

INGESTION: Do not induce vomiting; get medical attention.

SECTION VII - Precautions for Sale Handling and Use

Steps to Be Taken in Case Material is Released or Spilled: Allow small spills to evaporate. Larger spills should be collected and disposed of properly in accordance with regulations.

Waste Disposal Method: EPA 2000 has a high BTU value. Waste product can, therefore, be mixed with normal waste oil for burning as industrial fuel. It can also be recycled or reclaimed.

Precautions to Be Taken in Handling and Storing:

Store in cool, dry area away from heat.

Keep container tightly closed when product is not being used.

SECTION VIII -Control Measures

Respiratory Protection (specify type): Not required if TLV kept below PPM.

Ventilation: Local Exhaust: Adequate
Mechanical (general): Adequate
Special: None
Other: None

Protective Gloves: NITRILE / PVC

Eye Protection: Goggles / safety glasses

Other Protective Clothing or Equipment: Not Required

Work/Hygienic Practices: Keep eye wash in vicinity. Wash with soap & water before handling food.

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

TSP

Page: 1

PRODUCT NAME: TSP

NFPA CODES: H F R

MSDS CODE: 620N

2 0 0

////
DOT SHIPPING NAME AND LABELING: CLEANING COMPOUND - NOT REGULATED

===== SECTION I - MANUFACTURER IDENTIFICATION =====

EFFECTIVE: 08/17/2001

MANUFACTURER'S NAME: SAVOGRAN
ADDRESS : 259 LENOX STREET
PO BOX 130
NORWOOD, MA 02062-0130
PHONE : 781-762-5400

NAME OF PREPARER : MARK A. MONIQUE

=== SECTION II - HAZARDOUS INGREDIENTS UNDER OSHA HAZARD COMMUNICATION STD ===

INGREDIENTS	CAS NUMBER	WEIGHT PERCENT
Trisodium Phosphate Dodecahydrate	10101-89-0	75% - 80%
EXPOSURE GUIDELINES NOT LISTED		
Sodium Sesquicarbonate	533-96-0	20% - 25%
EXPOSURE GUIDELINES NOT LISTED		

////

===== SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS =====

INITIAL BOILING POINT: NA	SPECIFIC GRAVITY: 60-75LBS/FT3
VAPOR DENSITY: NA	VAPOR PRESSURE (CALCULATED): NA
EVAPORATION RATE: NA	MATERIAL V.O.C. (% BY WT.): 0.
PERCENT VOLATILE: 0.	SOLUBILITY IN WATER: MODERATE
PH (1% IN H2O): 11-12	
APPEARANCE AND ODOR: WHITE CRYSTALLINE SOLID	

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: NA METHOD USED: NO DATA
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: NO DATA UPPER: NO DATA

EXTINGUISHING MEDIA: NONFLAMMABLE

SPECIAL FIREFIGHTING PROCEDURES:
SOLUTIONS IN WATER ARE MODERATELY TO STRONG ALKALINE. WEAR FULL PROTECTIVE CLOTHING.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

===== SECTION V - REACTIVITY DATA =====

STABILITY: STABLE
CONDITIONS TO AVOID:
MATERIAL IS HYGROSCOPIC AND TENDS TO CAKE UNDER DAMP CONDITIONS.
INCOMPATIBILITY (MATERIALS TO AVOID):
SOLUTIONS IN WATER ARE HIGHLY ALKALINE AND MAY PRODUCE HYDROGEN GAS WHEN IN

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

TSP

Page:~2

CONTACT WITH ALUMINUM. WILL REACT WITH ACIDS TO FORM CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

===== SECTION VI - HEALTH HAZARD DATA =====

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:
INHALATION OF DUST CAN CAUSE NASAL AND RESPIRATORY IRRITATION.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE:
SKIN: IRRITATING, MAY CAUSE CHEMICAL BURNS AND DERMATITIS. EYE CONTACT CAN CAUSE SEVERE IRRITATION, BURNING AND TRANSIENT INJURY TO CORNEA.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:
NONE

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:
MAY CAUSE IRRITATION AND CHEMICAL BURNS TO THE GASTROINTESTINAL TRACT.

HEALTH HAZARDS (CHRONIC):
NO CHRONIC EFFECTS EXPECTED

CARCINOGENICITY: NTP: NO IARC MONOGRAPHS: NO OSHA REGULATED: NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
NONE

EMERGENCY AND FIRST AID PROCEDURES:
SKIN CONTACT: REMOVE CONTAMINATED CLOTHING AND WASH SKIN THOROUGHLY WITH WATER. IF IRRITATION OCCURS GET MEDICAL ATTENTION PROMPTLY. THOROUGHLY WASH CONTAMINATED CLOTHING BEFORE REUSE. **EYE CONTACT**: FLUSH EYES WITH PLENTY OF RUNNING WATER FOR AT LEAST 15 MINUTES. HOLD EYELIDS APART TO ENSURE COMPLETE IRRIGATION OF ALL TISSUE. GET MEDICAL ATTENTION PROMPTLY. **INHALATION**: IF ILLNESS OCCURS, REMOVE PATIENT TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IF BREATHING HAS STOPPED, START ARTIFICIAL RESPIRATION. CALL PHYSICIAN IMMEDIATELY. **SWALLOWING**: NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. IF SWALLOWED DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER (IF AVAILABLE GIVE SEVERAL GLASSES OF MILK). IF VOMITING OCCURS SPONTANEOUSLY KEEP AIRWAY CLEAR AND GIVE MORE WATER. GET MEDICAL ATTENTION PROMPTLY. IF SYMPTOMS INDICATE, APPLY TREATMENT AS APPROPRIATE FOR CORROSIVE ALKALI SUBSTANCE.

===== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
SWEEP UP MATERIAL AND TRANSFER TO CONTAINERS. REMAINING RESIDUE MAY BE WASHED AWAY WITH WATER.

WASTE DISPOSAL METHOD:
SMALL QUANTITIES MAY BE DEPOSITED IN GENERAL TRASH AND RESIDUE FLUSHED DOWN DRAIN WITH WATER. LARGE SPILLS MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

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

TSP

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

STORE IN DRY PLACE. MOISTURE CAN CAUSE CAKING. KEEP AWAY FROM ACIDS OF ALL TYPES. WATER SOLUTIONS CAN BE CORROSIVE TO ALUMINUM AND GENERATE HYDROGEN.

OTHER PRECAUTIONS:

AVOID CONTACT WITH MATERIAL. DO NOT EAT, DRINK OR SMOKE WHEN HANDLING THIS MATERIAL.

===== SECTION VIII - CONTROL MEASURES =====

RESPIRATORY PROTECTION:

WEAR NIOSH/MSHA APPROVED DUST RESPIRATOR, IF DUST IS FORMED.

VENTILATION:

PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW LEVEL OF OVEREXPOSURE.

PROTECTIVE GLOVES:

USE DUST PROOF GLOVES.

EYE PROTECTION:

USE DUST PROOF GOGGLES IF DUST IS IRRITATING EYES.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

NONE

===== SECTION IX - DISCLAIMER =====

JUDGEMENT OF POTENTIAL HAZARDS OF THIS PRODUCT IS BASED ON INFORMATION AVAILABLE ABOUT INDIVIDUAL COMPONENTS LISTED UNDER SECTION II - INGREDIENTS. DIRECT TESTING OF MIXTURE HAS NOT BEEN DONE. 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.



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

BASIC CHEMICAL SOLUTIONS

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **BCS SODIUM HYDROXIDE LIQUID**
(1% - 50%)

CHEMICAL NAME/CLASS: Sodium Hydroxide Solution

PRODUCT USE: Metal finishing, neutralization, industrial cleaners, chemical processing.

SUPPLIER/MANUFACTURER'S NAME: **BASIC CHEMICAL SOLUTIONS**
ADDRESS: Corporate Office
525 Seaport Blvd.
Redwood City, CA 94063

BUSINESS PHONE: 800-411-4227

EMERGENCY PHONE: **CHEMTREC:** 800-424-9300

DATE OF PREPARATION: May 7, 2003
DATE OF REVISION: July 5, 2006

Si usted no entiende las Hojas de Informacion de Seguridad sobre Materiales, busque a alguien para que se la explique a usted en detalle.

(If you do not understand the Material Safety Data Sheet, find someone to explain it to you in detail.)

2. COMPOSITION AND INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	%w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			OTHER mg/m ³
			TLV mg/m ³	STEL mg/m ³	PEL mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Sodium Hydroxide	1310-73-2	1-50	2, C	NE	2, C (Vacated 1989 PELs)	NE	10	NIOSH REL: 2 DFG MAKs: 2
Water and other ingredients. The other ingredients are each present in less than 1 percent concentration in this product.		Balance	The components present in the balance of this product do not contribute any significant, additional hazards. All hazard information pertinent to this product has been presented in the remaining sections of this Material Safety Data Sheet, per the requirements of Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200).					

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear to turbid liquid solution. This solution is corrosive, and can be damaging to contaminated tissue. Ingestion of large quantities can be fatal. In the event of fire or spill, adequate precautions must be taken. This solution reacts with water to generate heat. If involved in a fire, this product may decompose to produce sodium oxides and a variety of other compounds (i.e. carbon monoxide and carbon dioxide). Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: This solution can damage skin, eyes, mucous membranes, and other contaminated tissue. Burns may not be immediately painful or visible.

INHALATION: If mists or sprays of this solution are inhaled, this product may cause pulmonary irritation, irritation of the mucus membranes, coughing, and a sore throat. Damage to the tissues of the respiratory system may occur.

CONTACT WITH SKIN or EYES: Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage possibly blindness. Skin contact may result in a "soapy" feel and cause reddening, discomfort, and irritation. Prolonged exposure may result in ulcerating burns which could leave scars.

SKIN ABSORPTION: Skin absorption is not anticipated to be a significant route of over-exposure to any component of this product.




INGESTION: Though ingestion is not anticipated to be a significant route of over-exposure to this product, if ingestion does occur burning and irritation of the mouth, throat, esophagus, and other tissues of the digestive system will occur immediately upon contact. Ingestion of large quantities may be fatal.

INJECTION: Though injection is not anticipated to be a significant route of over-exposure to this product, if it occurs, may cause local reddening, tissue swelling, and discomfort.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

ACUTE: This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion of large quantities may be fatal.

CHRONIC: Repeated skin contact with this product may result in dermatitis (inflammation and reddening of the skin).

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	1
PROTECTIVE EQUIPMENT			D
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		
For routine industrial applications			

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

SKIN EXPOSURE: If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. Washing with large amounts of clean water should continue until affected skin surface no longer feels slippery. Victim must seek medical attention.

EYE EXPOSURE: If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Do not attempt to neutralize. Oils or ointments should not be used at this time. Victim must seek immediate medical attention.

INHALATION: If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT, °C (method): Not flammable.

AUTOIGNITION TEMPERATURE, °C: Not flammable.

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES

Carbon Dioxide: YES

Foam: YES

Dry Chemical: YES

Halon: YES

Other: Any "ABC" Class.

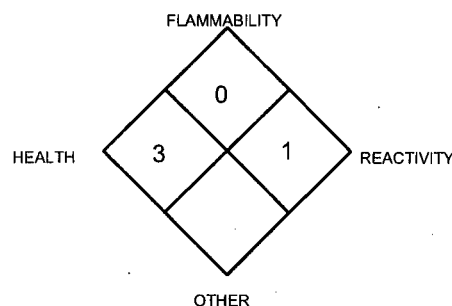
UNUSUAL FIRE AND EXPLOSION HAZARDS: Not considered flammable or combustible. Does not support combustion. However, contact with water or acids may generate sufficient heat to ignite nearby combustible materials. Contact with aluminum, tin or zinc will result in the generation of heat and release of hydrogen gas. Run-off from fire control may cause pollution. Keep fire-exposed containers cool with water spray to prevent rupture due to excessive heat. High pressure water hose may spread product from broken containers increasing contamination. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (including carbon monoxide, carbon dioxide and sodium oxides). Products of combustion are irritating to the respiratory tract and may cause breathing difficulty. Symptoms may be delayed several hours or longer depending upon the extent of exposure.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING



6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people, and respond with trained personnel.

The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard-hat. Self Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.

Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with citric acid or other caustic neutralizing agent. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residue in a suitable container. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Do not eat or drink while handling this material. Remove contaminated clothing immediately. Discard contaminated clothing items, or launder before re-use. Inform anyone handling such contaminated laundry of the hazards associated with this product. Use ventilation and other engineering controls to minimize potential exposure to this product.

7. HANDLING and STORAGE (Continued)

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. It is best to never add water to this product, always add product, with constant stirring, slowly to surface of lukewarm (80-100 °F, 27-38 °C) water, to assure product is being completely dispersed as it is added. Only trained personnel can add water to this product. Never add more product than can be absorbed by solution while maintaining temperatures below 200 °F(93 °C) to prevent boiling and spattering of caustic solution. Use in a well-ventilated location.

For Non-Bulk Containers: Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual liquid, therefore, empty containers should be handled with care.

Bulk Containers: All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks immediately to the proper personnel.

Tank Car Shipments: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and be properly prepared, prior to starting the transfer operations. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment before maintenance begins by a triple-rinse with water followed, if necessary, by using caustic neutralizing agent and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: If required use a corrosion-resistant ventilation system separate from other exhaust ventilation systems to ensure that there is no potential for overexposure to sprays, or mists of this product and that exposures are below those in section 2 (Composition and Information on Ingredients). Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations. If adequate ventilation is not available or if there is potential for airborne exposure above the exposure limits (listed in Section 2) a respirator may be worn up to respirator exposure limitations, check with respirator equipment manufactures recommendations/limitations. For a higher level of protection use positive pressure supplied air respiration protection or Self Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS:

Positive pressure, full-facepiece Self Contained Breathing Apparatus; or positive pressure, full-facepiece Self Contained Breathing Apparatus with an auxiliary positive pressure Self Contained Breathing Apparatus.

EYE PROTECTION: Splash goggles or safety glasses. Face-shields are recommended when the operation can generate splashes, sprays or mists.

HAND PROTECTION: Wear appropriate gloves for routine industrial use. Use appropriate gloves for spill response, as stated in Section 6 of this MSDS (Accidental Release Measures).

BODY PROTECTION: Use body protection appropriate for task. Cover-all, rubber aprons, or chemical protective clothing made from natural rubber are generally acceptable, depending upon the task.

9. PHYSICAL and CHEMICAL PROPERTIES

Physical and chemical properties for various concentrations of **Sodium Hydroxide**, the main component of this product are as follows:

	Series			
	10	20	30	50
PHYSICAL STATE:	Liquid			
BOILING POINT @ 760 mm Hg:	110°C	113°C	119°C	140°C
FREEZING POINT:	-12°C 10°F	-26°C -14°F	0°C 32°F	12°C 53.6°F
VAPOR PRESSURE mm Hg @ 60°C:	135	110	76	13
SPECIFIC GRAVITY @ 15.6°C	1.11	1.22	1.33	1.53
DENSITY – lb-gal @ 15.6°C:	9.26	10.17	11.09	12.76
VAPOR DENSITY:	Not Determined			
EVAPORATION RATE (water = 1):	Similar to or slower than water depending upon weight percent.			
pH:	14.0 pH @ 7.5% solution			
SOLUBILITY in H ₂ O - % by wt:	Completely Soluble			

ODOR THRESHOLD: Not available.

APPEARANCE AND COLOR: This product is a clear light straw to turbid liquid solution.

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn blue-purple upon contact with this solution even with low concentrations.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition products of this solution can include carbon monoxide, carbon dioxide, and sodium compounds.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product reacts with strong acids. Additionally, it is incompatible with organic halogen compounds, organic nitro compounds, aluminum, zinc, tin, and other metals. Avoid contact with leather and wool. **Reactions with various food sugars may form carbon monoxide.**

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposure or contact to extreme temperatures and incompatible chemicals.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Additional toxicology information for components greater than 1 percent in concentration is provided below.

SODIUM HYDROXIDE:

Eye Irritancy (monkey) = 1% solution, 24 hr, Severe.

Skin Irritancy (rabbit) = 500 mg, 24 hr, Severe.

Eye Irritancy (rabbit) = 4 g, Mild.

Eye Irritancy (rabbit) = 1% solution, Severe.

Eye Irritancy (rabbit) = 50 :g, 24 hr, Severe.

Eye Irritancy (rabbit) = 1 mg, 24 hr, Severe.

Eye Irritancy (rabbit) = 100 mg with rinse, Severe.

Cytogenic Analysis System (grasshopper, parenteral) = 20 mg

LD₅₀ (intraperitoneal, mouse) = 40 mg/kg.

LDLo (oral, rabbit) = 500 mg/kg.

11. TOXICOLOGICAL INFORMATION (Continued)

SUSPECTED CANCER AGENT: The components of this product's ingredients are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA; and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product is severely irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: No component of this product is known to be a sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Mutation data is available for the Sodium Hydroxide (component of this product), obtained during clinical studies on animal tissues exposed to high doses of this compound.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An *embryotoxin* is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A *teratogen* is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Skin disorders can be aggravated by over-exposure to this product. Inhalation of this products mists may aggravate respiratory conditions.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure to this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable in the environment; they may degrade, after time, into other organic and inorganic constituents. Additional environmental data is available for the components of this product as follows:

SODIUM HYDROXIDE: K_{OW} = too low to be measured. Water solubility = 9 g/0.9 ml water. BOD: None.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product is harmful to plant and animal life if this product is released into the environment. As with all chemicals, work practices should be aimed at eliminating environmental releases.

EFFECT OF CHEMICAL ON AQUATIC LIFE This product can substantially raise the pH of an aquatic environment and can be extremely toxic to fish and aquatic plants. As with all chemicals, work practices should be aimed at eliminating environmental releases. Additional aquatic data for the components of this product is available as follows:

SODIUM HYDROXIDE:

LC₁₀₀ (*Cyprinus carpio*) = 180 ppm/24 hr/25 °C

TL_m (mosquito fish) = 125 ppm/96 hr (fresh water)

TL_m (bluegill) = 99 mg/L/48 hr (tap water)

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: D002 (Characteristic, corrosive), applicable to wastes consisting only of this solution.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Sodium Hydroxide solution

HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive Material)

UN IDENTIFICATION NUMBER: UN 1824

PACKING GROUP: II

DOT LABEL(S) REQUIRED: Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 154

MARINE POLLUTANT: This product does not contain any components which are designated by the Department of Transportation to be Marine Pollutants. (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

Note: The latest DOT information is provided, please verify all DOT information as it is subject to change without notice.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act are as follows.

COMPONENT	SARA 302	SARA 304	SARA 313
Sodium Hydroxide	No	Yes	No

SARA Threshold Planning Quantity: Not applicable.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Sodium Hydroxide = 1000 lbs.

OTHER FEDERAL REGULATIONS: Not applicable.

STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Sodium Hydroxide.

California - Permissible Exposure Limits for Chemical Contaminants: Sodium Hydroxide.

Florida - Substance List: Sodium Hydroxide.

Illinois - Toxic Substance List: Sodium Hydroxide.

Kansas - Section 302/313 List: Sodium Hydroxide.

Minnesota - List of Hazardous Substances: Sodium Hydroxide.

Missouri - Employer Information/Toxic Substance List: Sodium Hydroxide.

New Jersey - Right to Know Hazardous Substance List: Sodium Hydroxide.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: Sodium Hydroxide.

Pennsylvania - Hazardous Substance List: Sodium Hydroxide.

Rhode Island - Hazardous Substance List: Sodium Hydroxide.

Texas - Hazardous Substance List: Sodium Hydroxide.

West Virginia Substance List: Sodium Hydroxide.

Wisconsin - Toxic and Hazardous Substances: Sodium Hydroxide.

CALIFORNIA PROPOSITION 65 No component of this product is on the California Proposition 65 lists.

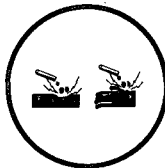
LABELING (Precautionary Statements): **DANGER! CORROSIVE MATERIAL! LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE LUNG DAMAGE. REACTS VIOLENTLY WITH ACIDS. REACTS WITH WATER TO GENERATE HEAT. AVOID SPATTERING BY SLOWLY ADDING TO SOLUTION.** Do not get into eyes, on skin or clothing. Avoid breathing spray or mist. Do not take internally. Use with adequate ventilation and employ respiratory protection when exposed to the mist or spray. When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing. Do not transfer to unlabeled containers. Use with adequate ventilation. Wash thoroughly after handling. Keep container closed when not in use. **FIRST-AID:** In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not induce vomiting. **IN CASE OF FIRE:** Use water, dry chemical, CO₂, or alcohol foam. **IN CASE OF SPILL:** Dike area to contain spill. Only trained personnel equipped full acid- protective gear should be permitted in this area. Spilled material may be absorbed into an appropriate absorbent material. Spills should be removed using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid or citric acid and then flush with water. If necessary a liberal covering of sodium bicarbonate should then be applied and then rinsed with water. Do not wash into storm or sanitary sewer system.

TARGET ORGANS: Skin, eyes and respiratory system.

15. REGULATORY INFORMATION (Continued)

WHMIS SYMBOLS:

E- Corrosive Material



16. OTHER INFORMATION

INFORMATION SOURCE:

CHEMICAL SAFETY ASSOCIATES, Inc.

PREPARED BY:

BASIC CHEMICAL SOLUTIONS

THIS INFORMATION IS DRAWN FROM RECOGNIZED SOURCES BELIEVED TO BE RELIABLE. BASIC CHEMICAL SOLUTIONS MAKES NO GUARANTEES NOR ASSUMES ANY LIABILITY IN CONNECTION WITH THIS INFORMATION. THE USER SHOULD BE AWARE OF CHANGING TECHNOLOGY, RESEARCH, REGULATIONS AND ANALYTICAL PROCEDURES THAT MAY REQUIRE CHANGES HEREIN. THE ABOVE DATA IS SUPPLIED UPON THE CONDITION THAT PERSONS WILL EVALUATE THIS INFORMATION AND THEN DETERMINE ITS SUITABILITY FOR THEIR USE.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin adsorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (*Federal Register*: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The **DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TD₀**, **LDLo**, and **LD₀**, or **TC**, **TC₀**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the DOT; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.

Material Safety Data Sheet

Sodium nitrite

ACC# 21410

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium nitrite

Catalog Numbers: AC196620000, AC196620025, AC217600000, AC217600010, AC424350000, AC424350020, AC424350050, AC424355000, S80187, S93374, NC9151301, NC9155411, NC9790812, S338-3, S347-10, S347-250, S347-3, S347-500

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#	Chemical Name	Percent	EINECS/ELINCS
7632-00-0	Sodium nitrite	>97	231-555-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white to light yellow crystals.

Danger! May be fatal if inhaled. Strong oxidizer. Contact with other material may cause a fire. Harmful if swallowed. Causes eye, skin, and respiratory tract irritation. May cause methemoglobinemia. Hygroscopic (absorbs moisture from the air). Air sensitive. This substance has caused adverse reproductive and fetal effects in animals.

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 (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. May cause acute pulmonary edema, asphyxia, chemical pneumonitis, and upper airway 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).

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 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 and move 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 other material may cause 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. Keep combustibles (wood, paper, oil, etc.,) away from spilled material.

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. Avoid storage on wood floors.

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

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium nitrite	none listed	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

Physical State: Crystals

Appearance: white to light yellow

Odor: odorless

pH: ~ 9

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 320 deg C

Freezing/Melting Point: 271 deg C

Decomposition Temperature: 320 deg C

Solubility: Soluble.

Specific Gravity/Density: 2.168

Molecular Formula: NaNO₂

Molecular Weight: 69.00

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: Ignition sources, dust generation, exposure to air, 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, moisture, air, activated carbon, vegetable astringents.

Hazardous Decomposition Products: Oxides of nitrogen, irritating and toxic fumes and gases.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7632-00-0: RA1225000; RA1425000

LD50/LC50:

CAS# 7632-00-0:

Draize test, rabbit, eye: 500 mg/24H Mild;

Inhalation, rat: LC50 = 5.5 mg/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, NTP, or CA Prop 65.

Epidemiology: Oral, rat: TDLo = 2190 gm/kg/2Y-C (Tumorigenic - Carcinogenic by RTECS criteria - Gastrointestinal - tumors).; Oral, rat: TD = 91 gm/kg/2Y-C (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Skin and Appendages - 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 gain).; 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).

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.

Neurotoxicity: No information found.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 0.19-0.39 mg/L; 96 Hr; Flow-through bioassay Fish: Mosquito Fish: TLm = 8.1 ppm; 24 Hr; Highly turbid water Fish: 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.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	SODIUM NITRITE	SODIUM NITRITE
Hazard Class:	5.1	5.1(6.1)
UN Number:	UN1500	UN1500
Packing Group:	III	III

Section 15 - Regulatory Information

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 Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 7632-00-0: 100 lb final RQ; 45.4 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

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 Prop 65

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:**

T O N

Risk Phrases:

R 25 Toxic if swallowed.

R 8 Contact with combustible material may cause 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.

Section 16 - Additional Information
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MSDS Creation Date: 7/02/1999

Revision #6 Date: 6/18/2004

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 liability 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.

MSDS Number: N3660 * * * * * Effective Date: 05/06/05 * * * * * Supersedes: 07/02/02

MSDS

Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-959-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure of accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

NITRIC ACID, 50-70%

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: 63.01

Chemical Formula: HNO₃

Product Codes:

J.T. Baker: 411D, 412D, 5371, 5796, 5801, 5826, 5856, 5876, 5896, 9597, 9598, 9600, 9601, 9602, 9603, 9604, 9606, 9607, 9608, 9610, 9616, 9617, 9670

Mallinckrodt: 1409, 2704, 2716, 6623, H862, H988, H993, H998, V077, V633, V650

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

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (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: White (Corrosive)

Potential Health Effects

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

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.

Skin Contact:

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.

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

Immediate first aid treatment reduces the health effects of this substance.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give

oxygen. Call a physician.

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® or TEAM® 'Low Na+' acid neutralizers are recommended for spills of this product.

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 safety 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.

Solubility:

Infinitely soluble.

Specific Gravity:

1.41

pH:

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\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: NITRIC ACID (WITH NOT MORE THAN 70% NITRIC ACID)

Hazard Class: 8**UN/NA:** UN2031**Packing Group:** II**Information reported for product/size:** 6.5GL**International (Water, I.M.O.)**

Proper Shipping Name: NITRIC ACID

Hazard Class: 8**UN/NA:** UN2031**Packing Group:** II**Information reported for product/size:** 6.5GL

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\----- Ingredient	TSCA	EC	Japan	Australia
-----	-----	-----	-----	-----

Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Nitric Acid (7697-37-2)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Nitric Acid (7697-37-2)	1000	No	No
Water (7732-18-5)	No	No	No

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.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0 Other: **Oxidizer**

Label Hazard Warning:

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep from contact with clothing and other combustible materials.

Do not store near combustible materials.

Store in a tightly closed container.

Remove and wash contaminated clothing promptly.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, and Canadian WHMIS Standards

PART I What is the material and what do I need to know in an emergency?

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): SODIUM PENTABORATE, ENRICHED
CHEMICAL NAME/CLASS: Inorganic Boron Compound
SYNONYMS: None
PRODUCT USE: Various Uses
SUPPLIER/MANUFACTURER'S NAME: EAGLE-PICHER TECHNOLOGIES LLC
ADDRESS: PO Box 798, Quapaw, OK 74354
EMERGENCY PHONE: 1-918-673-2201
01-918-673-2201 (International)
BUSINESS PHONE: 1-918-673-2201
DATE OF PREPARATION: May 06, 2003

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	w/w%	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		NIOSH IDLH mg/m ³	OTHER mg/m ³
			TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³		
Sodium Pentaborate Currently there are no exposure limits for Sodium Pentaborate. The limits given are for Boron Oxide	200443-98-7	100	10	NE	15 (Total Dust)	NE	2000	NIOSH REL: TWA = 10

NE = Not Established. NOTE (1): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product consists of an odorless white powder. **Health Hazards:** Inhalation of dusts from this product may be irritating to the respiratory system. Contact with the skin may cause irritation, especially if contact is prolonged. Eye contact will cause irritation due to mechanical irritation. **Flammability Hazards:** This product is not flammable. Exposure by inhalation or ingestion may cause symptoms of boron toxicity. If exposed to extremely high temperatures, this product can decompose to generate irritating vapors and toxic gases (e.g. boron oxides). **Reactivity Hazards:** This product is not reactive. **Environmental Hazards:** Negligible. **Emergency Recommendations:** Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The primary routes of occupational overexposure are inhalation of dusts or fumes if heated to high temperatures and contact with skin and eyes. The symptoms of overexposure to this product, via route of exposure are as follows:

INHALATION: Inhalation of dusts of this product may be irritating to the nose and throat. Symptoms of can include coughing and sneezing and are expected to be alleviated upon breathing fresh air. Boron compounds are known to be absorbed via mucous membranes. Symptoms of exposure may include those described under "Ingestion" and may include adverse effects on the central nervous system, rash, vomiting, convulsions and anemia.

CONTACT WITH SKIN or EYES: Skin contact may cause irritation. If contact is prolonged, symptoms may include pain, itchiness and reddening. Contact with the eyes can cause pain, tearing and redness. Prolonged or repeated skin overexposures may cause dermatitis (dry red skin).

SKIN ABSORPTION: Solutions of boron compounds may be absorbed via intact skin, although the rate of absorption is slow and toxic effects are less likely. Absorption through damaged skin is rapid and complete.

INGESTION: Though not anticipated to be a significant route of occupational exposure, ingestion of large quantities of this product may cause anorexia, weight loss, vomiting, mild diarrhea, skin rash, alopecia (hair loss), convulsions and anemia. Boron poisoning causes depression of the circulation, persistent vomiting, and diarrhea, followed by profound shock and coma. The temperature becomes sub-normal and a scarletina-form rash may cover the entire body. Shedding of the skin may occur in the area of the rash. (continued on following page)

3. HAZARD IDENTIFICATION

INGESTION (continued): In severe poisoning with boron compounds, oliguria, anuria and tubular necrosis may occur along with lethargy, twitching of facial muscles and extremities, and cyanosis.



INJECTION: Though not anticipated to be a likely route of occupational exposure, injection of this material (via puncture or laceration by a contaminated object) may cause local reddening, tissue swelling, and discomfort in addition to the wound.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

ACUTE: Acute exposure to Sodium Pentaborate by inhalation, and skin or eye contact may irritate contaminated tissues. Ingestion of Sodium Pentaborate may result in depression of circulatory system, central nervous system effects, vomiting, diarrhea, shock or coma. Absorption through the mucous membranes may occur, causing adverse effects on central nervous system or rash.

CHRONIC: Chronic ingestion of this product may give rise to anorexia, loss of strength, confusion, rash and alopecia (hair loss). Prolonged or repeated skin overexposures may cause dermatitis (dry red skin). Refer to Section 11 (Toxicological Information) for additional information.

TARGET ORGANS: ACUTE: Skin, eyes, respiratory system, central nervous system. CHRONIC: Skin, intestines, liver, and kidney, male reproductive system.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD		(BLUE)	1
FLAMMABILITY HAZARD		(RED)	0
PHYSICAL HAZARD		(YELLOW)	0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8
For Routine Industrial Use and Handling Applications			

See Section 16 for Definition of Ratings

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

Contaminated individuals should be taken for medical attention if they feel unwell or if adverse effects occur. Take copy of label and MSDS to physician or health professional with contaminated individual.

SKIN EXPOSURE: If this material contaminates the skin, begin decontamination with running water. Recommended flushing is for 15 minutes if any sign of skin irritation develops. Contaminated individual should seek immediate medical attention if any adverse exposure symptoms develop.

EYE EXPOSURE: If this product enters the eyes, open contaminated individual's eyes while under gently running water. Use sufficient force to open eyelids. Have contaminated individual "roll" eyes. Minimum flushing is for 15 minutes. Do not interrupt flushing. Contaminated individual must seek medical attention.

INHALATION: If this product is inhaled, remove contaminated individual to fresh air.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. If victim is conscious, rinse mouth with water immediately. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin disorders may be aggravated by prolonged overexposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable

FLAMMABLE LIMITS (in air by volume, %):

Lower: Not applicable.

Upper: Not applicable.

5. FIRE-FIGHTING MEASURES (Continued)

FIRE EXTINGUISHING MATERIALS: Use extinguishing material suitable to the surrounding fire.

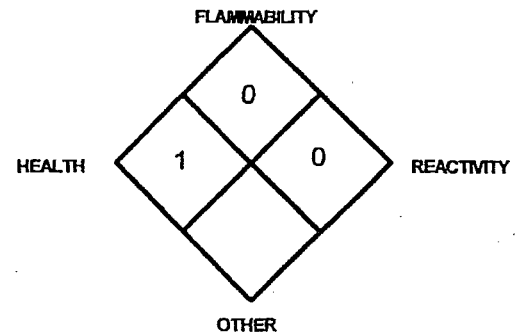
Water Spray: YES **Carbon Dioxide:** YES
Foam: YES **Dry Chemical:** YES
Halon: YES **Other:** Any "ABC" Class

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this product may decompose and produce irritating vapors and toxic gases, including boron oxides.

Explosion Sensitivity to Mechanical Impact: Not applicable.

Explosion Sensitivity to Static Discharge: Not applicable.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire-fighters must wear Self-Contained Breathing Apparatus (SCBA) and full protective equipment. Move fire-exposed containers from area of the fire if it can be done without risk to fire-fighters. Keep fire exposed containers cool with water spray. If possible, fire-fighters should control fire run-off water to prevent environmental contamination. Decontaminate fire response equipment thoroughly.

NFPA-RATING

**See Section 16 for
Definition of Ratings**

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Small releases can be swept-up or cleaned-up using a damp sponge or polypads, avoiding generation of dusts. Responders should wear gloves, goggles, and suitable body protection during the clean-up of small spills. Larger, uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a large spill (e.g. > 100 kg), clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be Level B: gloves (rubber gloves, nitrile gloves, or latex gloves), labcoat, Tyvek or similar clothing and goggles. If dusts are created during clean-up the use of a Air-Purifying respirator with high efficiency particulate filter is recommended. Self-Contained Breathing Apparatus must be selected if releases occur in confined or poorly-ventilated areas, or in situations in which the level of oxygen is below 19.5% or is unknown. Sweep-up or vacuum spilled solid (an explosion-proof vacuum should be used). Rinse area with soap and water solution, followed by a water rinse. Place all spill residue in appropriate container which is properly labeled. Seal the container immediately and dispose of in accordance with U.S. Federal, State and local regulations and those of Canada and it's provinces (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?***7. HANDLING and STORAGE**

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product IN YOU. Wash thoroughly after using this material. Avoid dusts generated by this product. Do not eat, smoke, apply cosmetics, or drink while handling this material. Use ventilation and other engineering controls to minimize potential exposure to dusts of this product. Remove contaminated clothing immediately. Wipe-down area routinely to avoid the accumulation of dusts.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open bottles carefully. Empty containers may contain residual material and should be handled with care. Store this product in a cool, dry location, away from direct sunlight, sources of intense heat. Store away from incompatible chemicals (see Section 10, Stability and Reactivity). Inspect all incoming containers before storage to ensure they are properly labeled and not damaged. All equipment used in the handling of this material should be electrically grounded.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, if necessary. Collect all rinsates and disposal of in accordance with U.S. Federal, State and local regulations and those of Canada and its provinces.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

INTERNATIONAL EXPOSURE LIMITS FOR COMPONENTS: Currently, there are no international exposure limits for Sodium Pentaborate. Please refer to exposure limits given in Section 2 (Composition and Information On Ingredients).

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposures are below limits provided in Section 2 (Composition and Information on Ingredients). Prudent practice is to ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada. Please reference applicable regulations and standards for relevant details.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION: None needed under normal circumstances of use. Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients) if applicable. If respiratory protection is needed, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent U.S. State standards, and Canadian CSA Standard Z94.4-93. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following are NIOSH respiratory guidelines for boron oxide, a decomposition product of Sodium Pentaborate.

BORON OXIDE**CONCENTRATION****RESPIRATORY PROTECTION**

Up to 50 mg/m³: Any Dust and Mist Respirator.

Up to 100 mg/m³: Any Dust and Mist Respirator except single-use and quarter-mask respirators, or any Supplied-Air Respirator (SAR).

Up to 250 mg/m³: Any SAR operated in a continuous-flow mode, or any Powered, Air-Purifying Respirator (PAPR) with a dust and mist filter.

Up to 500 mg/m³: Any Air-Purifying, Full-Facepiece Respirator with a high-efficiency particulate filter, or any PAPR with a tight-fitting facepiece and a high-efficiency particulate filter, or any Self-Contained Breathing Apparatus (SCBA) with a full facepiece, or any SAR (with a full facepiece).

Up to 2000 mg/m³: Any Supplied-Air Respirator (SAR) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece Respirator with a high-efficiency particulate filter, or any appropriate escape-type, SCBA.

EYE PROTECTION: Splash goggles or safety glasses may be worn if operations can generate airborne particulates of this product. If necessary, refer to U.S. OSHA 29 CFR 1910.133 and appropriate Canadian Standards for further information.

HAND PROTECTION: Wear light-weight plastic or rubber gloves for routine industrial use. Check gloves for leaks prior to use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 and appropriate Standards of Canada.

BODY PROTECTION: If necessary, use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If necessary, use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If splashes or sprays are anticipated, use rubber boots. If necessary, refer to appropriate Standards of Canada. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not determined.

EVAPORATION RATE (nBuAc = 1): Not determined.

SPECIFIC GRAVITY (water = 1): 1.72

MELTING/FREEZING POINT: Not determined.

SOLUBILITY IN WATER: 15.4%

BOILING POINT: Not determined.

VAPOR PRESSURE @ 2140°C: 1.56X10⁻⁵ ATM

pH: Not applicable.

ODOR THRESHOLD: Not applicable.

MOLECULAR WEIGHT:

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not applicable.

APPEARANCE, ODOR AND COLOR: Sodium Pentaborate is a white, odorless powder.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance of this product is a distinguishing characteristic in event of accidental release.

10. STABILITY and REACTIVITY

STABILITY: Stable at normal temperature and pressure.

DECOMPOSITION PRODUCTS: The products of thermal decomposition of this material include irritating vapors and toxic gases (e.g., oxides boron).

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Sodium Pentaborate is incompatible with strong oxidizers, strong acids and strong caustics.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible chemicals.

PART IV *Is there any other useful information about this material?***11. TOXICOLOGICAL INFORMATION**

TOXICITY DATA: There are no specific toxicology data currently available for Sodium Pentaborate.

SUSPECTED CANCER AGENT: Sodium Pentaborate is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, and CAL/OSHA, and therefore is neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Prolonged dermal exposure may cause irritation. Contact with the eyes may be irritating.

SENSITIZATION TO THE PRODUCT: Sodium Pentaborate is not known to be skin or respiratory sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Sodium Pentaborate on the human reproductive system.

Mutagenicity: Sodium Pentaborate is not reported to cause reproductive effects in humans.

Embryotoxicity: Sodium Pentaborate is not reported to produce embryotoxic effects in humans.

Teratogenicity: Sodium Pentaborate is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: Sodium Pentaborate is not known to cause reproductive toxicity effects.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURES INDICES (BEIs): Currently, there are no Biological Exposure Indices (BEIs) determined for Sodium Pentaborate.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: Sodium Pentaborate is stable under ambient environmental conditions.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Sodium Pentaborate may cause adverse effects on terrestrial plants and animals especially if release in large quantities.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Sodium Pentaborate may cause adverse effects on aquatic plants and animals if released into an aquatic environment, especially if release in large quantity.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority. Empty containers, as defined by appropriate sections of RCRA, are not RCRA hazardous wastes. Insure proper management of any residuals remaining in containers.

EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable

UN IDENTIFICATION NUMBER: Not Applicable

DOT LABEL(S) REQUIRED: Not Applicable

PACKAGING GROUP: Not Applicable

NORTH AMERICAN RESPONSE GUIDEBOOK NUMBER (2000): Not Applicable

MARINE POLLUTANT: Sodium Pentaborate is not listed as a marine pollutant as per D.O.T. (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: Sodium Pentaborate is not considered as dangerous goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION DESIGNATION: Sodium Pentaborate is not considered as dangerous goods, per rules of IATA.

INTERNATIONAL MARITIME ORGANIZATION (IMO): Sodium Pentaborate is not considered as dangerous goods, per rules of the IMO. **Marine Pollutant:** Sodium Pentaborate is not designated by the IMO to be a Marine Pollutant.

15. REGULATORY INFORMATION

U.S. STATE AND FEDERAL REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: Sodium Pentaborate is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for Sodium Pentaborate. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: Sodium Pentaborate is listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Sodium Pentaborate is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None.

California - Permissible Exposure Limits for Chemical Contaminants: None.

Florida - Substance List: None.

Illinois - Toxic Substance List: None.

Kansas - Section 302/313 List: None.

Massachusetts - Substance List: None.

Michigan - Critical Materials Register: None.

Minnesota - List of Hazardous Substances: None.

Missouri - Employer Information/Toxic Substance List: None.

New Jersey - Right to Know Hazardous Substance List: None.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: None.

Pennsylvania - Hazardous Substance List: None.

Rhode Island - Hazardous Substance: None.

Texas - Hazardous Substance List: None.

West Virginia - Hazardous Substance List: None.

Wisconsin - Toxic and Hazardous Substances: None.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Sodium Pentaborate is not on the California Proposition 65 Lists.

ANSI LABELING (Z129.1): CAUTION! MAY CAUSE RESPIRATORY SYSTEM, SKIN AND EYE IRRITATION. HARMFUL IF INGESTED. Do not taste or swallow. Avoid contact with skin or eyes. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, eye protection and appropriate body protection. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. If ingested, do not induce vomiting and get medical attention. Get medical attention if any adverse reaction occurs. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Sweep-up spill and place in suitable container, avoiding creation of dusts. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL INVENTORY: Sodium Pentaborate is not listed on the DSL Inventory; it is excepted as a salt of a listed material.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION AGENCY (CEPA) PRIORITY SUBSTANCES LISTS: Sodium Pentaborate is not on the Priority Substances Lists.

CANADIAN WHMIS SYMBOLS: Not applicable.

16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, INC.
PO Box 3519, La Mesa, CA 91944-3519
(619) 670-0609

The information contained herein is furnished without warranty of any kind. Persons using this product should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of this material, the safety of health of employees and customers and the protection of the environment.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

EXPOSURE LIMITS IN AIR (continued):

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

DEFINITIONS OF TERMS (Continued)

EXPOSURE LIMITS IN AIR (continued):

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **TWA-Time Weighted Average:** Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD:

0 (Minimal Hazard): No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation:* Essentially non-irritating. PII or Draize = "0". *Eye Irritation:* Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". *Oral Toxicity LD₅₀ Rat:* < 5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC₅₀ Rat:* < 20 mg/L; **1 (Slight Hazard):** Minor reversible injury may occur, slightly or mildly irritating. *Skin Irritation:* Slightly or mildly irritating. *Eye Irritation:* Slightly or mildly irritating. *Oral Toxicity LD₅₀ Rat:* > 500-5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 1000-2000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 2-20 mg/L; **2 (Moderate Hazard):** Temporary or transitory injury may occur. *Skin Irritation:* Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. *Eye Irritation:* Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, ≤ 25. *Oral Toxicity LD₅₀ Rat:* > 50-500 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 200-1000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 0.5-2 mg/L; **3 (Serious Hazard):** Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation:* Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. PII or Draize > 5-8 with destruction of tissue. *Eye Irritation:* Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD₅₀ Rat:* > 1-50 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 20-200 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 0.05-0.5 mg/L; **4 (Severe Hazard):** Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation:* Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation:* Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD₅₀ Rat:* ≤ 1 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* ≤ 20 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* ≤ 0.05 mg/L).

FLAMMABILITY HAZARD:

0 (Minimal Hazard): Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.; **1 (Slight Hazard):** Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur. Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2 (Moderate Hazard):** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of coarse dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3 (Serious Hazard):** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC];

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued):

3 (continued): Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]; **4 (Severe Hazard):** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. pyrophoric].

PHYSICAL HAZARD:

0 (Water Reactivity): Materials that do not react with water. *Organic Peroxides:* Materials that are normally stable, even under fire conditions and will not react with water. *Explosives:* Substances that are Non-Explosive. *Unstable Compressed Gases:* No Rating. *Pyrophorics:* No Rating. *Oxidizers:* No "0" rating allowed. *Unstable Reactives:* Substances that will not polymerize, decompose, condense or self-react.; **1 (Water Reactivity):** Materials that change or decompose upon exposure to moisture. *Organic Peroxides:* Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives:* Division 1.5 & 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases:* Pressure below OSHA definition. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group III; *Solids:* any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. *Liquids:* any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives:* Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.; **2 (Water Reactivity):** Materials that may react violently with water. *Organic Peroxides:* Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives:* Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases:* Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group II *Solids:* any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. *Liquids:* any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3 (Water Reactivity):** Materials that may form explosive reactions with water. *Organic Peroxides:* Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives:* Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases:* Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group I *Solids:* any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture.

DEFINITIONS OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD RATINGS (continued):

PHYSICAL HAZARD (continued):

3 (continued): Liquids: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. Unstable Reactives: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.; **4** Water Reactivity: Materials that react explosively with water without requiring heat or confinement. Organic Peroxides: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. Explosives: Division 1.1 & 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. Compressed Gases: No Rating. Pyrophorics: Add to the definition of Flammability "4". Oxidizers: No "4" rating. Unstable Reactives: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.). PPE Rating B: Hand and eye protection is required for routine chemical use. PPE Rating C: Hand, eye, and body protection may be required for routine chemical use.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury).

FLAMMABILITY HAZARD: 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. 1 Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. 2 Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air. 3 Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions. 4 Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily.

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions. 1 Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. 2 Materials that readily undergo violent chemical change at elevated temperatures and pressures. 3 Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. 4 Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures.

FLAMMABILITY LIMITS IN AIR: Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: LD₅₀ - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC₅₀ - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m³ concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include TDLo, the lowest dose to cause a symptom and TCLo the lowest concentration to cause a symptom; TDo, LDLo, and LDo, or TC, TCo, LCLo, and LCo, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program; RTECS - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** BEI - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. BCF = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. TL_m = median threshold limit; Coefficient of Oil/Water Distribution is represented by log K_{ow} or log K_{oc} and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

ACGIH: American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

This section explains the impact of various laws and regulations on the material. EPA is the U.S. Environmental Protection Agency. NIOSH is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). WHMIS is the Canadian Workplace Hazardous Materials Information System. DOT and TC are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (SARA); the Canadian Domestic/Non-Domestic Substances List (DSL/NDL); the U.S. Toxic Substance Control Act (TSCA); Marine Pollutant status according to the DOT; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. OSHA - U.S. Occupational Safety and Health Administration.

32.68

MATERIAL SAFETY DATA SHEET**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

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:
 613-996-6666.

For chemical emergencies in Canada, call CANUTEC at 1-

2. COMPOSITION INFORMATION ON INGREDIENTS**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 Registration Number:
Trimellitic acid 528-44-9	3	N.E.	N.E.	N.E.	N.E.	18881400-

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 Registration Number:
Sodium chloride 7647-14-5	7	N.E.	N.E.	N.E.	N.E.	18881400-
Trade Secret : Dye compound	10 to 20	N.E.	N.E.	N.E.	N.E.	5646P, 5647P

PRODUCT:

A34517L100 INTRACID RHODAMINE WT LIQUID

Water	70	N.E.	N.E.	N.E.	N.E.	
7732-18-5						

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Warning: Causes eye irritation. May cause skin irritation.

EFFECTS FROM ACUTE EXPOSURE:

EYE CONTACT: Irritating to the eyes

SKIN CONTACT: May be irritating to the skin.

INHALATION: None known.

INGESTION: None known

CHRONIC OVEREXPOSURE EFFECTS:

Not known.

CARCINOGENICITY: NTP - No, IARC - No, OSHA Regulated - No

PRINCIPLE ROUTES OF EXPOSURE: None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Not known.

4. FIRST AID MEASURES

EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

SKIN: In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention.

INHALATION: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking fingers down throat; never give anything to an unconscious person. Get medical attention.

5. FIRE FIGHTING MEASURES

PRODUCT:

A34517L100 INTRACID RHODAMINE WT LIQUID

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:

Carbon Dioxide, Dry Chemical, Water Fog

FIRE FIGHTING PROCEDURES:

Cool exposed containers with water spray

after extinguishing fire.

UNUSUAL HAZARDS:

None known.

ADDITIONAL FIRE AND EXPLOSION DATA:
apparatus and full protective equipment.

As in any fire, wear self-contained breathing

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep container closed when not in use.

OTHER STORAGE AND HANDLING DATA:

In accord with good industrial

practice, handle with care and avoid personal contact.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID

COLOR: RED

ODOR: NONE

SOLUBILITY IN WATER (20°C): MISCIBLE

PRODUCT:

A34517L100 INTRACID RHODAMINE WT LIQUID

SPECIFIC GRAVITY: 1.13
DENSITY @ 25°C: N.D.
PH: 10.5 @ 1.0%
MELTING POINT: N.D.
BOILING POINT: N.A.
FREEZING POINT: N.D.
VAPOR DENSITY (AIR=1): IS HEAVIER THAN AIR
EVAP. RATE (BUTYL ACETATE=1): SLOWER THAN BUTYL ACETATE
VOC CONTENT (%): N.D.
VAPOR PRESSURE (mm/Hg @ 20°C): N.D.

10. STABILITY AND REACTIVITY**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.**11. TOXICOLOGICAL INFORMATION**

ACUTE ORAL LD50 (mg/kg): No Data
ACUTE DERMAL LD50 (mg/kg): No Information
ACUTE INHALATION LC50 (mg/L): No Data

IRRITATION TO (skin, eyes, respiratory): None.**ADDITIONAL TOXICOLOGY INFORMATION:** None known.**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL INFORMATION:** No data is available at this time.**13. DISPOSAL CONSIDERATIONS****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.**14. TRANSPORT INFORMATION**

DOT Proper Shipping Name: Not DOT Regulated
DOT Technical Name: N.A.
DOT Primary Hazard Class: N.A.

PRODUCT:

A34517L100 INTRACID RHODAMINE WT LIQUID

DOT Secondary Hazard Class: ... N.A.

UN/NA NUMBER: ... N.A.

DOT PACKING GROUP: ... N.A.

DOT EMERGENCY RESPONSE INFORMATION: Keep unnecessary people away. Isolate area and deny entry. Stay upwind. Keep out of low areas. Call CHEMTREC at 1-800-424-9300 for emergency assistance.

..... For chemical emergencies in Canada, call CANUTEC at 1-613-996-6666.

15 REGULATORY INFORMATION

SARA SECTION 302: None Found

SARA (311, 312) HAZARD CLASS:
IMMEDIATE HEALTH HAZARD

SARA (313) CHEMICALS: THIS PRODUCT DOES NOT CONTAIN A TOXIC CHEMICAL FOR ROUTINE ANNUAL 'TOXIC CHEMICAL RELEASE REPORTING' UNDER SECTION 313 (40 CFR 372)

AMOUNT OF SARA (313) REPORTABLE CHEMICAL (%): No SARA (313) Reportable Chemicals.

METAL CONTENT: This product is not a metallized dye.

TSCA INVENTORY STATUS: All components of this product are included on the TSCA Section 8 Inventory.

CALIFORNIA PROPOSITION 65 CHEMICALS: None

TSCA SECTION 12 (B) EXPORT REGULATIONS: This product is not subject to TSCA 12(b) Export Regulations.

GERMAN AMINES/EUROPEAN UNION AMINES: This product does not contain any compounds that would be prohibited under the current German/European Union regulations regarding cleavable amine compounds.

16 OTHER INFORMATION**HAZARD RATING SYSTEMS**

HMIS: FLAMMABILITY 1 , REACTIVITY 0 , HEALTH 2

ADDITIONAL INFORMATION:
NONE

PRODUCT:

A34517L100 INTRACID RHODAMINE WT LIQUID

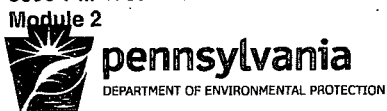
REASON FOR UPDATE:

Product review.

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.

***** END OF MSDS *****



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

WASTEWATER TREATMENT TECHNOLOGIES
MODULE 2

APPLICANT NAME		PPL Susquehanna, LLC
Outfall Number	Treatment Unit Description (list in sequence)	Method for Handling and Disposal of Solid or Liquid Residue Resulting from Treatment (list in sequence)
070	Sedimentation (setting)	Cleanfill
	Discharge to Surface Water	N/A
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
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	N/A
075	Sedimentation (Setting)	Cleanfill
	Discharge to Surface Water	N/A
079	Grinding	N/A
	Screening	Landfill
	Equalization	NA
	Activated Sludge	Aerobic Digestion / Landfill
	Neutralization	NA

	Disinfection (Chlorine)	N/A
	Dechlorination	N/A
	Discharge to Surface Water	N/A
080	Sedimentation (Settling)	Cleanfill
	Discharge to Surface Water	N/A



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPL Susquehanna, LLC
Outfall: 070 S-2 Pond

**SOURCES OF WASTEWATER
MODULE 3**

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 070 S-2 Pond

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

N/A

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

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

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. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC

Outfall: 071 Cooling Tower Blowdown

**SOURCES OF WASTEWATER
MODULE 3**

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 071 Cooling Tower Blowdown

1. Process Wastewater

a. Describe process and type of wastewater.

Cooling Water Blowdown from Circulating Water and Emergency Service Water (ESW) System operation. Includes ESW Pond overflow to blowdown.

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application. Continuous Operation

c. Discharge Occurs. 24 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. 17.80 MGD

The monthly average discharge rate. 13.85 MGD

The long-term average discharge rate. 13.85 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

a. Describe the wastewater.

Outfall 171 - Liquid Radwaste Discharge to CT Blowdown and 371 Neutralization Basin internal discharge to Circ Water

b. Source(s). Volume of Liquid radwaste discharge 171 to Cooling Tower Blowdown.

c. Discharge Occurs. 0-6 hrs/day; 1-7 days/wk; 60 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate. .073 MGD

The monthly average discharge rate. 0.036 MGD

The long-term average discharge rate. 0.036 MGD

For batch discharges report:

Number of decant cycles. _____ Cycles/day

Length of each decant cycle. _____ MIN.

Average decant discharge rate. _____ GPM

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

b. Discharge Occurs. 24 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. 17.87 MGD

The monthly average discharge rate. 13.89 MGD

The long-term average discharge rate. 13.89 MGD

4. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC

Outfall: 072 S&A Sump

SOURCES OF WASTEWATER MODULE 3

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 072 S&A Sump

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

Miscellaneous stormwater collected around Emergency Transformers, Diesel Generator oil unloading area and equipment and S&A oil storage area berm downstream of O&G separator.

b. Source(s).

c. Discharge Occurs. 1 hrs/day; _____ days/wk; 33 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate. 0.010 MGD

The monthly average discharge rate. 0.009 MGD

The long-term average discharge rate. 0.009 MGD

For batch discharges report:

Number of decant cycles. _____ Cycles/day

Length of each decant cycle. _____ MIN.

Average decant discharge rate. _____ GPM

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

b. Discharge Occurs. 1 hrs/day; _____ days/wk; 30 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate. 0.010 MGD

The monthly average discharge rate. 0.009 MGD

The long-term average discharge rate. 0.009 MGD

4. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC
Outfall: 073 U-1 Transformer Sump

**SOURCES OF WASTEWATER
MODULE 3**

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 073 U-1 Transformer Sump

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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.

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

Miscellaneous stormwater collected around U-1 Transformer(s), Lube oil storage tank berm, and oil filled circuit breakers downstream of O&G separator.

b. Source(s).

c. Discharge Occurs. 1 hrs/day; _____ days/wk; 8 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate.

0.016 MGD

The monthly average discharge rate.

0.008 MGD

The long-term average discharge rate.

0.008 MGD

For batch discharges report:

Number of decant cycles.

_____ Cycles/day

Length of each decant cycle.

_____ MIN.

Average decant discharge rate.

_____ GPM

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

b. Discharge Occurs. 1 hrs/day; _____ days/wk; 8 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate. 0.016 MGD

The monthly average discharge rate. 0.008 MGD

The long-term average discharge rate. 0.008 MGD

4. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC
Outfall: 074 U-2 Transformer Sump

SOURCES OF WASTEWATER MODULE 3

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 074 U-2 Transformer Sump

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

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 downstream of O&G separator.

b. Source(s).

c. Discharge Occurs. 1 hrs/day; _____ days/wk; 12 days/yr; 12 months/yr.

During which months? All

Report the discharge rate as:

The maximum daily discharge rate. 0.016 MGD

The monthly average discharge rate. 0.008 MGD

The long-term average discharge rate. 0.008 MGD

For batch discharges report:

Number of decant cycles. _____ Cycles/day

Length of each decant cycle. _____ MIN.

Average decant discharge rate. _____ GPM

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

b. Discharge Occurs. 1 hrs/day; _____ days/wk; 12 days/yr; 12 months/yr.
During which months? All

Report the discharge rate as:

The maximum daily discharge rate. 0.016 MGD

The monthly average discharge rate. 0.008 MGD

The long-term average discharge rate. 0.008 MGD

4. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC

Outfall: 075 Peach Stand Pond

SOURCES OF WASTEWATER MODULE 3

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

APPLICANT NAME	PPL Susquehanna, LLC
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OUTFALL NUMBER	075 Peach Stand Pond
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1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

N/A

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

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

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. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPI Susquehanna, LLC
Outfall: 079 Sewage Treatment Plant

**SOURCES OF WASTEWATER
MODULE 3**

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

APPLICANT NAME PPI Susquehanna, LLC

OUTFALL NUMBER 079 Sewage Treatment Plant

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

Sanitary wastewater effluent from extended aeration sewage treatment plant

b. Source(s).

c. Discharge Occurs. 24 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.

0.056 MGD

The monthly average discharge rate.

0.015 MGD

The long-term average discharge rate.

0.015 MGD

For batch discharges report:

Number of decant cycles.

_____ Cycles/day

Length of each decant cycle.

_____ MIN.

Average decant discharge rate.

_____ GPM

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

b. Discharge Occurs. 24 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. 0.056 MGD

The monthly average discharge rate. 0.015 MGD

The long-term average discharge rate. 0.015 MGD

4. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.



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Applicant Name: PPL Susquehanna, LLC
Outfall: 080 C-1 Pond

SOURCES OF WASTEWATER MODULE 3

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

APPLICANT NAME PPL Susquehanna, LLC

OUTFALL NUMBER 080 C-1 Pond

1. Process Wastewater

a. Describe process and type of wastewater.

N/A

b. Production Rate.

Referring to the instructions in Appendix 1 for this question, complete a Module 15, Production Rate, for each process subject to an effluent limitation listed in 40 CFR Subchapter N (Parts 400-471). Indicate the number of completed Module 15s attached to this application.

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

2. All Other Wastewater Contributing to this Outfall

a. Describe the wastewater.

N/A

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

3. Total Process, Miscellaneous Noncontact Cooling, and Sanitary Wastewater

a. Source(s).

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. Stormwater

Complete Module 12 or Module 14 for the stormwater contribution.

ADDITIONAL INFORMATION FOR MODULE 3

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 080 was sampled for this NPDES permit application.

071 - Cooling Tower Blowdown includes input from the Unit 1 and Unit 2 Cooling Towers, internal discharges, Acid Chlorine Building Sump, 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 9,368 gpm (13.5 MGD), then the pond discharge adds only an additional 2.7% to the station blowdown. This amount however, is not currently 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 estimated Flow and not recording Instrumentation 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 discharge have made flow recorders inoperable.

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

<u>SYSTEMS</u>	<u>NO. OF SYSTEMS</u>	<u>SYSTEM VOLUME (gal)</u>
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

Asiatic clams have been found in the river near the Susquehanna SES and on occasion in the ESW Spray Pond. Zebra mussel adults were observed in the river at the great bend area near the New York border. 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.

PPL Susquehanna, LLC has received PaDEP approval to dry Cooling and Spray Pond sediment onsite as a coproduct. 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 cold weather operation deicing water is routed from the River Water Makeup line to the river intake structure for deicing purposes. An option is also available to utilize warm condenser water for this purpose. Currently procedural controls are in place to limit return flow to inside the intake when this option is utilized.

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. **Sampling of this outfall in the last 5 years for O & G annually and TSS have indicated all nondetectable results. PPL requests elimination of these analysis requirement specifically the annual O & G as it is difficult to matrix this complex analysis with the radiological aspects of operation.**

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 - Circulating Water Pumphouse Building sump was previously eliminated 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.

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.

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 074 was sampled to represent this discharge and Outfall 073 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 Outfall 080 was sampled for this NPDES permit renewal application.

079 - 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 a proposed oil & grease separator at a new planned 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 this Outfall 080 was sampled for this permit application.



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**ANALYSIS RESULTS TABLE POLLUTANT GROUP 1
MODULE 4**

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

APPLICANT NAME 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 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: _____)

POLLUTANT GROUP 1	1. LEVEL PRESENT					2. UNITS		3. Coefficient of Effluent Variability (CV)
	a. Maximum Daily Value		b. Average of Analysis		c. No. of Analysis	a. Concentration	b. Mass	
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				
Biochemical Oxygen Demand, BOD	2.4	346	0.8	105	3	mg/L	lb/day	
Chemical Oxygen Demand, COD	35	5044	30	3951	3	mg/L	lb/day	
Hardness (CaCO ₃)	335	42440	284	37400	3	mg/L	lb/day	
Total Suspended Solids, TSS	73	10520	39	1185	3	mg/L	lb/day	
Total Dissolved Solids, TDS	662	83900	516	67900	3	mg.L	lb/day	
Ammonia as N	.16	20.3	.09	11.9	3	mg/L	lb/day	
Nitrate-Nitrite (as N)	2.2	273	1.63	215	3	mg/L	lb/day	
Total Kjeldahl Nitrogen (TKN)	1.1	139	.037	48.3	3	mg/L	lb/day	
Phosphorus (as P), Total	1.4	177	1.33	176	3	mg/L	lb/day	
Temperature winter	Value		Value					
Temperature summer	Value		Value					
pH	Min. 8.68	Max. 8.74			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.

POLLUTANT GROUP 1	Believed Absent	1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
Color	<input type="checkbox"/>	5	SM20-2120B	150		92		3	CU	-	
Fecal Coliform	<input type="checkbox"/>										
Fluoride	<input type="checkbox"/>	200	300	0.32	40.5	0.25	33.4	3	mg/L	lb/day	
Oil and Grease	<input type="checkbox"/>	2200	1664	ND	ND	ND	ND	3	mg/L	lb/day	
Bromide	<input type="checkbox"/>	600	300	1.3	162	0.75	99.2	3	mg/L	lb/day	
Chlorine, Total Residual	<input type="checkbox"/>	50	330.1	ND	ND	ND	ND	3	mg/L	lb/day	
Sulfate	<input type="checkbox"/>	2000	300	143	18100	84	11030	3	mg/L	lb/day	
Sulfide	<input type="checkbox"/>	1000	SM4500F	ND	ND	ND	ND	3	mg/L	lb/day	
Sulfite	<input type="checkbox"/>	2000	SM4500B	ND	ND	ND	ND	3	mg/L	lb/day	
Surfactants	<input type="checkbox"/>	25	SM20-5540C	.121	17.4	.04	5.3	3	mg/L	lb/day	
Aluminum, Total	<input type="checkbox"/>	50	200.7	1.2	173	.75	99.2	3	mg/L	lb/dau	
Barium, Total	<input type="checkbox"/>	5	200.7	.092	11.6	.084	11.1	3	mg/L	lb/day	
Boron, Total	<input type="checkbox"/>	50	200.7	.070	8.86	.061	7.99	3	mg/L	lb/day	
Cobalt, Total	<input type="checkbox"/>	2.5	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
Iron, Total	<input type="checkbox"/>	30	200.7	3.2	461	2.5	329	3	mg/L	lb/day	
Iron, Dissolved	<input type="checkbox"/>	60	200.7	1.8	259	1.6	215	3	mg/L	lb/day	
Manganese, Total	<input type="checkbox"/>	2.5	200.7	.26	37.5	.20	26.8	3	mg/L	lb/day	
Radioactivity (Total Alpha and Beta)	<input type="checkbox"/>	1.08E-01 2.95E+00	900	3.11E+00 1.38E-01	-	2.1E-01 9.1E+01	-	3	pCi/L	-	
Total Organic Carbon, TOC	<input type="checkbox"/>	1000	SM20-5310B	12	1730	9.4	1230	3	mg/L	lb/day	
Radium, Total	<input type="checkbox"/>	4.16E-01 1.08E+00	904	3.51E-01 1.69E+00	-	3.01E-01 8.93E-01	-	3	pCi/L	-	
Magnesium	<input type="checkbox"/>	50	200.7	18.4	2286	18.1	2380	3	mg/L	lb/day	
Molybdenum	<input type="checkbox"/>	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
Tin, Total	<input type="checkbox"/>	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
Titanium, Total	<input type="checkbox"/>	10	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.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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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPL Susquehanna, LLC

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 1
MODULE 4**

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

APPLICANT NAME: PPL Susquehanna, LLC

- ☐ **Outfall Number** ____ (Show location of sampling point on Line Drawing)
- ☒ **Intake Sampling Results - Optional** (Specify Source: Susquehanna River)
- ☐ **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: ____)

POLLUTANT GROUP 1	1. LEVEL PRESENT					2. UNITS		3. Coefficient of Effluent Variability (CV)
	a. Maximum Daily Value		b. Average of Analysis		c. No. of Analysis	a. Concentration	b. Mass	
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				
Biochemical Oxygen Demand, BOD	ND		ND		3	mg/L		
Chemical Oxygen Demand, COD	ND		ND		3	mg/L		
Hardness (CaCO ₃)	106		80.7		3	mg/L		
Total Suspended Solids, TSS	29		10		3	mg/L		
Total Dissolved Solids, TDS	179		145		3	mg/L		
Ammonia as N	ND		ND		3	mg/L		
Nitrate-Nitrite (as N)	0.56		0.45		3	mg/L		
Total Kjeldahl Nitrogen (TKN)	ND		ND		3	mg/L		
Phosphorus (as P), Total	ND		ND		3	mg/L		
Temperature winter	Value		Value					
Temperature summer	Value		Value					
pH	Min. 7.08	Max. 7.88			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.

POLLUTANT GROUP 1	Believed Absent	1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
Color	<input type="checkbox"/>	5	SM20-2120B	50		28		3	CU	lb/day	
Fecal Coliform	<input type="checkbox"/>									lb/day	
Fluoride	<input type="checkbox"/>	200	300	ND		ND		3	mg/L	lb/day	
Oil and Grease	<input type="checkbox"/>	2000	1664	ND		ND		3	mg/L	lb/day	
Bromide	<input type="checkbox"/>	600	300	ND		ND		3	mg/L	lb/day	
Chlorine, Total Residual	<input type="checkbox"/>	10	330.1	0.1		0.05		3	mg/L	lb/day	
Sulfate	<input type="checkbox"/>	2000	300	26		21		3	mg/L	lb/day	
Sulfide	<input type="checkbox"/>	1000	SM4-500F	ND		ND		3	mg/L	lb/day	
Sulfite	<input type="checkbox"/>	2000	SM4-500B	ND		ND		3	mg/L	lb/day	
Surfactants	<input type="checkbox"/>	25	SM20-5540C	.103		.043		3	mg/L	lb/day	
Aluminum, Total	<input type="checkbox"/>	50	200.7	.46		.11		3	mg/L	lb/day	
Barium, Total	<input type="checkbox"/>	5	200.7	.028		.026		3	mg/L	lb/day	
Boron, Total	<input type="checkbox"/>	50	200.7	ND		ND		3	mg/L	lb/day	
Cobalt, Total	<input type="checkbox"/>	2.5	200.7	ND		ND		3	mg/L	lb/day	
Iron, Total	<input type="checkbox"/>	30	200.7	1.3		.71		3	mg/L	lb/day	
Iron, Dissolved	<input type="checkbox"/>	60	200.7	0.88		0.54		3	mg/L	lb/day	
Manganese, Total	<input type="checkbox"/>	2.5	200.7	.098		.056		3	mg/L	lb/day	
Radioactivity (Total Alpha and Beta)	<input type="checkbox"/>	1.66E+00 2.95E+00	900	2.49E+00 1.07E+01	-	1.11E+00 5.60E+00	-	3	pCi/L	-	
Total Organic Carbon, TOC	<input type="checkbox"/>	1000	SM20-5310B	3.9		3.0		3	mg/L	lb/day	
Radium, Total	<input type="checkbox"/>	4.98E-01 8.51E-01	904	6.20E-02 2.86E+00	-	5.01E-02 5.21E+00	-	3	pCi/L	-	
Magnesium	<input type="checkbox"/>	50	200.7	6.9		5.1		3	mg/L	lb/day	
Molybdenum	<input type="checkbox"/>	10	200.7	ND		ND		3	mg/L	lb/day	
Tin, Total	<input type="checkbox"/>	10	200.7	ND		ND		3	mg/L	lb/day	
Titanium, Total	<input type="checkbox"/>	10	200.7	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.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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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATIONANALYSIS RESULTS TABLE POLLUTANT GROUP 1
MODULE 4

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

APPLICANT NAME PPL Susquehanna LLC

- ☒ **Outfall Number 072** (Show location of sampling point on Line Drawing)
- ☐ 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: _____)

POLLUTANT GROUP 1	1. LEVEL PRESENT					2. UNITS		3. Coefficient of Effluent Variability (CV)
	a. Maximum Daily Value		b. Average of Analysis		c. No. of Analysis	a. Concentration	b. Mass	
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				
Biochemical Oxygen Demand, BOD	4.3	0.35	4.3	0.35	1	mg/L	lb/day	
Chemical Oxygen Demand, COD	ND	ND	ND	ND	1	mg/L	lb/day	
Hardness (CaCO ₃)								
Total Suspended Solids, TSS	ND	ND	ND	ND	1	mg/L	lb/day	
Total Dissolved Solids, TDS								
Ammonia as N								
Nitrate-Nitrite (as N)	ND	ND	ND	ND	1	mg/L	lb/day	
Total Kjeldahl Nitrogen (TKN)	ND	ND	ND	ND	1	mg/L	lb/day	
Phosphorus (as P), Total	ND	ND	ND	ND	1	mg/L	lb/day	
Temperature winter	Value		Value					
Temperature summer	18.9 Value		Value		1	degrees c	N/A	
pH	Min. 7.71	Max. 7.71				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.

POLLUTANT GROUP 1	Believed Absent	1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
Color	<input checked="" type="checkbox"/>										
Fecal Colliform	<input checked="" type="checkbox"/>										
Fluoride	<input checked="" type="checkbox"/>										
Oil and Grease	<input type="checkbox"/>	3600	1664	ND	ND	ND	ND	1	mg/L	lb/day	
Bromide	<input checked="" type="checkbox"/>										
Chlorine, Total Residual	<input checked="" type="checkbox"/>										
Sulfate	<input checked="" type="checkbox"/>										
Sulfide	<input checked="" type="checkbox"/>										
Sulfite	<input checked="" type="checkbox"/>										
Surfactants	<input checked="" type="checkbox"/>										
Aluminum, Total	<input checked="" type="checkbox"/>										
Barium, Total	<input checked="" type="checkbox"/>										
Boron, Total	<input checked="" type="checkbox"/>										
Cobalt, Total	<input checked="" type="checkbox"/>										
Iron, Total	<input checked="" type="checkbox"/>										
Iron, Dissolved	<input checked="" type="checkbox"/>										
Manganese, Total	<input checked="" type="checkbox"/>										
Radioactivity (Total Alpha and Beta)	<input checked="" type="checkbox"/>										
Total Organic Carbon, TOC	<input checked="" type="checkbox"/>										
Radium, Total	<input checked="" type="checkbox"/>										
Magnesium	<input checked="" type="checkbox"/>										
Molybdenum	<input checked="" type="checkbox"/>										
Tin, Total	<input checked="" type="checkbox"/>										
Titanium, Total	<input checked="" type="checkbox"/>										

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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 1
MODULE 4**

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

APPLICANT NAME PPL Susquehanna LLC

- ☒ **Outfall Number 074** (Show location of sampling point on Line Drawing)
☐ 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: _____)

POLLUTANT GROUP 1	1. LEVEL PRESENT					2. UNITS		3. Coefficient of Effluent Variability (CV)
	a. Maximum Daily Value		b. Average of Analysis		c. No. of Analysis	a. Concentration	b. Mass	
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				
Biochemical Oxygen Demand, BOD	ND	ND	ND	ND	1	mg/L	lb/day	
Chemical Oxygen Demand, COD	53	3.58	53	3.58	1	mg/L	lb/day	
Hardness (CaCO ₃)								
Total Suspended Solids, TSS	5	0.34	5	0.34	1	mg/L	lb/day	
Total Dissolved Solids, TDS								
Ammonia as N								
Nitrate-Nitrite (as N)	ND	ND	ND	ND	1	mg/L	lb/day	
Total Kjeldahl Nitrogen (TKN)	ND	ND	ND	ND	1	mg/L	lb/day	
Phosphorus (as P), Total	ND	ND	ND	ND	1	mg/L	lb/day	
Temperature winter	Value		Value					
Temperature summer	15 Value		Value		1	degrees c	N/A	
pH	Min. 7.9	Max. 7.9			1	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.

POLLUTANT GROUP 1	Believed Absent	1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)	
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis				
				Concentration	Mass	Concentration	Mass	Concentration	Mass			
Color	<input checked="" type="checkbox"/>											
Fecal Coliform	<input checked="" type="checkbox"/>											
Fluoride	<input checked="" type="checkbox"/>											
Oil and Grease	<input type="checkbox"/>	2300	1664	ND	ND	ND	ND	1	mg/L	lb/day		
Bromide	<input checked="" type="checkbox"/>											
Chlorine, Total Residual	<input checked="" type="checkbox"/>											
Sulfate	<input checked="" type="checkbox"/>											
Sulfide	<input checked="" type="checkbox"/>											
Sulfite	<input checked="" type="checkbox"/>											
Surfactants	<input checked="" type="checkbox"/>											
Aluminum, Total	<input checked="" type="checkbox"/>											
Barium, Total	<input checked="" type="checkbox"/>											
Boron, Total	<input checked="" type="checkbox"/>											
Cobalt, Total	<input checked="" type="checkbox"/>											
Iron, Total	<input checked="" type="checkbox"/>											
Iron, Dissolved	<input checked="" type="checkbox"/>											
Manganese, Total	<input checked="" type="checkbox"/>											
Radioactivity (Total Alpha and Beta)	<input checked="" type="checkbox"/>											
Total Organic Carbon, TOC	<input checked="" type="checkbox"/>											
Radium, Total	<input checked="" type="checkbox"/>											
Magnesium	<input checked="" type="checkbox"/>											
Molybdenum	<input checked="" type="checkbox"/>											
Tin, Total	<input checked="" type="checkbox"/>											
Titanium, Total	<input checked="" type="checkbox"/>											

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.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATIONANALYSIS RESULTS TABLE POLLUTANT GROUP 1
MODULE 4

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

APPLICANT NAME PPI Susquehanna, LLC

- ☒ **Outfall Number 079** (Show location of sampling point on Line Drawing)
- ☐ 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: _____)

POLLUTANT GROUP 1	1. LEVEL PRESENT				2. UNITS		3. Coefficient of Effluent Variability (CV)
	a. Maximum Daily Value		b. Average of Analysis		c. No. of Analysis	a.	
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass		Concentration	b. Mass
Biochemical Oxygen Demand, BOD	4.6	0.42	4.6	0.42	1	mg/L	lb/day
Chemical Oxygen Demand, COD	24	2.20	24	2.20	1	mg/L	lb/day
Hardness (CaCO ₃)	176	16.14	176	16.14	1	mg/L	lb/day
Total Suspended Solids, TSS	ND	ND	ND	ND	1	mg/L	lb/day
Total Dissolved Solids, TDS	1080	99.08	1080	99.08	1	mg/L	lb/day
Ammonia as N	8.99	0.82	8.99	0.82	1	mg/L	lb/day
Nitrate-Nitrite (as N)	65.2	5.98	65.2	5.98	1	mg/L	lb/day
Total Kjeldahl Nitrogen (TKN)	9.8	0.90	9.8	0.90	1	mg/L	lb/day
Phosphorus (as P), Total	8.0	0.73	8.0	0.73	1	mg/L	lb/day
Temperature winter	Value		Value				
Temperature summer	16.5 Value		Value		1	Celcius	
pH	Min. 7.23	Max. 7.23				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.

POLLUTANT GROUP 1	Believed Absent	1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
Color	<input type="checkbox"/>	5	SM20-2120B	75		75		1	CU		
Fecal Coliform	<input type="checkbox"/>		9222D	1		1		1	col/100mL		
Fluoride	<input type="checkbox"/>	200	300	ND	ND	ND	ND	1	mg/L	lb/day	
Oil and Grease	<input type="checkbox"/>	2100	1664	ND	ND	ND	ND	1	mg/L	lb/day	
Bromide	<input type="checkbox"/>	600	300	ND	ND	ND	ND	1	mg/L	lb/day	
Chlorine, Total Residual	<input type="checkbox"/>	10	330.1	ND	ND	ND	ND	1	mg/L	lb/day	
Sulfate	<input type="checkbox"/>	2000	300	95.5	8.76	95.5	8.76	1	mg/L	lb/day	
Sulfide	<input type="checkbox"/>	1000	SM4500F	ND	ND	ND	ND	1	mg/L	lb/day	
Sulfite	<input type="checkbox"/>	2000	SM4500B	ND	ND	ND	ND	1	mg/L	lb/day	
Surfactants	<input type="checkbox"/>	25	SM20-5540C	ND	ND	ND	ND	1	mg/L	lb/day	
Aluminium, Total	<input type="checkbox"/>	50	200.7	ND	ND	ND	ND	1	mg/L	lb/day	
Barium, Total	<input type="checkbox"/>	5	200.7	.012	.001	.012	.001	1	mg/L	lb/day	
Boron, Total	<input type="checkbox"/>	50	200.7	ND	ND	ND	ND	1	mg/L	lb/day	
Cobalt, Total	<input type="checkbox"/>	2.5	200.7	ND	ND	ND	ND	1	mg/L	lb/day	
Iron, Total	<input type="checkbox"/>	30	200.7	.095	.009	.095	.009	1	mg/L	lb/day	
Iron, Dissolved	<input type="checkbox"/>	60	200.7	.098	.009	.098	.009	1	mg/L	lb/day	
Manganese, Total	<input type="checkbox"/>	2.5	200.7	.007	.001	.007	.001	1	mg/L	lb/day	
Radioactivity (Total Alpha and Beta)	<input type="checkbox"/>	1.81E+00 3.94E+00	900	9.80E-01 4.13E+01	-	9.80E-01 4.13E+01	-	1	pCi/L	-	
Total Organic Carbon, TOC	<input type="checkbox"/>	500	SM20-5310B	7.6	.70	7.6	.70	1	mg/L	lb/day	
Radium, Total	<input type="checkbox"/>	2.14E-01 8.46E-01	904	2.29E-02 6.74E-01	-	2.28E-02 6.74E-01	-	1	pCi/L	-	
Magnesium	<input type="checkbox"/>	50	200.7	14.6	1.34	14.6	1.34	1	mg/L	lb/day	
Molybdenum	<input type="checkbox"/>	10	200.7	ND	ND	ND	ND	1	mg/L	lb/day	
Tin, Total	<input type="checkbox"/>	10	200.7	ND	ND	ND	ND	1	mg/L	lb/day	
Titanium, Total	<input type="checkbox"/>	10	200.7	ND	ND	ND	ND	1	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.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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPL Susquehanna LLC

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 2
MODULE 5**

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

APPLICANT NAME 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: _____)

POLLUTANT GROUP 2 Metals		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1M	Antimony, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
2M	Arsenic, Total	5	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
3M	Beryllium, Total	2	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	2.5	200.7	.003	.38	.001	.13	3	mg/L	lb/day	
5M	Chromium VI	10	3500CrD	ND	ND	ND	ND	3	mg/L	lb/day	
03 6M	Copper, Total	5	200.7	.009	1.14	.007	.91	3	mg/L	lb/day	
7M	Lead, Total	3	200.7	.003	.43	.001	.15	3	mg/L	lb/day	
8M	Mercury, Total	.2	245.1	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.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.

POLLUTANT GROUP 2 Metals		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
12M	Thallium, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
13M	Zinc, Total	5	200.7	.017	2.45	.014	1.8	3	mg/L	lb/day	
14M	Cyanide, Total	5	335.4	ND	ND	ND	ND	3	mg/L	lb/day	
14M	Cyanide, Free	5	4500CNI	ND	ND	ND	ND	3	mg/L	lb/day	
15M	Phenols, Total	5	420.4	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.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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: _____

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 2
MODULE 5**

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

APPLICANT NAME _____

- ☐ **Outfall Number** _____ (Show location of sampling point on Line Drawing)
- ☒ **Intake Sampling Results - Optional** (Specify Source: Susquehanna River)
- ☐ **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 2 Metals		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass		Concentration	Mass	
1M	Antimony, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
2M	Arsenic, Total	5	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
3M	Beryllium, Total	2	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	ND	ND	ND	ND	3	mg/L	lb/day	
5M	Chromium VI	10	3500CrD	ND	ND	ND	ND	3	mg/L	lb/day	
6M	Copper, Total	5	200.7	0.015	2.15	.012	1.54	3	mg/L	lb/day	
7M	Lead, Total	3	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
8M	Mercury, Total	.2	245.1	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.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.

POLLUTANT GROUP 2 Metals		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
12M	Thallium, Total	10	200.7	ND	ND	ND	ND	3	mg/L	lb/day	
13M	Zinc, Total	5	200.7	.023	3.31	.017	2.24	3	mg/L	lb/day	
14M	Cyanide, Total	5	335.4	ND	ND	ND	ND	3	mg/L	lb/day	
14M	Cyanide, Free	5	4500CNI	ND	ND	ND	ND	3	mg/L	lb/day	
15M	Phenols, Total	5	420.4	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.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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**ANALYSIS RESULTS TABLE POLLUTANT GROUP 3
MODULE 6**

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

APPLICANT NAME PPI 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: _____)

POLLUTANT GROUP 3 Volitales		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1V	Acrolein	30	624	ND	ND	ND	ND	3	ug/L	lb/day	
2V	Acrylonitrile	5	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	2	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	ND	ND	ND	ND	3	ug/L	lb/day	
8V	Chlorodibromomethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
9V	Chloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
10V	2-Chloroethylvinyl Ether	2	624	ND	ND	ND	ND	3	ug/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.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.

POLLUTANT GROUP 3 Volitales		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
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	ND	ND	ND	3	ug/L	lb/day	
15V	1,2-Dichloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
16V	1,1-Dichloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
17V	1,2 Dichloropropane	1	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	ug/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	3	ug/L	lb/day	
22V	Methylene Chloride	1	624	2.0	0.25	0.67	.088	3	ug/L	lb/day	
23V	1,1,2,2-Tetrachloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
24V	Tetrachloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
25V	Toluene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
26V	1,2-Trans-dichloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
27V	1,1,1-Trichloroethane	1	624	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	ug/L	lb/day	
31V	Vinyl Chloride	2	624	ND	ND	ND	ND	3	ug/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.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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BUREAU OF WATER STANDARDS AND FACILITY REGULATION

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 3
MODULE 6**

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

APPLICANT NAME PPI Susquehanna LLC

- ☐ **Outfall Number** _____ (Show location of sampling point on Line Drawing)
- ☒ **Intake Sampling Results - Optional** (Specify Source: Susquehanna River)
- ☐ **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 3 Volitales		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1V	Acrolein	30	624	ND	ND	ND	ND	3	ug/L	lb/day	
2V	Acrylonitrile	5	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	2	624	ND	ND	ND	ND	3	ug/L	lb/day	
6V	Carbon Tetrachloride	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
03277 7V	Chlorobenzene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
8V	Chlorodibromomethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
9V	Chloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
10V	2-Chloroethylvinyl Ether	2	624	ND	ND	ND	ND	3	ug/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.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.

POLLUTANT GROUP 3 Volitales		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
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	ND	ND	ND	3	ug/L	lb/day	
15V	1,2-Dichloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
16V	1,1-Dichloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
17V	1,2 Dichloropropane	1	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	ug/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	3	ug/L	lb/day	
22V	Methylene Chloride	1	624	1.8	0.22	1.3	0.18	3	ug/L	lb/day	
23V	1,1,2,2-Tetrachloroethane	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
24V	Tetrachloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
25V	Toluene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
26V	1,2-Trans-dichloroethylene	1	624	ND	ND	ND	ND	3	ug/L	lb/day	
27V	1,1,1-Trichloroethane	1	624	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	ug/L	lb/day	
31V	Vinyl Chloride	2	624	ND	ND	ND	ND	3	ug/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.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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BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPI Susquehanna LLC

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 4
MODULE 7**

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

APPLICANT NAME PPI Susquehanna LLC

- ☒ **Outfall Number 071** (Show location of sampling point on Line Drawing)
- ☐ 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 Overflow (Describe: _____)

POLLUTANT GROUP 4 Acid Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1A	2-Chlorophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
2A	2,4-Dichlorophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
3A	2,4-Dimethylphenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
4A	4,6-Dinitro-o-cresol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
5A	2,4-Dinitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
6A	2-Nitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
7A	4-Nitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
8A	P-chloro-m-cresol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
9A	Pentachlorophenol	15.1	625	ND	ND	ND	ND	3	ug/L	lb/day	
10A	Phenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
11A	2,4,6-Trichlorophenol	7.5	625	ND	ND	ND	ND	3	ug/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.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.



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**ANALYSIS RESULTS TABLE POLLUTANT GROUP 4
MODULE 7**

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

APPLICANT NAME: PPI Susquehanna LLC

- ☐ **Outfall Number 071** (Show location of sampling point on Line Drawing)
- ☒ Intake Sampling Results - Optional (Specify Source: Susquehanna River)
- ☐ 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 Overflow (Describe: _____)

POLLUTANT GROUP 4 Acid Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass		Concentration	Mass	
1A	2-Chlorophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
2A	2,4-Dichlorophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
3A	2,4-Dimethylphenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
4A	4,6-Dinitro-o-cresol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
5A	2,4-Dinitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
6A	2-Nitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
7A	4-Nitrophenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
8A	P-chloro-m-cresol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
9A	Pentachlorophenol	15.1	625	ND	ND	ND	ND	3	ug/L	lb/day	
10A	Phenol	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
11A	2,4,6-Trichlorophenol	7.5	625	ND	ND	ND	ND	3	ug/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.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.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATIONANALYSIS RESULTS TABLE POLLUTANT GROUP 5
MODULE 8

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

APPLICANT NAME PPL Susquehanna LLC

- ☒ **Outfall Number 071** (Show location of sampling point on Line Drawing)
- ☐ Water Supply 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: _____)

POLLUTANT GROUP 5 Base Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Annual Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1B	Acenaphthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
2B	Acenaphthylene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
3B	Anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
4B	Benzidine	28.3	625	ND	ND	ND	ND	3	ug/L	lb/day	
5B	Benzo(a)anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
6B	Benzo(a)pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
7B	3,4-Benzofluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
8B	Benzo(ghi)perylene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
9B	Benzo(k)fluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
10B	Bis(2- Chloro-ethoxy)methane	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
11B	Bis(2- Chloroethyl)ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
12B	Bis(2- Chloro-isopropyl)ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
13B	Bis(2-Ethylhexyl)phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
14B	4-Bromophenyl Phenyl Ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
15B	Butylbenzyl Phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
16B	2-Chloronaphthalene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
17B	4-Chlorophenyl Phenyl Ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	

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.

POLLUTANT GROUP 5 Base Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Annual Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
18B	Chrysene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
19B	Dibenzo(a,h)anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
20B	1,2-Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
21B	1,3- Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
22B	1,4- Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
23B	3,3'-Dichlorobenzidine	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
24B	Diethyl Phthalate	7.5	625	51.0	6.46	23.1	3.04	3	ug/L	lb/day	
25B	Dimethyl Phthalate	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
26B	Di-n-butyl Phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
27B	2,4-Dinitrotoluene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
28B	2,6-Dinitrotoluene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
29B	Di-n-octyl Phthalate	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
30B	1,2-Diphenylhydrazine (as Azobenzene)	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
31B	Fluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
32B	Fluorene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
33B	Hexachlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
34B	Hexechlorobutadiene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
35B	Hexachlorocyclopentadiene	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
36B	Hexachloroethane	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
37B	Indeno(1,2,3-cd)pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
38B	Isophorone	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
39B	Naphthalene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
40B	Nitrobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
41B	N-Nitrosodimethylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
42B	N-Nitrosodi-n-propylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
43B	N-Nitrosodiphenylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
44B	Phenanthrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
45B	Pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
46B	1,2,4-Trichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	

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.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATIONANALYSIS RESULTS TABLE POLLUTANT GROUP 5
MODULE 8

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

APPLICANT NAME PPL Susquehanna LLC

- ☐ Outfall Number _____ (Show location of sampling point on Line Drawing)
- ☒ Water Supply Sampling Results - Optional (Specify Source: Susquehanna River)
- ☐ 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 Base Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Annual Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1B	Acenaphthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
2B	Acenaphthylene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
3B	Anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
4B	Benzidine	28.3	625	ND	ND	ND	ND	3	ug/L	lb/day	
5B	Benzo(a)anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
6B	Benzo(a)pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
7B	3,4-Benzofluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
8B	Benzo(ghi)perylene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
9B	Benzo(k)fluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
10B	Bis(2- Chloro-ethoxy)methane	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
11B	Bis(2-Chloroethyl)ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
12B	Bis(2- Chloro-isopropyl)ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
13B	Bis(2-Ethylhexyl)phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
14B	4-Bromophenyl Phenyl Ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
15B	Butylbenzyl Phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
16B	2-Chloronaphthalene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
17B	4-Chlorophenyl Phenyl Ether	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	

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.

POLLUTANT GROUP 5 Base Compounds		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Annual Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
18B	Chrysene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
19B	Dibenzo(a,h)anthracene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
20B	1,2-Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
21B	1,3- Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
22B	1,4- Dichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
23B	3,3'-Dichlorobenzidine	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
24B	Diethyl Phthalate	7.5	625	14.2	2.05	4.73	0.62	3	ug/L	lb/day	
25B	Dimethyl Phthalate	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
26B	Di-n-butyl Phthalate	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
27B	2,4-Dinitrotoluene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
28B	2,6-Dinitrotoluene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
29B	Di-n-octyl Phthalate	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
30B	1,2-Diphenylhydrazine (as Azobenzene)	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
31B	Fluoranthene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
32B	Fluorene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
33B	Hexachlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
34B	Hexechlorobutadiene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
35B	Hexachlorocyclopentadiene	7.5	625	ND	ND	ND	ND	3	ug/L	lb/day	
36B	Hexachloroethane	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
37B	Indeno(1,2,3-cd)pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
38B	Isophorone	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
39B	Naphthalene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
40B	Nitrobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
41B	N-Nitrosodimethylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
42B	N-Nitrosodi-n-propylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
43B	N-Nitrosodiphenylamine	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	
44B	Phenanthrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
45B	Pyrene	1.4	625	ND	ND	ND	ND	3	ug/L	lb/day	
46B	1,2,4-Trichlorobenzene	2.8	625	ND	ND	ND	ND	3	ug/L	lb/day	

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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPL Susquehanna LLC

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 6
MODULE 9**

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

APPLICANT NAME PPL Susquehanna LLC

- ☒ **Outfall Number 071** (Show location of sampling point on Line Drawing)
☐ Intake Sampling Results - Optional (Specify Source: Susquehanna River)
☐ 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 Overflow (Describe: _____)

POLLUTANT GROUP 6 Pesticides		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1P	Aldrin										
2P	Alpha-BHC										
3P	Beta-BHC										
4P	Gamma-BHC										
5P	Delta-BHC										
6P	Chlordane										
7P	4,4'-DDT										
8P	4,4'-DDE										
9P	4,4'-DDD										
10P	Dieldrin										
11P	Alpha-endosulfan										

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 the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

POLLUTANT GROUP 6 Pesticides		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
12P	Beta-endosulfan										
13P	Endosulfan Sulfate										
14P	Endrin										
15P	Endrin Aldehyde										
16P	Heptachlor										
17P	Heptachlor Epoxide										
18P	PCB-1242	0.50	608	ND	ND	ND	ND	3	ug/L	lbday	
19P	PCB-1254	0.50	608	ND	ND	ND	ND	3	ug/L	lb/day	
20P	PCB-1221	0.50	608	ND	ND	ND	ND	3	ug/L	ib/day	
21P	PCB-1232	0.50	608	ND	ND	ND	ND	3	ug/L	lbday	
22P	PCB-1248	0.50	608	ND	ND	ND	ND	3	ug/L	lb/day	
23P	PCB-1260	0.50	608	ND	ND	ND	ND	3	ug/L	lb/day	
24P	PCB-1016	0.50	608	ND	ND	ND	ND	3	ug/L	lb/day	
25P	Toxaphene										
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 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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: PPL Susquehanna LLC

**ANALYSIS RESULTS TABLE POLLUTANT GROUP 6
MODULE 9**

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

APPLICANT NAME PPL Susquehanna LLC

- ☐ **Outfall Number** _____ (Show location of sampling point on Line Drawing)
- ☒ **Intake Sampling Results - Optional** (Specify Source: Susquehanna River)
- ☐ **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 Overflow** (Describe: _____)

POLLUTANT GROUP 6 Pesticides		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
1P	Aldrin										
2P	Alpha-BHC										
3P	Beta-BHC										
4P	Gamma-BHC										
5P	Delta-BHC										
6P	Chlordane										
7P	4,4'-DDT										
8P	4,4'-DDE										
9P	4,4'-DDD										
10P	Dieldrin										
11P	Alpha-endosulfan										

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 the potential for establishing a large number of effluent limits and/or monitoring requirements in the final NPDES permit.

POLLUTANT GROUP 6 Pesticides		1. MDL Used* (µg/L)	2. EPA Method Number Used	3. Level Present					4. Units		5. Coefficient of Effluent Variability (CV)
				a. Max Daily Value		b. Average of Analysis		c. Number of Analysis			
				Concentration	Mass	Concentration	Mass				
12P	Beta-endosulfan										
13P	Endosulfan Sulfate										
14P	Endrin										
15P	Endrin Aldehyde										
16P	Heptachlor										
17P	Heptachlor Epoxide										
18P	PCB-1242	0.47	608	ND	ND	ND	ND	3	ug/L	lbday	
19P	PCB-1254	0.47	608	ND	ND	ND	ND	3	ug/L	lb/day	
20P	PCB-1221	0.47	608	ND	ND	ND	ND	3	ug/L	ib/day	
21P	PCB-1232	0.47	608	ND	ND	ND	ND	3	ug/L	lbday	
22P	PCB-1248	0.47	608	ND	ND	ND	ND	3	ug/L	lb/day	
23P	PCB-1260	0.47	608	ND	ND	ND	ND	3	ug/L	lb/day	
24P	PCB-1016	0.47	608	ND	ND	ND	ND	3	ug/L	lb/day	
25P	Toxaphene										
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 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.

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

APPLICANT NAME PPL Susquehanna, LLC

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**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION**

OTHER TOXIC CHEMICALS

MODULE 11

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

Applicant Name	PPL Susquehanna, LLC
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Outfall Number	All (N/A)
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1. GC/MS "Five Peaks" pollutants (see Appendix 1)

Group Number (3 - 6)	Chemical Substance or Compound Name	MDL (µg/L)	Average Effluent Concentration (µg/L)	Maximum Effluent Concentration (µg/L)	No. Samples Positive / No. analyzed
					/
					/
					/
					/
					/

2. Other Chemicals

[illegible]

☐ 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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Applicant Name: **PPL Susquehanna, LLC**

**STORMWATER
MODULE 12**

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

APPLICANT NAME **PPL Susquehanna, LLC**

1. Site Plan and Stormwater Runoff. Attach a copy of your facility's site plan. (See instructions)

DEP strongly recommends the separation of stormwater and other wastewaters.

2. Description of Potential Pollutant Sources and Controls

a. For each stormwater outfall, provide an estimate of the area (include units) drained to the outfall, and a list of potential pollutant(s) and sources 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.

b. Describe Best Management Practices and nonstructural controls used to prevent potential pollutants in stormwater.

Inspections, container condition maintained, PPC Plan Implemented, training provided, assessments, audits, walkdowns, limit storage volume(s), utilize less hazardous approved materials whenever possible.

c. For each stormwater outfall, provide the location and description of existing structural control measures to reduce pollutants in stormwater runoff; and a description of the treatment the stormwater receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Control Measures
070	Rention pond, spill containment / berms, level alarms
075	Spill berms, Oil spill collar on rentention pond standpipe, leak detection alarms
080	Rention pond, spill containments, level controls/alarms

3. Non-stormwater Discharges

a. All non-stormwater discharges from these outfall(s) are identified in the Industrial Wastewater section of this application for the outfall.

☒ YES ☐ NO

b. Provide a description of the method used, the date of any testing, and the on-site drainage points that were directly observed during a test.

N/A

4. Significant Leaks or Spills

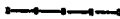
Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last 3 years, including the approximate date and location of the spill or leak, and the type and amount of material released.

No significant or reportable spill events in the last 3 years.



KEY

FENCING



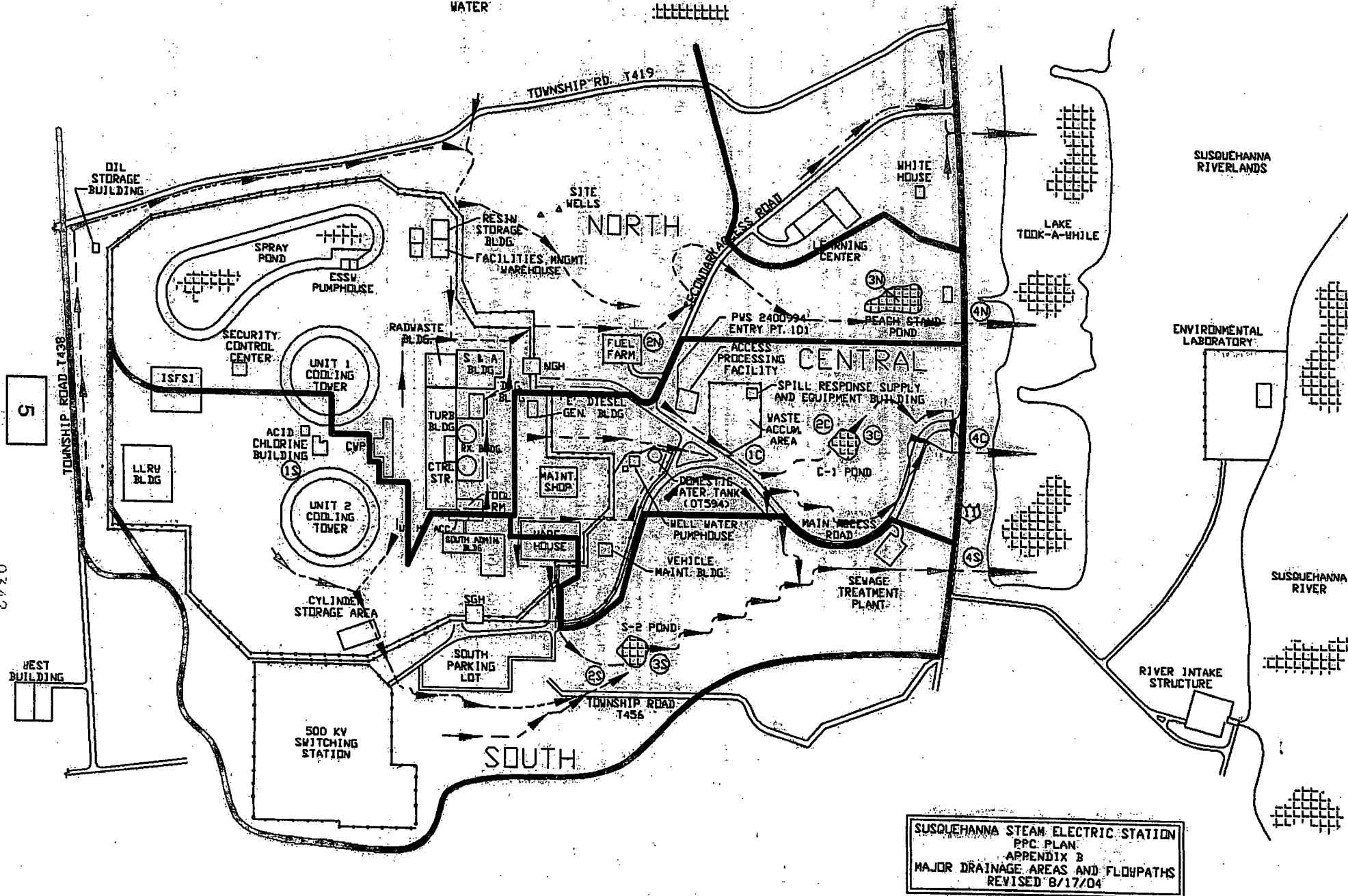
PROTECTED AREA BOUNDARY



WATER



PPC PLAN
APPENDIX B
REVISION 9



5. PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLANNING.

Does the facility have a PPC plan?

☒ YES ☐ NO

Does the facility have any other related plans, such as a Pollution Incident Prevention (PIP) Plan, Spill Prevention Control and Counter Measure (SPCC) Plan or Stormwater BMP Plan?

☒ YES ☐ NO

If "YES," identify and indicate date(s) implemented.

Type of Plan	Date Implemented
PPC Plan Note: Two (2) Copies provided w/Application	Updated 1/8/2010
SPPC Plan Note: Two (2) Copies provided w/Application	Updated 1/8/2010
DEP may require the plan(s) be submitted with this application.	

6. Additional Stormwater Information Submission

a. Could all sampling be performed as required?

☒ YES ☐ NO

(Explain below)

Outfall 080 was sampled representative of 070 & 075.

b. Complete a Stormwater Sampling Data Table (Module 13) for each outfall containing stormwater. Indicate the total number of tables submitted.

1


 COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 BUREAU OF WATER STANDARDS AND FACILITY REGULATION

STORMWATER SAMPLING DATA TABLE
MODULE 13

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

APPLICANT NAME	PPL Susquehanna, LLC		
OUTFALL NUMBER	080	REPRESENTATIVE OUTFALL NUMBER(S)	

1. Provide the results of at least one analysis for every pollutant in this table. See Appendix 1.

Pollutant	CAS Number (if available)	Maximum Values (include units)	Average Values (include units)	Number of Storm Events Sampled	Sources of Pollutants
		Grab Sample Taken During First 30 Minutes	Grab Sample Taken During First 30 Minutes		
Oil and Grease		ND	ND	1	
Biological Oxygen Demand (BODS)		ND	ND	1	
Chemical Oxygen Demand (COD)		ND	ND	1	
Total Suspended Solids (TSS)		7 mg/L	7 mg/L	1	
Total Kjeldahl Nitrogen		ND	ND	1	
Nitrate plus Nitrite Nitrogen		ND	ND	1	
Total Phosphorus		ND	ND	1	
pH (min./Max.)		7.9 SU	7.9 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.

Pollutant	CAS Number (if available)	Maximum Values (include units)	Average Values (include units)	Number of Storm Events Sampled	Sources of Pollutants
		Grab Sample Taken During First 30 Minutes	Grab Sample Taken During First 30 Minutes		
Chlorine total residual		<0.05 mg/L	<0.05 mg/L	1	Infrequent, Incidental Tank Drainage

Appendix 1.)

[illegible]

4. Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1.	2.	3.	4.	5.	6.	7.	8.
Date of Storm Event	Duration of Storm (in minutes)	Total rainfall during storm event (in inches)	Number of hours between beginning of storm measured and end of previous measurable event	Maximum flow rate during rain event (gallons per minute or specify units)	Total flow from rain event (gallons or specify units)	Season Sample Was taken	Form of Precipitation (rainfall, snowmelt)
10/15/10	13 hours	0.51	130 hours	16.6 gpm	10374 gal	Fall	Rainfall

5. Provide a description of the method of flow measurement or estimate.

Volumetric measurement at discharge pipe into container of known quantity.

Appendix A

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**

March 2010

EPA 316(b) Rule (Phase II)
Cooling Water Intake Structure

PPL Susquehanna, LLC is in compliance with the requirements of the Phase II 316(b) Rule per Compliance (1)(i). This facility is equipped with a closed-cycle recirculating system. According to the rule, having made this demonstration in the previous NPDES Permit Application, this facility is 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 124.94(b) of the rule. The supporting data was previously submitted as required by 40 CFR 122.2(r)(2),(3) and (5).

Appendix B

Preparedness Prevention and Contingency (PPC) Plan (Includes SPCC Plan)



**NPDES
RENEWAL APPLICATION
PERMIT NO. PA 0047325**

March 2010

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)**