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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9502090282 DOC.DATE: 94/10/17 NOTARIZED: NO DOCKET #
FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
AUTH.NAME AUTHOR AFFILIATION
FIELDS.J.S. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
CROWLEY,K. Pennsylvania, Commonwealth of

SUBJECT: Amends NPDES permit application submitted on 940715 for SSES to include revised outage & operational support activities info & list of addl water treatment chemicals which may be used at station.

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PRIORITY 1 DOCUMENT

PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101-1179 • 610/774-5151

October 17, 1994

Ms. Kate Crowley
Regional Water Quality Manager
Pennsylvania Department of Environmental Resources
90 East Union Street, 2nd Floor
Wilkes-Barre, PA 18701-3296

SUSQUEHANNA STEAM ELECTRIC STATION
AMENDMENT TO RENEWAL APPLICATION
FOR NATIONAL POLLUTION DISCHARGE
ELIMINATION SYSTEM PERMIT
PERMIT NO. PA0047325
CCN 741326 FILE R9-8A
PLE- 18066

Dear Ms. Crowley:

Pennsylvania Power & Light Company is amending the NPDES permit application submitted to the Pennsylvania Department of Environmental Resources (PaDER) on July 15, 1994, (Letter PLE-17914) for the Susquehanna Steam Electric Station (SES). This update includes revised outage and operational support activities information, a list of additional water treatment chemicals which may be used at the station, and requests for deletion of analyses for chromium and zinc concentrations in Outfall 071, Cooling Tower Blowdown discharge. Chemical Material Safety Data Sheets are also provided.

If you have any questions, please contact me at (610) 774-7889.

Sincerely,

Jerome S. Fields
Sr. Environmental Scientist-Nuclear

Attachment

Copy to:
NRC Document Control Desk
NRC Region I
Mr. C. Polusny, NRC Project Manager
Mr. P. M. Swerdon, PaDER
Mr. D. Agustini, PaDER

JE23

NPDES PERMIT APPLICATION AMENDMENT
PERMIT NO. PA0047325

1. OUTAGE SUPPLEMENTAL DECAY HEAT REMOVAL ACTIVITIES - Update of Section C-I

PP&L will be changing the way it conducts refueling outages for the Susquehanna SES, Units 1 and 2. In the future, PP&L will be supplementing the existing heat removal system with a Supplemental Decay Heat Removal System. Temporary cooling equipment such as cooling towers and chillers with heat removal extraction rates of 15 - 20 million BTU/hour will be used to cool down the Spent Fuel Pools which store used nuclear fuel rods. Each unit has one spent fuel pool and outages are conducted for only one unit at a time.

Water used in the cooling towers will probably be high quality demineralized water, however domestic water and circulating water could also be used. This project will be operable for approximately 45 days and at the end of this period approximately 10,000 gallons of water will be collected. Depending on the water source, PP&L will discharge the water either to the storm drains, Sewage Treatment Plant or Cooling Tower Basin. Water discharged to the Sewage Treatment Plant will be in a manner to prevent any possible upsets. Also, depending on which water source is used, water treatment chemicals equivalent to the station's Circulating Water System will be used.

The present outage schedule is a three-year cycle, where there is one outage a year for two years and two outages in the third year. Next year is a two outage year.

2. OPERATIONAL FIRE PROTECTION TESTS - Update of Section C-I

Fire protection systems are flushed in accordance with station U.S. Nuclear Regulatory Commission Technical Specifications and insurance company requirements annually or on a three year cycle depending on the particular system surveillance/test procedure. Fire hydrants located onsite are opened and water from fire pumps located at the Circulating Water Pump House is flushed throughout that portion of the fire protection system being tested. Usually circulating river water is used for flushing the lines.

System flow testing/flushing occurs three times every two years with one additional test performed every third year. Approximately 2,500 gpm of water for a period of 2 - 3 hours is discharged from the fire pumps during testing. Full flow tests are performed for eight electrical transformer protection systems on a three-year frequency. Approximately 2,500 gpm of water for a period of 30 minutes is discharged from the fire pumps during this testing. Fire pump

discharge goes through site storm drains and ponds prior to entering the Susquehanna River.

3. ADDITIONAL WATER TREATMENT CHEMICALS - Update of Section C-IV

As I previously indicated in the attachment to Letter PLE-17914, July 15, 1994, PP&L evaluates water treatment program chemicals every four years. This review process has not been completed, however, we are submitting information on chemical additives known or expected to be used beginning sometime in 1995. These chemicals or equivalent chemicals could be used beginning in 1995 after receipt of the renewal NPDES permit. Attached are the following:

- Section C-IV, form - 1; Information on Chemical Additives Known or Expected to be Present in the Discharge
- Material Safety Data Sheets
- Product Bulletin sheets

PP&L continues to evaluate chlorine and chlorine substitute biocides and is working with the PaDER, Bureau of Water Quality Management, Division of Assessment and Standards as a participant in a comprehensive Zebra mussel control program.

4. ELIMINATION OF ZINC AND CHROMIUM ANALYSES (OUTFALL 071)

The Susquehanna SES no longer uses zinc as a corrosion inhibitor and requests that the Total Zinc weekly 8-hour composite samples be eliminated from Outfall 071, Cooling Tower Blowdown. Analytical results listed in the renewal permit application, Section C-III, Required and Optional Analyses, for the Susquehanna River sample and from Outfall 071, Cooling Tower Blowdown samples indicate similar concentrations. Results are as follows:

- Total Zinc river sample - 0.036 mg/l
  Outfall 071 Total Zinc sample - 0.042 mg/l average
  0.063 mg/l daily max

The Susquehanna SES have never not used chromium as a corrosion inhibitor in the water treatment system and also requests deletion of the annual 8-hour composite sample. Results of NPDES sampling analyses are as follows:

- Total Chromium river sample - <0.003 mg/l
  Outfall 071 Total Chromium sample - 0.004 mg/l average
  0.006 mg/l daily max

These results are well below the present NPDES permit limits 1.0 mg/l for Total Zinc and 0.20 mg/l for Total Chromium, therefore, PP&L requests both parameters not be included in Outfall 071 limits.

SECTION C (continued) NPDES Number PA 0047325

IV. INFORMATION AND ANALYSIS OF EFFLUENT QUALITY FOR OTHER POTENTIALLY TOXICS POLLUTANTS

1. Information on Chemical Additives Known or Expected to be Present in the Discharge

(Read instructions carefully and use the tabular formad and additional pages, where necessary, 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 In-System	CONCENTRATION Effluent	CONCENTRATION Units	Lowest Possible Analytical Detection Level (ug/l)	Whole product 96 Hr LC50 (mg/l) and species[1]	Whole product 48 Hr LC50 (mg/l) and species[1]
071	Powerline PPL11 Hydroxy ethylidene diphosphonic acid (HEDP)	Betz Laboratories, Inc. 4636 Somerton Rd Trevose, PA 19053	Avg. 125 Max 500	1,500	1,500	ug/l	50	Rainbow Trout (610)	Daphnia magna (755)
071	Towerbrom 960 Sodium dichloro-s-triazinetrione; sodium bromide	Calgon Corp. P.O. Box 1346 Pittsburgh, PA 15230-1346	Avg. 80	500-700	<200	ug/l	200 Note 1	Bluegill Sunfish (1,000)	Daphnia magna (6,000)
071	Macrotrol 9210 Alkyl dimethylgenzyl ammonium chorides; Alkyl dimethyl ethylbenzyl ammonium chlorides	Nalco Chemical Co. One Nalco Center, Naperville, IL 60563-1198	Max 1,300	10,000	<200	ug/l	200 ug/l	Bluegill Sunfish (0.515)	Daphnia magna (0.0058)
071	Nalco 1315 Crystalline Silica	Nalco Chemical Co. One Nalco Center Naperville, IL 60563-1198	Avg. 800 Max 12,500	5,000-50,000	5,000-50,000	ug/l	Note 2	———	———
071	BULAB 6002 Poly [oxyethylene (dimethyliminio) ethylene (dimethyliminio) ethylene dichloride]	Beckman Laboratories, Inc. 1256 N. Mclean Blvd Memphis, TN 38108	Avg. 1,000	10,000	<200	ug/l	<200	Bluegill Sunfish (0.34)	Daphnia magna (0.37)

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

Note 1: Free available halogen.
Note 2: This detoxicant does not contain ingredients on the List of Toxic Chemicals (40CFR372).
Note 3: Depending on Closed Cooling Water System usage between 5 and 50 gallons annually.

der/frm(lmc)

SECTION C (continued)

NPDES Number PA 0047325

IV. INFORMATION AND ANALYSIS OF EFFLUENT QUALITY FOR OTHER POTENTIALLY TOXICS POLLUTANTS

1. Information on Chemical Additives Known or Expected to be Present in the Discharge

(Read instructions carefully and use the tabular formad and additional pages, where necessary, 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 (ug/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	BULAB 6003 Disodium cyanodi-thiolmedocarbonate; Potassium-N-methyldi-thiocarbonate	Beckman Laboratories, Inc. 1256 N. McLean Blvd Memphis, TN 38108	Avg. 1,000	10,000	<200	ug/l	<200	———	Daphnia magna (0.14)
071/072	Slimicide C107	Betz Laboratories 4636 Somerton Rd Trevose, PA 19053	Note 3	50,000-200,000	<5,000	ug/l	5,000	Fathead Minnow (13)	Daphnia magna (12.7)

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

Note 1: Free available halogen.
Note 2: This detoxicant does not contain ingredients on the List of Toxic Chemicals (40CFR372).
Note 3: Depending on Closed Cooling Water System usage between 5 and 50 gallons annually.

der/frm(lmc)

BETZ LABORATORIES,INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19053
BETZ MATERIAL SAFETY DATA SHEET
EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : POWERLINE PPL11

EFFECTIVE DATE:02-22-94
PRINTED: 02-22-94

PRODUCT APPLICATION:WATER-BASED DEPOSIT CONTROL AGENT.

-----SECTION 1----------HAZARDOUS INGREDIENTS----------

INFORMATION ON PHYSICAL HAZARDS,HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

PHOSPHONIC ACID (1-HYDROXYETHYLIDINE)BIS-(HEDP)***CAS# 2809-21-4; EYE IRRITANT; PEL:NOT DETERMINED;TLV:NOT DETERMINED

-----SECTION 2----------TYPICAL PHYSICAL DATA----------

PH: AS IS(APPROX.)< 1.0	ODOR: MILD
FL.PT.(DEG.F):> 200 SETA(CC)	SP.GR.(70F): 1.437
VAPOR PRESSURE(mmHG): ~ 18.0	VAPOR DENSITY(AIR=1): < 1.00
VISC cps70F: 85	%SOLUBILITY(WATER): 100.0
EVAP RATE: < 1.00(ETHER=1)	APPEARANCE: COLORLESS TO YELLOW
PHYSICAL STATE:LIQUID	FREEZE POINT(DEG.F): < -30.00

-----SECTION 3----------REACTIVITY DATA----------

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT : POWERLINE PPL11

-----SECTION 7----------SPECIAL PROTECTIVE EQUIPMENT----------

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134.USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8----------STORAGE AND HANDLING PRECAUTIONS----------

STORAGE INSTRUCTIONS***

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

DO NOT FREEZE.IF FROZEN,THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS***

ACIDIC.CORROSIVE(METAL).DO NOT MIX WITH ALKALINE MATERIAL.

****

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

****

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS:D002=CORROSIVE(PH,STEEL)

...DOT HAZARD/UN#/ER GUIDE# IS :CORROSIVE TO STEEL/UN1760/#60

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 302 CHEMICALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 313 CHEMICALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

...SARA SECTION 312 HAZARD CLASS:IMMEDIATE(ACUTE)

...MICHIGAN CRITICAL MATERIALS:

NO REGULATED CONSTITUENT PRESENT AT OSHA THRESHOLDS

NFPA/HMIS : HEALTH - 2; FIRE - 1; REACTIVITY - 0; SPECIAL - CORR; PE - B

Dermal LD50 RABBIT: >7,940 MG/KG
Note - FHSA

Eye Irritation Score RABBIT: CORROSIVE

Ames Assay BACTERIA: NEGATIVE
Note - +/- METABOLIC ACTIVATION

Non-Ames Mutagenicity : NEGATIVE
Note - MOUSE LYMPHOMA ASSAY +/- METABOLIC ACTIVATION

90 Day Feed Study RAT: NOEL:10,000 PPM
Note - HEMOPOEITIC EFFECTS AT 30,000 PPM

90 Day Feed Study Dog: 20-60 MG/KG
Note - 30-day study. No pathological effects.

90 Day Feed Study Dog: .062-1%
Note - 2 year-feed study. Reversible anemia developed at 1% in diet.

PRODUCT SPECIFICATIONS AND NPDES APPLICATION REQUIREMENTS

Product Number, Trade Name, and Function

Towerbrom 960 is a mixture of sodium dichloroisocyanurate and sodium bromide. When dissolved in water, the mixture produces the disinfectant hypobromous acid.

Chemical Additive Manufacture

Calgon Corporation
P. O. Box 1346
Pittsburgh, PA 15230
Phone: (412)777-8000

Average/Maximum Usage Rates and Toxicity Data

Based on a reported system volume of 9,100,000 gallons per unit, the average slug addition of 80 pounds per unit represents a product dosage of approximately 1 ppm. The frequency of addition will vary with demand and season and will range from one or two additions weekly in the winter to a maximum of 3 to 4 weekly additions in the summer. Given that treatment will take place on one unit at a time, the actual maximum effluent concentrations will be approximately half these dosages as a result of dilution.

In general, blowdown for a given unit will be closed during the application of Towerbrom until any free halogen is depleted, which should be less than one (1) hour from the end of the application. Any residual material from a Towerbrom application once blowdown is reestablished would be in the form of cyanuric acid. Health and environmental effects for cyanuric acid have been extensively studied as the basis for EPA pesticide registration for chlorinated isocyanurates. Environmental data for cyanuric acid are as follows:

Cyanuric Acid

48-hr EC_{50} Daphnia magna:	6,000 mg/L, Practically Nontoxic
96-hr LC_{50} Bluegill sunfish:	>1,000 mg/L, Practically Nontoxic
96-hr LC_{50} Fathead minnow:	>2,100 mg/L, Practically Nontoxic
96-hr LC_{50} Rainbow trout:	>2,100 mg/L, Practically Nontoxic
96-hr EC_{50} Algae:	655 mg/L, Practically Nontoxic

Monosodium Cyanurate

8-day Dietary LC_{50} Mallard duck:	>10,000 ppm, Practically Nontoxic
8-day Dietary LC_{50} Bobwhite quail:	>10,000 ppm, Practically Nontoxic

PRODUCT SPECIFICATIONS AND NPDES APPLICATION REQUIREMENTS

As contained in the MSDS data for Towerbrom 960, the product toxicity is as follows:

Daphnia Magna	48 hour LC_{50}	2.5 mg/l
	No Effect	1.8 mg/l
Fathead Minnow	48 hour LC50	0.7 mg/l
	No Effect	0.32 mg/l
Selenastrum (algae)	96 hour EC_{50}	0.6 mg/l

Keep in mind that these product residuals reflect an associated free halogen residual that will not occur in the actual system since the system demand will instantaneously consume this residual with a trace residual remaining for control.

A published summary of health effects data for cyanuric acid is attached. These data may be used as basis for establishing NPDES permit limits if necessary for the operation of a cooling tower using Towerbrom 960. In addition, references, including a Utility reference in the State of Pennsylvania are contained in the Reference Section of this proposal.

Active Ingredients

Towerbrom 960 contains 89 percent sodium dichloroisocyanurate and 7 percent sodium biocide.

Analytical Detection

The Hach DPD test can be used to detect 0.01 ppm total residual halogen as chlorine.

1030 2/88

MATERIAL SAFETY DATA SHEET

CALGON CORPORATION
P.O. Box 1346
Pittsburgh, PA 15230-1346

24 Hour Emergency Telephone -- (412) 777-8000

I. PRODUCT IDENTIFICATION

PRODUCT NAME: Towerbrom 960

CHEMICAL DESCRIPTION: This product is a mixture of sodium dichloroisocyanurate (anhydrous) and sodium bromide. When dissolved in water, the mixture produces the disinfectant hypobromous acid.

PRODUCT CLASS: Microbiocide

II. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Chemical Name	CAS No.	% by Weight	Oral LD50 (rat)	Dermal LD50 (rabbit)	ACGIH TLV OSHA PEL
Sodium dichloro-s-triazinetrione	2893-78-9	89	1400 mg/kg	Not available	TWA 0.5 mg/m^3* STEL 1.5 mg/m^3*
Sodium bromide	7647-15-6	7	3500 mg/kg	Not available	Not listed

*Supplier recommendations

III. TYPICAL PHYSICAL PROPERTIES

BOILING POINT: Not applicable

VAPOR PRESSURE: Not available

VAPOR DENSITY (air=1): Not available

% VOLATILE BY WEIGHT: Nil

SOLUBILITY IN WATER: 20 g/100 g @ 25°C

BULK DENSITY: 57 lbs./cubic ft.

pH: 6.0 (1% soln @ 25°C)

MELTING POINT: 240-250°C (decomposes)

APPEARANCE AND ODOR: White to off-white granules with slight bromine odor.

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: This product is not flammable or combustible, however, it is an oxidizing and chlorinating agent. Contact with most foreign materials, organic matter or easily chlorinated or oxidized materials may result in fire.

VI. HEALTH HAZARD DATA (continued)

EFFECTS OF OVEREXPOSURE:

ACUTE

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

SKIN CONTACT: This product may be irritating and damaging to the skin upon contact. In dry form, the product is not appreciably irritating to dry skin. However, on contact with moisture, sodium dichloroisocyanurate readily hydrolyzes to form hypochlorous acid which may cause tissue damage. This product is not expected to be absorbed through the skin in harmful amounts or to cause skin sensitization. The acute dermal LD50 (rabbit) of a similar product was found to be > 5000 mg/kg.

INGESTION: The acute oral LD50 (rat) of a similar formulation was found to be 1350 mg/kg. Ingestion of sodium dichloroisocyanurate has been reported to cause ulceration or bleeding from the stomach, gastrointestinal irritation, salivation, tearing, shortness of breath, weakness, emaciation, lethargy, diarrhea, and coma.

INHALATION: Inhalation of sodium dichloroisocyanurate dust has been reported to produce nose, throat, and respiratory tract irritation and in some individuals bronchospasm may result. Chlorine gas from decomposition of the product has been reported to cause burning of the nose and mouth and irritation of the lining of the respiratory tract with coughing, a choking sensation, chest pain, vomiting, nausea, headache, dizziness and fainting. The onset of severe respiratory symptoms following exposure to chlorine, including pulmonary edema and pneumonitis, may be delayed.

SUBCHRONIC, CHRONIC

Rats were exposed by inhalation to dust of sodium dichloroisocyanurate at exposure levels of 0, 3.2, 10.4, and 32.8 mg/m3 for 6 hours/day, 5 days/week for 4 weeks. Signs of irritation including lacrimation, salivation and labored breathing were observed at the mid- and high-exposure levels. Decreased body and/or liver weights, and hematological parameter alterations were also noted in the mid- and high-exposure groups. No adverse histopathological effects were observed. The no-effect level is considered to be 3.2 mg/m3.

No teratogenic or fetotoxic effects were observed in the offspring of mice administered sodium dichloroisocyanurate, by gavage, at dosage levels of 0, 25, 100, and 400 mg/kg/day on days 6 through 15 of gestation. Mortality and signs of toxicity were observed in the high-dose group dams. Decreased maternal body weight gain was observed in all treatment groups.

Repeated oral ingestion of sodium bromide produces sedation and central nervous system (CNS) depression with possible effects such as headache, irritability, agitation, delirium, vertigo, memory loss, muscular incoordination and increased action of the reflexes, decreased appetite, hallucinations, acne-like rash, stupor and coma.

Following repeated exposures (4-12 weeks) to sodium bromide in their feed, signs of muscular incoordination and depressed grooming, changes in body weight and behavior, and endocrine (hormone) system effects were reported in laboratory animals. Reduced fertility and viability of offspring were noted in rats fed sodium bromide for three successive generations. These effects on the ability of rats to reproduce were reported to be reversible upon withdrawal of the bromide. Results of another study suggest that learning ability was reduced in offspring of rats given sodium bromide during pregnancy.

CARCINOGENICITY:

NTP: No ingredients listed
IARC: No ingredients listed
OSHA: No ingredients listed

HMIS RATINGS: Health = 3* Flammability = 0 Reactivity = 2
Personal Protective Equipment = to be supplied by user depending on use conditions.

*There are potential chronic health effects to consider.

IX. SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled material. Any spillage of this product should be cleaned up immediately to avoid contact with other materials with which it may react. Keep spilled product dry. Contact with water releases irritating and hazardous chlorine containing gases. Sweep, scoop, or vacuum up all spilled material, contaminated soil, and other contaminated material and place in a clean, dry container for disposal. Complete cleanup on a dry basis if possible. Floor sweeping compounds should not be used in the removal as fuming, fire and explosion may result. Keep unneutralized product out of sewers, watersheds and water systems.

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

ECOLOGICAL DATA:

On similar formulation:

Selenastrum	EC50	0.6 mg/l
Daphnia magna	48-hr. LC50	2.5 mg/l
Fathead Minnow	48-hr. LC50	0.7 mg/l

On Sodium dichloroisocyanurate:

Rainbow Trout	96-hr. LC50	0.37 ppm
Bluegill Sunfish	96-hr. LC50	0.43 ppm
Mallard Duck	Oral LD50	1916 mg/kg
Mallard Duck	Dietary 8-day LC50	> 10,000 ppm
Bobwhite Quail	Dietary 8-day LC50	> 10,000 ppm

X. REGULATORY STATUS

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

RCRA STATUS: This product as sold would be considered a RCRA Hazardous Waste based on the characteristics of ignitability and reactivity. The EPA Hazardous Waste Numbers are D001 and D003.

CERCLA reportable quantity of EPA hazardous substances in product: None

SARA TITLE III:

Section 302 Extremely Hazardous Substances: None

Section 311 and 312 Health and Physical Hazards:

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

Section 313 Toxic Chemicals: None

DOT CLASSIFICATION:

Class: 5.1
Proper Shipping Name: Dichloroisocyanuric acid salts, mixture
ID Number: UN 2465
Label: Oxidizer
Packing Group: II

PREPARED BY: P.J. Maloney

IMP-0B79/AN

Utility Chemicals | **Product Bulletin**

U-9210

MACROTROL™ 9210

MOLLUSCICIDE/ BIOCIDE

NALCO

Product Benefits

- Minimizes loss of heat transfer, flow restrictions and down time due to fouling by macroorganisms
- Works quickly—requires short, treatment periods
- Can be applied either off-line or on-line
- Minimal capital costs—easy to apply

Principal Uses

MACROTROL 9210 is a water-soluble, quaternary ammonium-based biocide for use in recirculating cooling towers, auxiliary cooling water systems, brewery pasteurizers and once-through cooling systems. It may be used to control macroorganisms in addition to aerobic bacteria, anaerobic bacteria, fungi, and algae.

MACROTROL 9210 is a non-oxidizing biocide that has exceptional penetrating and dispersing characteristics.

General Description

MACROTROL 9210 is a liquid, quaternary ammonium-based biocide. This product is specifically designed to control macroorganisms found in cooling systems.

For a general description of the chemical and physical properties, refer to the MACROTROL 9210 Material Safety Data Sheet.

Active ingredients:

alkyl (60% C14, 30% C16, 5% C12, 5% C18) dimethyl benzyl ammonium chlorides 5%

alkyl (68% C12, 32% C14) dimethyl ethylbenzyl ammonium chlorides 5%

EPA Reg. No. 6836-57-1706

Dosage and Feeding

This product can be used to control molluscs, bacteria, fungi, and algae. The dosage range allowed for each species is listed on the product label. Contact your Nalco representative for specific instructions regarding your application.

This product cannot be used in potable or domestic water systems. MACROTROL 9210 must be used in accordance with its label.

Materials Compatibility

Storage tanks should be constructed of PVC, carbon steel or containers lined with Plasite 6000 or Plasite 7122. Feed lines and pumps should be constructed of PVC, Hypalon, Viton, Teflon, Buna-N, polypropylene, Plexiglas, polyurethane, carbon steel, 304 stainless steel or 316 stainless steel.

(Continued on Reverse Side)

NALCO CHEMICAL COMPANY
ONE NALCO CENTER • NAPERVILLE, ILLINOIS 60563-1198

1198

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Clear	FORM: Liquid	ODOR: Almond
DENSITY:	8.28 lbs/gal.	
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	0.97 @ 68 Degrees F	ASTM D-1298
pH (NEAT) =	7.7	ASTM E-70
FREEZE POINT:	31 Degrees F	ASTM D-1177
POUR POINT:	35 Degrees F	ASTM D-97
BOILING POINT:	212 Degrees F @ 760 mm Hg	ASTM D-86
FLASH POINT:	207 Degrees F (PMCC)	ASTM D-93

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

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: 207 Degrees F (PMCC) ASTM D-93

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

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NOx under fire conditions.

SECTION 9 REACTIVITY INFORMATION

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

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

SECTION 10 PERSONAL PROTECTION EQUIPMENT

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

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

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors, mists or aerosols may be released.

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AREA 708-305-1000

SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:

Results below are based on the active ingredients (10% of the product):

96 hour static acute LC50 to Bluegill Sunfish = 515 ppb

96 hour static acute LC50 to Rainbow Trout = 930 ppb

28 day LC50 to Fathead Minnow = 94 ppb
28 day no observed effect concentration is 32 ppb based on no mortality or abnormal effects.

48 hour static acute LC50 to Daphnia Magna = 5.8 ppb
21 day no observed effect concentration is 4.2 ppb based on no mortality or abnormal effects.

96 hour static acute LC50 to Sheepshead Minnow = 860 ppb

96 hour static acute LC50 to Mysid Shrimp = 92 ppb

48 hour static acute LC50 to Eastern Oyster = 47.6 ppb

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

SECTION 13 TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CODE - (DEPENDENT UPON MODE, PACKAGE)	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

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

Alkyl dimentyl benzyl ammonium chlorides - Corrosive
Alkyl dimethyl ethylbenzyl ammonium chlorides - Corrosive

Ethanol = TWA 1,000 ppm, 1,880 mg/m3 ACGIH/TLV

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AREA 708-305-1000

SECTION 14 REGULATORY INFORMATION (CONTINUED)

Sec. 611 (40 CFR 82, CLASS I and II Ozone depleting substances):
This product contains the following ingredients covered by the Clean Air Act:

Ethanol - Section 111

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

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

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

INTERNATIONAL REGULATIONS:

This product is a registered biocide and is exempt from WHMIS under The House of Commons of Canada Bill C-70.

SECTION 15 ADDITIONAL INFORMATION

Nalco internal number F06021

SECTION 16 USER'S RESPONSIBILITY

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

SECTION 17 BIBLIOGRAPHY

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

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

NALCO CHEMICAL COMPANY ONE NALCO CENTER • NAPERVILLE, ILLINOIS 60563-1198
AREA 708-305-1000

NALCO

NALCO® 1315 DETOXIFICATION AGENT

PRODUCT BENEFITS

- Minimizes loss of heat transfer, flow restrictions and down time due to fouling by macroorganisms
- Works quickly – requires short treatment periods
- Minimal capital costs – easy to apply

PRINCIPAL USES

NALCO 1315 detoxification chemical is a proprietary stabilized clay slurry designed for use in recirculating cooling tower, auxiliary cooling water systems, and once-through cooling systems which are using MACROTROL™ 9210. This product can be used to detoxify residual MACROTROL 9210 prior to discharging it to a receiving stream.

GENERAL DESCRIPTION

For typical chemical and physical properties, refer to the NALCO 1315 Material Safety Data Sheet.

DOSAGE

The dosage of NALCO 1315 required will vary depending upon the type of cooling system and the concentration of MACROTROL 9210 that must be detoxified. Contact your Nalco representative for specific requirements.

FEEDING

NALCO 1315 should be fed continuously to the outfall in a manner that ensures maximum distribution and mixing with the water to be detoxified.

HANDLING AND STORAGE

Read the label and Material Safety Data Sheet for complete handling information before using this product.

Suggested in-plant storage limit is six months in unopened containers.

SHIPPING

NALCO 1315 is shipped from manufacturing locations in returnable PORTA-FEED® units and bulk.

REMARKS

If you need assistance or information, please call your nearest Nalco representative or our Naperville, IL office at (708) 305-1000.

For **Medical and Transportation Emergencies** involving Nalco products call (24 hour response): (800) I-M-ALERT or (800) 462-5378.

NALCO CHEMICAL COMPANY
ONE NALCO CENTER ◻ NAPERVILLE, ILLINOIS 60563-1198

SECTION 5 HEALTH EFFECTS INFORMATION (CONTINUED)

EYE CONTACT: May cause irritation with prolonged contact.
SKIN CONTACT: May cause irritation with prolonged contact.

SYMPTOMS OF EXPOSURE:
CHRONIC: Long term breathing of excessive levels of dried product may produce pneumoconiosis (silicosis).

AGGRAVATION OF EXISTING CONDITIONS: Prolonged inhalation of dried product can increase lung injury in persons with emphysema, asthma, or other lung disorders.

CANCER EVALUATION: The National Toxicology Program's (NTP) Annual Report On Carcinogens and the International Agency for Research on Cancer (IARC) Monographs have identified the following substance(s): Crystalline silica: as a suspect human cancer-causing agent based on limited human evidence but sufficient evidence in experimental animals.

SECTION 6 TOXICOLOGY INFORMATION

TOXICITY STUDIES: No toxicity studies have been conducted on this product.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Greenish tan	FORM: Liquid	ODOR: None
SOLUBILITY IN WATER:	Dispersible	
SPECIFIC GRAVITY:	1.04 @ 60 Degrees F	ASTM D-1298
pH (NEAT) =	8.3	ASTM E-70
BOILING POINT:	212 Degrees F @ 760 mm Hg	ASTM D-86
FLASH POINT:	None	

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

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARD: None

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: None known

NALCO CHEMICAL COMPANY ONE NALCO CENTER • NAPERVILLE, ILLINOIS 60563-119
AREA 708-305-1000

SECTION 11 SPILL AND DISPOSAL INFORMATION (CONTINUED)

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

SECTION 12 ENVIRONMENTAL INFORMATION

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

SECTION 13 TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CODE - (DEPENDENT UPON MODE, PACKAGE)	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

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

Crystalline silica - Cancer hazard based on tests with laboratory animals (refer to Section 5)

Crystalline silica = TWA 0.1 mg/m3 (respirable dust) ACGIH/TLV

Crystalline silica = TWA 0.1 mg/m3 (respirable dust) OSHA/PEL

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

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

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

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):

SECTION 16 USER'S RESPONSIBILITY

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

SECTION 17 BIBLIOGRAPHY

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

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

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

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

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

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

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

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

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

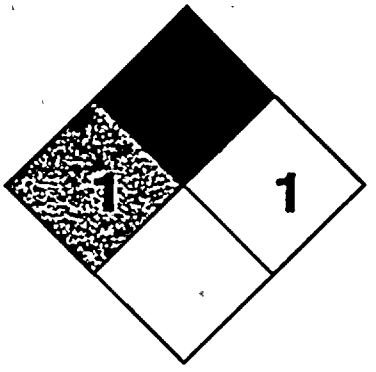
BUCKMAN LABORATORIES, INC.

MATERIAL SAFETY DATA SHEET

BULAB 6002

Revision Date: 11/05/93

Phone 1-800-BUCKMAN



Buckman Laboratories, Inc.
1256 North McLean Boulevard
Memphis, TN 38108

24 Hour Emergency Phone
(901) 767-2722

SECTION 1 OSHA HAZARD CLASSIFICATIONS

Irritating to eyes.

SECTION 2 HAZARDOUS COMPONENTS

Chemical Name	CAS Number	% by Weight	TLV
Poly[oxyethylene(dimethyliminio)ethylene (dimethyliminio)ethylene dichloride]	31075-24-8	60 %	N/A

Total listed: 60 %

The remainder of the components comprise proprietary information.

SECTION 3 PRECAUTIONARY LABEL INFORMATION AS PRESCRIBED BY THE U.S. EPA

CAUTION: Harmful if swallowed. Avoid breathing vapors. Avoid contact with skin, eyes, or clothing.
FIRST AID: 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.
ENVIRONMENTAL HAZARDS: This product is highly toxic to fish and aquatic invertebrates. 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.

SECTION 4 FIRST AID INFORMATION

Acute Marine LC50's
96 Hr. Sheepshead minnow: > 600.0 mg/L
96 Hr. Mysid Shrimp: 13.0 mg/L
Avian Acute Oral LD50's
Mallard ducks: 805.0 mg/kg
Bobwhite quail: 1,100.0 mg/kg
Avian Dietary LC50's
Mallard ducks: > 5,620.0 ppm
Bobwhite quail: > 20,000.0 ppm

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	clear, pale yellow liquid
Odor	mild
Density @ 25°C	1.15 g/mL
Flash Point	none
Freezing Point	< 0°C
Boiling Point	>100 °C (>212 °F)
Solubility	Completely miscible with water, insoluble in most organic solvents.
pH	6 - 8
pH (100 ppm in water)	6 - 7
Vapor Pressure	N/T
o/w Partition Coefficient	N/T
Oxidizing/Reducing Properties	Not tested.

NOTE: N/A = Not Applicable, N/T = Not Tested

SECTION 9 FIRE AND EXPLOSION INFORMATION

Flammable limits: Not applicable.
Extinguishing media: Dry chemical, water foam or carbon dioxide. Water should be used to cool surrounding containers.
Special firefighting procedures: None

SECTION 10 REACTIVITY INFORMATION

Stability: stable
Incompatibility: Anionic polymers
Hazardous Decomposition Products: None known.

SECTION 11 HANDLING PRECAUTIONS

Rubber gloves and safety glasses or goggles are recommended.

SECTION 12 SATISFACTORY MATERIALS OF CONSTRUCTION

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

SECTION 14 TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

SECTION 15 REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):
SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.
SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.
CERCLA (Comprehensive Environmental Response, Compensation and Liability Act: No components of this product are listed.

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Wastes: No components of this product are listed.
CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.
FDA (Food and Drug Administration): This product not approved for food contact uses.

TSCA (Toxic Substances Control Act) Applicability: Registered pesticides are exempt from the requirements of TSCA. All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is a registered pesticide.
EPA Reg. No. 1448-42

HMIS/NPCA Ratings: Health 1; Flammability 1; Reactivity 1
NFPA Ratings: Health 1; Flammability 1; Reactivity 1

STATE REGULATIONS
California Proposition 65: This product has been reviewed for Prop 65 components, and the following warning applies:

WARNING: This product may contain substance(s) which are known to the State of California to cause cancer or reproductive harm.

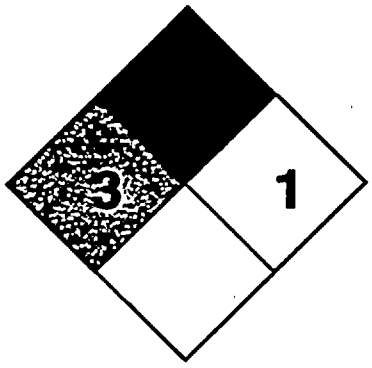
BUCKMAN LABORATORIES, INC.

MATERIAL SAFETY DATA SHEET

BULAB 6003

Revision Date: 9/23/93

Phone 1-800-BUCKMAN



Buckman Laboratories, Inc.
1256 North McLean Boulevard
Memphis, TN 38108

24 Hour Emergency Phone
(901) 767-2722

SECTION 1	OSHA HAZARD CLASSIFICATIONS

Corrosive to eyes and skin. Toxic by ingestion or dermal absorption.

SECTION 2	HAZARDOUS COMPONENTS

Chemical Name	CAS Number	% by Weight	TLV
Disodium cyanodithioimidocarbonate	138-93-2	14.7 %	N/A
Potassium N-methyldithiocarbamate	137-41-7	20.3 %	N/A
Total listed: 35 %			

The remainder of the components comprise proprietary information.

SECTION 3	PRECAUTIONARY LABEL INFORMATION AS PRESCRIBED BY THE U.S. EPA

WARNING: Causes eye damage and skin irritation. 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.
FIRST AID: In case of skin contact, wash with plenty of soap and water. Remove contaminated clothing and wash before reuse. If product gets in the eyes, flush immediately with copious amounts of clean, cool water for at least 15 minutes. Get medical attention immediately. If swallowed, call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.
ENVIRONMENTAL HAZARDS: This pesticide is toxic to fish. Keep out of lakes, streams, or ponds. Permits may be required for discharges containing this pesticide into lakes, streams, ponds, or public water. For guidance, contact the regional office of the Environmental Protection Agency.

Acute Aquatic LC50's
48 Hr. Daphnia Magna: 0.14 mg/L

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	clear, red-orange liquid
Odor	sulfide
Density @ 25°C	1.22 g/mL
Flash Point	>100 °C (>212 °F)
Freezing Point	< 0°C
Boiling Point	>100 °C (>212 °F)
Solubility	Completely miscible with water, insoluble in most organic solvents.
pH	13
pH (100 ppm in water)	8 - 10
Vapor Pressure	N/T
o/w Partition Coefficient	N/T
Oxidizing/Reducing Properties	N/T

NOTE: N/A = Not Applicable, N/T = Not Tested

SECTION 9 FIRE AND EXPLOSION INFORMATION

Flammable limits: Not determined.
Extinguishing media: Dry chemical, water fog, foam, or carbon dioxide
Special firefighting procedures: Self contained breathing apparatus and full body protective clothing required. Water spray may be used to cool containers.

SECTION 10 REACTIVITY INFORMATION

Stability: stable greater than 30 days @ 50°C (122°F)
Incompatibility: strong acids, strong oxidizers, corrosive to aluminum.
Hazardous Decomposition Products: carbon disulfide, hydrogen sulfide, methylamine, methylisothiocyanate

SECTION 11 HANDLING PRECAUTIONS

Respiratory protection is required for work areas where misting may occur.
Rubber gloves, safety glasses or chemical splash goggles, body protective clothing such as long sleeve shirts and long trousers, and protective shoes are required.
Eye wash fountains in the work place are strongly recommended.

SECTION 12 SATISFACTORY MATERIALS OF CONSTRUCTION

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

SECTION 14 TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: CAUSTIC ALKALI LIQUID, N.O.S. , (Potassium N-methyldithiocarbamate, Disodium cyanodithioimidocarbonate), 8, UN 1719, PG III (ERG GUIDE 60)

The shipping name listed above applies only to a 55 gallon drum of the product. This product may have more than one proper shipping name, depending on packaging, product properties, and mode of shipment. All products shipped from Buckman locations have been properly packaged and labeled according to appropriate hazardous shipping regulations that apply for that particular shipment. If any alteration of packaging, product, or mode of transportation is further intended, different shipping names and labeling may apply. If there are any questions pertaining to hazardous shipping requirements, contact the Buckman transportation department for further details.

SECTION 15 REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):
SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Immediate (Acute) Health Hazard.
SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.
CERCLA (Comprehensive Environmental Response, Compensation and Liability Act: No components of this product are listed.

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Wastes: No components of this product are listed.
CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.
FDA (Food and Drug Administration): This product is approved under the following FDA (21 CFR) sections: 173.320, 176.300, 181.30

TSCA (Toxic Substances Control Act) Applicability: Registered pesticides are exempt from the requirements of TSCA. All components may not be listed on TSCA Inventory.

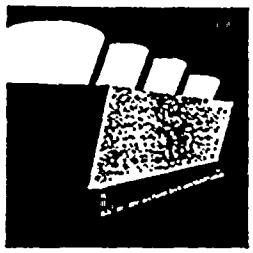
FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is a registered pesticide.
EPA Reg. No. 1448-54

HMIS/NPCA Ratings: Health 3; Flammability 1; Reactivity 1
NFPA Ratings: Health 3; Flammability 1; Reactivity 1

STATE REGULATIONS

BETZ Industrial

product facts



BETZ SLIMICIDE C 107
MICROBIOLOGICAL CONTROL AGENT

- Reduced environmental impact
- Effective at high pH
- Compatible with oxidizing agents
- Effective in the presence of sulfides

DESCRIPTION AND USE

Slimicide C 107 is a Betz biocide product formulated in a water-based solvent system. It is EPA registered for control of aerobic, anaerobic bacteria and algae in recirculating cooling water systems and related heat transfer water systems. It is also registered for use in evaporative condensers, brewery pasteurizers, and closed cooling systems, and is USDA G5 and G7 approved.

The active component in Slimicide C 107 is glutaraldehyde, which provides solid performance on aerobic and anaerobic bacteria over a wide pH range. As a result of it's stability in the presence of sulfides, Slimicide C 107 is particularly effective on sulfate-reducing bacteria strains generally associated with microbiological influenced corrosion of carbon steel, stainless steel, and other alloys. Also, test data indicates Slimicide C 107 is efficacious on various strains of iron bacteria.

Slimicide C 107 complements bromination and chlorination programs by remaining efficacious in the presence of these oxidizing agents, and by reducing the tendency to develop microorganisms which are resistant to a single biocidal agent. By controlling slime accumulations, Slimicide C 107 allows cooling towers and heat exchangers to operate at maximum efficiency and reduces the potential for under-deposit corrosion.

Slimicide C 107 possess a toxicological profile which has been well studied resulting in a product which poses a greatly reduced health risk when compared to many water treatment biocide products. The water-based formulation is safer to handle and store than solvent-based materials. Slimicide C 107 undergoes natural detoxification which reduces the products toxicity to non-target organisms.

TREATMENT AND FEEDING REQUIREMENTS

Proper treatment levels and frequency of treatment for Slimicide C 107 depend on many factors such as system cleanliness, as well as system operating characteristics. Apply this product in accordance with control parameters established by Betz Industrial for a given system. In all cases, this product must be applied in accordance with use instructions on the Betz Slimicide C 107 label.

Dosage– When the system is noticeably fouled, apply Betz Slimicide C 107 at a rate of 112 ppm to 225 ppm based on system volume. Repeat this treatment as necessary until control is achieved. When microbial control is evident, add 45 ppm to 112 ppm, based on system volume, to the system as needed to maintain control. These dosages represent the extreme upper limit of product use requirements. In many systems, lower levels may prove effective. Evaluate product requirements through appropriate microbiological monitoring. Consult Betz Industrial for technical advice on specific applications.

Feed Point– Apply Slimicide C 107 at a point where turbulence, flow patterns, etc. will provide good mixing with the water to be treated. The product may be fed intermittently or continuously to maintain the recommended dosage.

FEED EQUIPMENT

Slimicide C 107 is compatible with stainless steel (304, 316) as well as several common plastics (high density polyethylene, fiberglass reinforced plastic, and teflon). Avoid the use of mild steel, copper and copper alloys, aluminum, galvanized metals, polypropylene, PVC, polysulfone, kynar, and all elastomers. This product may be fed using Betz PaceSetter® system or Betz System 13000®. When using chemical feed pumps, make sure liquid side components are constructed of or coated with compatible materials.

PRINTED IN USA

BETZ LABORATORIES,INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19053
BETZ MATERIAL SAFETY DATA SHEET
EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : SLIMICIDE C-107

EFFECTIVE DATE:14-AUG-92
DATE PRINTED: 14-AUG-92

PRODUCT APPLICATION : WATER-BASED MICROBIAL CONTROL AGENT.

-----SECTION 1----------HAZARDOUS INGREDIENTS----------

INFORMATION ON PHYSICAL HAZARDS,HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

GLUTARALDEHYDE***CAS# 111-30-8; SKIN,EYE AND RESPIRATORY IRRITANT,POTENTIAL SKIN SENSITIZER;ABSORBED;TOXIC(ORAL INGESTION); PEL:0.2PPM-C;TLV:0.2PPM-C;

-----SECTION 2----------TYPICAL PHYSICAL DATA----------

PH: AS IS(APPROX.) 3.5	ODOR: SLIGHT ACID
FL.PT.(DEG.F):> 200 P-M(CC)	SP.GR.(70F): 1.120
VAPOR PRESSURE(mmHG): 14.7	VAPOR DENSITY(AIR=1): > 1.00
VISC cps70F: 28	%SOLUBILITY(WATER): 100.0
EVAP RATE: < 1.00(ETHER=1)	APPEARANCE: COLORLESS
PHYSICAL STATE:LIQUID	FREEZE POINT(DEG.F): 1.00

-----SECTION 3----------REACTIVITY DATA----------

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSTION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT : SLIMICIDE C-107

-----SECTION 7----------SPECIAL PROTECTIVE EQUIPMENT----------

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134.USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE RESPIRATOR WITH ORGANIC VAPOR,HIGH EFFICIENCY PARTICULATE CARTRIDGES

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE RUBBER GLOVES,RUBBER BOOTS & CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES.FACE SHIELD

-----SECTION 8----------STORAGE AND HANDLING PRECAUTIONS----------

STORAGE INSTRUCTIONS***

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION.STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

ACIDIC.CORROSIVE(SKIN/EYES).DO NOT MIX WITH ALKALINE MATERIAL.

****

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

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APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS:D002=CORROSIVE(SKIN)

...DOT HAZARD/UN#/ER GUIDE# IS :CORROSIVE TO SKIN/UN1760/#60

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:NONE

...SARA SECTION 302 CHEMICALS:NONE

...SARA SECTION 313 CHEMICALS:NONE

...SARA SECTION 312 HAZARD CLASS:IMMEDIATE(ACUTE);DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 3; FIRE - 1; REACTIVITY - 0; SPECIAL - CORR; PE - X

NALCO CHEMICAL COMPANY
ONE NALCO CENTER • NAPERVILLE, ILLINOIS 60563-1198 • AREA 708-305-1000

January 31, 1995

Mr. Jerome S. Fields
Sr. Environmental Scientist - Nuclear
Pennsylvania Power and Light Company
Susquehanna Steam Electric Station
Allentown, PA 18101

Dear Mr. Fields:

Nalco gives permission to Pennsylvania Power and Light Company to photocopy Nalco MSDSs for regulatory review and approval.

Sincerely,

Ricky Stackhouse, Ph.D.
Manager, Product Safety