

Exelon Nuclear
Limerick Generating Station
P.O. Box 2300
Pottstown, PA 19464

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NPDES PA 00051926

January 20, 2006

Ms. Jennifer Fields, P.E.
Chief, Permits Section
Water Management Program
Department of Environmental Protection
2 East Main St.
Norristown, PA 19401

Subject: Spray Pond Additive for Antimicrobial Control

Reference: LGS Industrial Waste NPDES Permit # PA00051926

Dear Ms. Fields:

Limerick Generating Station is requesting the addition of GE Betz Spectrus NX1103, an EPA approved broad spectrum antimicrobial agent, to the list of approved chemicals. It would replace GE Betz Spectrus CT 1300, a material used for periodic biocide treatment of Spray Pond cooled equipment. Testing has shown that the CT1300 material, which has been used for over ten years, is no longer an effective biocide unless applied at a concentration of ≥ 75 ppm. NX1103 would be applied at 30 ppm during a 75-minute biocide treatment twice per week. Each treatment, consisting of 11.25 pounds of product, would combine with 375,000 gallons of the spray pond inventory of 29,000,000 gallons, or 1.29% of the Spray Pond total volume.

NX1103 would also be applied, on average, 1.5 times per week at 30 ppm, for a 75-minute biocide treatment of the RHR Service Water system. Each treatment, consisting of 22.5 pounds of product, would combine the biocide with 750,000 gallons of the Spray Pond inventory, or 2.57% of the Spray Pond total volume. This would yield an addition rate of about 45 pounds of NX1103 to the spray pond per week. Total usage rates for NX1103 applications would be as follows: maximum daily - 120 lbs/day, based on both ESW and all four RHR systems requiring treatment on the same day; and average monthly - 20 lbs/day, based on weekly ESW treatments and twice per month treatment of all RHR heat exchangers.

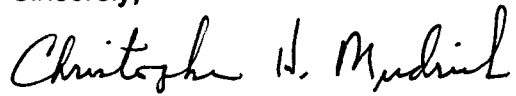
The treatments return to the spray pond and mix with the water inventory of 29 million gallons. The average overflow from the spray pond is approximately 20 gallons per minute, which combines with average Cooling tower blowdown of 6000 gpm.

After implementing NX1103 usage, two applications per year of CT1300 would still be required to treat for Asiatic clams in the ESW/RHR systems. Each application lasts for 12 hours, and typically injects 25 pounds of CT1300 into the Spray Pond.

Should you have any questions regarding this information, please contact Bob Alejnikov at 610-718-2513. Thank you for your cooperation in this matter.

C 001

Sincerely,

A handwritten signature in black ink, reading "Christopher H. Mudrick". The signature is written in a cursive style with a large, stylized 'C' and 'M'.

Christopher H. Mudrick
Plant Manager-LGS
Exelon Generation Company, LLC

Attachment: Material Safety Data Sheet- GE Betz Spectrus NX1103

cc: S. Collins, Region 1 Administrator, USNRC
S. Hansell, Resident Inspector, USNRC
Document Control Desk, USNRC, Wash. DC

bcc: R. DeGregorio – GML 5-1
C. Mudrick – GML 5-1
T. Tierney – SSB 2-3
M. Audette – SSB 2-3
R. Alejikov – SSB 2-3
T. Siglin – KSA 3N
R. Kreider – SSB 2-4
N. Chand – SSB 3-2



GE Betz

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

Material Safety Data Sheet

Issue Date: 22-MAR-2002

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

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

SPECTRUS NX1103

PRODUCT APPLICATION AREA:

WATER-BASED MICROBIAL CONTROL AGENT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

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

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
13590-97-1	DODECYLGUANIDINE HYDROCHLORIDE (DGH) Corrosive
6317-18-6	METHYLENE BIS(THIOCYANATE) Corrosive (eyes); toxic (by ingestion); irritant (skin); potential sensitizer (skin)
67-63-0	ISOPROPYL ALCOHOL (IPA) Flammable liquid; chronic overexposure may cause liver and kidney toxicity

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
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7732-18-5
25322-68-3

WATER
POLYETHYLENE GLYCOL

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

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

DOT hazard: Combustible liquid

Emergency Response Guide #27

Odor: Slight Pungent; Appearance: Yellow, Liquid

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

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

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

ACUTE EYE EFFECTS:

Corrosive 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 severe gastrointestinal irritation.

TARGET ORGANS:

Prolonged or repeated exposures may cause primary irritant dermatitis and/or skin sensitization.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

Inhalation of vapors/mists/aerosols cause eye, nose, throat and lung irritation. Skin contact may cause redness, itching, dermatitis, or skin sensitization.

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:

Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get immediate 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:

120F 49C SETA(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.

7 HANDLING & STORAGE

HANDLING:

Combustible. Corrosive to skin and/or eyes.

STORAGE:

Keep containers closed when not in use. Keep away from flames or sparks. Bond containers during filling or discharge when performed at temperatures at or above the product flash point.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

DODECYLGUANIDINE HYDROCHLORIDE (DGH)

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

METHYLENE BIS(THIOCYANATE)

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

ISOPROPYL ALCOHOL (IPA)

PEL (OSHA): 400 PPM(500PPM-STEL)

TLV (ACGIH): 400 PPM(500PPM-STEL)

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 and HEPA cartridges.

SKIN PROTECTION:

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

EYE PROTECTION:

splash proof chemical goggles, face shield

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav. (70F, 21C)	1.095	Vapor Pressure (mmHG)	24.0
Freeze Point (F)	< -30	Vapor Density (air=1)	> 1.00
Freeze Point (C)	< -34		
Viscosity(cps 70F, 21C)	64	% Solubility (water)	100.0
Odor	Slight Pungent		
Appearance	Yellow		
Physical State	Liquid		
Flash Point	SETA(CC)	120F	48C
pH As Is (approx.)	3.2		
Evaporation Rate (Water=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: 668 mg/kg
NOTE - Rat oral LD50: 520 mg/kg in an earlier study
Dermal LD50 RABBIT: >2,000 mg/kg
NOTE - Rabbit Dermal LD50: >16,000 mg/kg in an earlier study
Inhalation LC50 RAT: >2.90 mg/L/hr
NOTE - Maximum achievable concentration
Skin Irritation Score RABBIT: 4.9
NOTE - Skin Irritation Score: 2.46 in an earlier study
Eye Irritation Score RABBIT: 102
NOTE - Irreversible; 21 day test, max.ave. score day 2
Skin Sensitization G.PIG: POSITIVE
NOTE - Magnusson & Kligman method

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Acute Bioassay
LC50= 2.7; No Effect Level= 1.5 mg/L
Daphnia magna 48 Hour Static Renewal Bioassay
LC50= .26; No Effect Level= .14 mg/L
Fathead Minnow 96 Hour Static Renewal Bioassay
LC50= 1.1; No Effect Level= .36 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay
LC50= 2.7; No Effect Level= 1.33 mg/L

BIODEGRADATION

BOD-28 (mg/g): 518
BOD-5 (mg/g): 93
COD (mg/g): 1424
TOC (mg/g): 418

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- 121

FOOD AND DRUG ADMINISTRATION:

The ingredients in this product are approved by FDA under 21 CFR 176.300.

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

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	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
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MSDS status:	22-JAN-1998		** NEW **
	01-JUN-1998	8	22-JAN-1998
	12-JAN-1999	3, 7	01-JUN-1998
	06-APR-1999	1	12-JAN-1999
	22-MAR-2002	4	06-APR-1999

Spectrus™ NX1103 Microbiological Control Agent

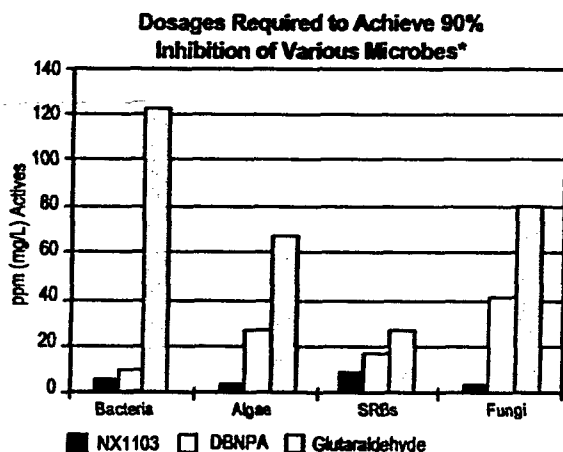
- Broad spectrum antimicrobial
- Proprietary blend minimizes microbial resistance
- FDA Approved (CFR 176.180 and 176.300)
- USDA Approved (G-5, G-7)
- Approved for sale in California

DESCRIPTION AND USE

Spectrus™ NX1103 is EPA approved for control of bacteria, algae, and fungi in a variety of industrial water-based systems. Spectrus NX1103 consists of a proprietary blend of 10% dodecylguanidine hydrochloride (DGH) and 5% methylene bis (thiocyanate) [MBT].

Spectrus NX1103 is approved for use in open recirculating cooling systems, heat exchange systems and evaporative condensers.

Control of microbiological populations in industrial water systems is essential to prevent biofouling. In cooling systems, biofouling of heat exchange equipment and tower fill reduces heat transfer efficiency and can force unscheduled shutdowns and extended turnarounds, leading to lost production. Equipment can also be damaged as a result of microbiologically influenced corrosion (MIC) associated with biofouling.



(*Based on lab studies using pure cultures; lowest dosage indicates superior performance.)

Consequently, biofouling must be prevented in order for operating units to avoid such events and achieve profitability goals.

Compared to single active biocide products (see Chart), the combination of surface active agent (DGH) and metabolic inhibitor (MBT) in Spectrus NX1103 work together to provide faster microbial control at lower dosages. The blend of actives in Spectrus NX1103 also limits development of resistant microbial populations and reduces the need to alternate products to maintain effectiveness.

In addition to cooling systems, Spectrus NX1103 can be used to control microbes in influent water systems, air washers, pasteurizers, and water-based scrubbers. See the Spectrus NX1103 product label for a complete listing of approved end uses.

TREATMENT AND FEEDING REQUIREMENTS

Correct treatment levels and frequency of Spectrus NX1103 addition depend on many factors. These include, but are not limited to, system cleanliness, types of microbes, nutrient concentrations, temperature, pH, retention time, and other system operating characteristics. Consult the product label for general dosage guidelines. Microbiological monitoring is recommended to evaluate product requirements. Consult your GE Betz representative for technical advice on your specific application.

In all cases, this product must be applied in accordance with use instructions on the Spectrus NX1103 label.

Feed point - Apply Spectrus NX1103 to a point in the system where turbulence and flow patterns assure good mixing with the water being treated.

Dilution: This blended product is best fed neat (undiluted) from the storage container.

Compatible Materials - Spectrus NX1103 is compatible with the following materials of construction: 316L Stainless; Hastalloy 825; High Density Cross-linked Polyethylene; Teflon; PVC; Buna N; Buna S; Ethylene Propylene Resin.

Avoid: 304 and 316, Stainless; High Density Polypropylene; Litharge Viton.

This product may be fed using the PaceSetter™ Control system.

GENERAL PROPERTIES

Physical properties of Spectrus NX1103 are shown on the Material Safety Data Sheet, a copy of which is available on request.

PACKAGING INFORMATION

Spectrus NX1103 is a liquid blend available in a wide-variety of containers and delivery methods, including GE Betz's ChemSure™ Drumless Delivery Services.

STORAGE

Protect from extreme temperatures. Store in a cool, ventilated location. Keep containers closed when not in use. Store away from oxidizers.

SAFETY PRECAUTIONS

Use of eye protection (goggles and face shield) and gauntlet-type rubber gloves is required when handling this product. See section 7 of the MSDS for additional information on recommended personal protective equipment.

GENERAL INFORMATION

EPA Registration Number 3876-121