Fields of Opportunities

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
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DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

September 13, 2013

Mark Mathias, Environmental Lead
Monsanto Company
P.O. Box 473
Muscatine, IA 52761

Subject: One-time approval for discharge of cooling tower biocide
Monsanto - Facility # 6-70-00-1-02

Dear Mr. Mathias:

This letter follows our discussion of the above issue. You have provided me with the MSDS for "Spectrus NX 1100" and described the situation. As I understand it, a leak in the cooling tower is being repaired and once repaired (Sunday afternoon, 9-15-13) the biocide will be added to the cooling tower. Five gallons of biocide will be added to a 100,000 gallon basin for an initial dose of 50 ppm. The biocide will be circulated through the cooling tower for 24 hours and then start to eliminate it via blowdown at a rate of 120 gpm. Normally this would be discharged to the Mississippi River, but in this case will be diverted to Monsanto's wastewater treatment plant (WWTP).

The cooling tower blowdown will first go to a 13 MG equalization tank ahead of the WWTP. Retention time through this tank and the treatment plant is about a week. You have reported that the half life of this product is 24 hours. Given the amount of time and amount of dilution going through the WWTP, it is unlikely more than a trace amount would be present in the WWTP discharge. You also reported that the chemical supplier will be able to test for this compound. Therefore, you may take this letter as approval of the one-time discharge of the Spectrus NX 1100 via the procedure described above.

The other issue we discussed is when you will be able to switch the cooling tower blowdown from the WWTP back to the normal Mississippi River outfall. In the lack of better information, I will require the most stringent value from the aquatic toxicology information in the MSDS. This would be the "no effect" level for Ceriodaphnia, which is 0.63 mg/l. However, you may provide me with more developed information next week.

If you have any questions, feel free to contact me at this office.

Sincerely,

FIELD SERVICES & COMPLIANCE BUREAU

Paul Brandt

Paul Brandt
Environmental Specialist Senior

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xc: DNR Records Section, DNR, Des Moines
File - industrial

GE
Water & Process Technologies

Material Safety Data Sheet

Issue Date: 06-SEP-2012
Supercedes: 21-OCT-2011

SPECTRUS NX1100

1 Identification

Identification of substance or preparation
SPECTRUS NX1100

Product Application Area
Biocide

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: 06-SEP-2012

2 Hazard(s) identification

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EMERGENCY OVERVIEW

DANGER

Corrosive to skin. Corrosive to the eyes. Mists/aerosols cause irritation to the upper respiratory tract.

DOT hazard: Corrosive to skin/steel
Odor: None; Appearance: Colorless To Yellow 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
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POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; Corrosive to skin.

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 the gastrointestinal tract.

TARGET ORGANS:
No evidence of potential chronic effects.

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%)
52-51-7	2-BROMO-2-NITROPROPANE-1,3-DIOL Toxic (by ingestion); skin irritant; eye damage; respiratory tract irritant	5-10
10377-60-3	MAGNESIUM NITRATE Oxidizer; irritant (eyes and skin)	1-5
55965-84-9	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE MIXTURE WITH 2-METHYL-4-ISOTHIAZOLIN-3-ONE Corrosive (eyes and skin); Skin sensitizer	1-5
7786-30-3	MAGNESIUM CHLORIDE Potential irritant	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:
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 2-8 fluid ounces (60-240 mL) of milk or water.

PEL (OSHA): LIMITS HAVE NOT BEEN ESTABLISHED BY US OSHA.
TLV (ACGIH): LIMITS HAVE NOT BEEN ESTABLISHED BY ACGIH.

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE MIXTURE WITH
2-METHYL-4-ISOTHIAZOLIN-3-ONE
PEL (OSHA): LIMITS HAVE NOT BEEN ESTABLISHED BY US OSHA.
TLV (ACGIH): LIMITS HAVE NOT BEEN ESTABLISHED BY ACGIH.

MAGNESIUM CHLORIDE
PEL (OSHA): LIMITS HAVE NOT BEEN ESTABLISHED BY US OSHA.
TLV (ACGIH): LIMITS HAVE NOT BEEN ESTABLISHED BY ACGIH.

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

EYE PROTECTION:
splash proof chemical goggles, face shield

9 Physical and chemical properties

Spec. Grav.(70F,21C)	1.107	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	24	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-4		
Viscosity(cps 70F,21C)	10	% Solubility (water)	100.0

Odor		None
Appearance		Colorless To Yellow 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

CHEMICAL STABILITY:
Stable under normal storage conditions.
POSSIBILITY OF HAZARDOUS REACTIONS:
Contact with strong bases may cause a violent reaction releasing heat. Contact with water reactive compounds may cause fire or explosion.
INCOMPATIBILITIES:
May react with strong reducing agents.
DECOMPOSITION PRODUCTS:
oxides of carbon, nitrogen, and sulfur; hydrogen chloride; and hydrogen bromide

11 Toxicological information

Oral LD50 RAT:	1030 mg/kg
NOTE - GHS Category 4	
Dermal LD50 RABBIT:	>2000 mg/kg
NOTE - GHS Category 5	
Skin Irritation Score RABBIT:	CORROSIVE
NOTE - GHS Category 1	
Eye Irritation Score RABBIT:	CORROSIVE
NOTE - GHS Category 1	
Skin Sensitization G.PIG:	NEGATIVE

12 Ecological information

AQUATIC TOXICOLOGY

Ceriodaphnia 48 Hour Static Renewal Bioassay
LC50= 4.7; No Effect Level= .63 mg/L
Daphnia magna 48 Hour Static Renewal Bioassay
LC50= 5; No Effect Level= 2.5 mg/L
Fathead Minnow 96 Hour Static Renewal Bioassay
LC50= 3.5; No Effect Level= 1.8 mg/L
Mysid Shrimp 48 Hour Static Renewal Bioassay
LC50= 40.5; No Effect Level= 18 mg/L
Rainbow Trout 96 Hour Static Renewal Bioassay
LC50= 7.2; No Effect Level= 3.1 mg/L
Sheepshead Minnow 96 Hour Static Renewal Bioassay
LC50= 26.7; No Effect Level= 15.5 mg/L

BIODEGRADATION

BOD-28 (mg/g): 4
BOD-5 (mg/g): 2
COD (mg/g): 78
TOC (mg/g): 29

13 Disposal considerations