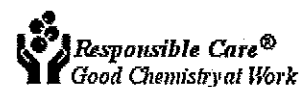


TOWERBROM(R) 60M GRANULES
M31040_NA_US

REVISION DATE: Feb 22 2008

OxyChem[®]



MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY INFORMATION

Occidental Chemical Corporation
5005 LBJ Freeway, Suite 2200
P.O. Box 809050
Dallas, Texas 75380-9050

24 HOUR EMERGENCY TELEPHONE:

1-800-733-3665 or 1-972-404-3228 (U.S.);
32.3.575.55.55 (Europe);
1800-033-111 (Australia)

TO REQUEST AN MSDS:

MSDS@oxy.com or 1-972-404-3245

CUSTOMER SERVICE:

1-800-752-5151 or 1-972-404-3700

MSDS NUMBER: M31040

SUBSTANCE: TOWERBROM(R) 60M GRANULES

PRODUCT USE: algaecide, microbiocide/microbiostat, disinfectant, bactericide, fungicide

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2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS CLASSIFICATION:

Acute toxicity, Category 3

GHS SYMBOL:

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GHS SIGNAL WORD: DANGER

GHS HAZARD STATEMENT:

Toxic if inhaled

Harmful if swallowed

May be harmful in contact with skin

EMERGENCY OVERVIEW:

COLOR: white

PHYSICAL FORM: granules

ODOR: bromine odor

SIGNAL WORD: DANGER

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE. MAY CAUSE BURNS TO MOIST SKIN IF NOT PROMPTLY REMOVED. HARMFUL IF SWALLOWED OR ABSORBED THROUGH THE SKIN. IRRITATING TO NOSE AND THROAT.

PHYSICAL HAZARDS: Strong oxidizer.

ECOLOGICAL HAZARDS: This material is toxic to fish and aquatic organisms.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Do not breathe dust, vapor or spray mist. Wear goggles, faceshield or safety glasses. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

POTENTIAL HEALTH EFFECTS:

INHALATION:

This material in the form as sold is not expected to produce respiratory effects. Particles of respirable size are generally not encountered. The respirable fraction is typically less than 0.1% by weight. If ground or otherwise in a powdered form, effects similar to a corrosive substance may occur. May cause severe irritation of the respiratory tract with coughing, choking, pain and possibly burns of the mucous membranes. If significant or prolonged exposure occurs, pulmonary edema may develop, either immediately or more often within a period of 5-72 hours. The symptoms may include tightness in the chest, dyspnea, frothy sputum, cyanosis, and dizziness. Physical findings may include moist rales, low blood pressure and high pulse pressure. Severe cases may be fatal.

SKIN CONTACT:

This material is corrosive to the skin. Direct contact with wet material or moist skin may cause severe irritation, pain, and possibly burns. Dry material is less irritating than wet material. This material is not a skin sensitizer based on studies with guinea pigs.

EYE CONTACT:

This material is corrosive to the eye. Direct contact may cause severe irritation, pain and burns, possibly severe, and permanent damage including blindness. The degree of injury depends on the concentration and duration of contact.

INGESTION:

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Ingestion may cause immediate pain and severe burns of the mucous membranes. There may be discoloration of the tissues. Swallowing and speech may be difficult at first and then almost impossible. The effects on the esophagus and gastrointestinal tract may range from irritation to severe corrosion. Edema of the epiglottis and shock may occur. Acute ingestion exposure may also cause CNS depression, coma, hypertension, tachycardia, and respiratory distress.

TARGET ORGANS: cardiovascular system, kidneys, bladder

CHRONIC EFFECTS:

Based on animal studies, exposure to concentrations of monosodium cyanurate at the solubility limit may cause cardiovascular, kidney and urinary bladder effects. Depending on the concentration and duration of exposure, repeated or prolonged inhalation exposure may cause inflammatory and ulcerative changes in the upper respiratory tract. Although not a likely route of exposure, prolonged ingestion exposure may cause behavioral changes, irritability, headache, confusion, anorexia, slurred speech, and lethargy.

CARCINOGEN STATUS:

OSHA: No

NTP: No

IARC: No

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT: SODIUM DICHLORO-S-TRIAZINETRIONE

CAS NUMBER: 2893-78-9

PERCENTAGE: 88-90

COMPONENT: SODIUM BROMIDE

CAS NUMBER: 7647-15-6

PERCENTAGE: 6-8

COMPONENT: SODIUM CHLORIDE

CAS NUMBER: 7647-14-5

PERCENTAGE: 0.1-1.5

COMPONENT: WATER

CAS NUMBER: 7732-18-5

PERCENTAGE: 0.5-3

4. FIRST AID MEASURES

INHALATION: Move person to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a

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trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing and shoes before reuse. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. If heated by outside source to temperatures above 240 C (464 F), this product will undergo self-sustaining decomposition with the evolution of noxious gases but no visible flame. Wet material may generate bromine or nitrogen trichloride, an explosion hazard.

EXTINGUISHING MEDIA: Flood with water. Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents.

FIRE FIGHTING: Consider evacuation of personnel located downwind. Keep unnecessary people away, isolate hazard area and deny entry. Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Wear NIOSH approved positive-pressure self-contained breathing apparatus in pressure-demand mode. Material which appears undamaged except for being damp on the outside, should be opened and inspected immediately. DO NOT attempt to reseal contaminated drums. Damp material should be neutralized to a non-oxidizing state. Contact OxyChem for instructions for handling and disposal of damp material.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive

SENSITIVITY TO STATIC DISCHARGE: Not sensitive

FLASH POINT: Not applicable

HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition or combustion products: chlorine, bromine, nitrogen, nitrogen trichloride, cyanogen chloride, oxides of carbon, phosgene

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6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Spills should be cleaned up as soon as possible. Keep unnecessary people away, isolate hazard area and deny entry. DO NOT add water to spilled materials. DO NOT use floor sweeping compounds to clean up spills. Sweep and scoop spilled material into clean, dedicated equipment. Every attempt should be made to avoid mixing spilled material with other chemicals or debris when cleaning up. DO NOT attempt to reseal contaminated drums. DO NOT transport wet or damp material. Damp material should be neutralized to a non-oxidizing state. Contact OxyChem for instructions for handling and disposal of damp material. Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. (NFPA Oxidizer Class 3.) Do not allow water to get in container. If liner is present, tie after each use. Keep container tightly closed and properly labeled. Store containers on pallets. Keep away from food, drink and animal feed. Keep separated from incompatible substances.

HANDLING: Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or dust when opening container. Avoid creation of dust. Wash thoroughly after handling. Never add water to this product. Always add product to large quantities of water. Use clean, dry utensils. Do not add the product to any dispensing device containing residuals of other products.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

TOWERBROM(R) 60M GRANULES:

Bromine may be found in slight amounts in the head space of containers of Towerbrom® Products.

SODIUM DICHLORO-S-TRIAZINETRIONE:

0.5 mg/m³ recommended TWA 8 hour(s) (internal Occupational Exposure Limit)

BROMINE:

0.1 ppm (0.7 mg/m³) OSHA TWA

0.3 ppm (2 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

0.1 ppm ACGIH TWA

0.2 ppm ACGIH STEL

BIOLOGICAL LIMIT VALUES:

TOWERBROM(R) 60M GRANULES:

No biological limit value(s) available.

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VENTILATION: Use only in well ventilated areas. Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear chemical safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear protective clothing to minimize skin contact. When potential for contact with dry material exists, wear disposable coveralls suitable for dust exposure, such as Tyvek®. Contaminated clothing should be removed and laundered before reuse.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: butyl rubber, natural rubber, neoprene, nitrile, polyvinyl chloride (PVC), Tyvek®

RESPIRATOR: A NIOSH approved respirator with N95 (dust, fume, mist) filters may be permissible under certain circumstances.

The added protection of a full face piece respirator is required when visible dusty conditions are encountered and/or eye irritation is a potential.

Acid gas cartridges with N95 filters are required when fumes or vapor may be generated.

A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant the use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid

COLOR: white

PHYSICAL FORM: granules

ODOR: bromine odor

BOILING POINT: Not applicable

MELTING POINT: decomposes without melting

FLASH POINT: Not applicable

DECOMPOSITION POINT: 486 F (252 C)

VAPOR PRESSURE: Not available

VAPOR DENSITY: Not applicable

SPECIFIC GRAVITY (water=1): Not applicable

BULK DENSITY: 61-65 lbs/ft³ (loose)

WATER SOLUBILITY: Not available

PH: 6-7 @ 25 C (1% solution)

VOLATILITY: Not applicable

ODOR THRESHOLD: Not available

EVAPORATION RATE: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

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10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Do not get water inside container. Wet material may generate bromine or nitrogen trichloride, an explosion hazard. Avoid contact with easily oxidizable organic material.

INCOMPATIBILITIES: acids, ammonia, bases, floor sweeping compounds, calcium hypochlorite, reducing agents, organic solvents and compounds

HAZARDOUS DECOMPOSITION:

Thermal decomposition or combustion products: chlorine, bromine, nitrogen, nitrogen trichloride, cyanogen chloride, oxides of carbon, phosgene

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

TOWERBROM(R) 60M GRANULES:

IRRITATION DATA: PRIMARY EYE IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

PRIMARY SKIN IRRITATION: Severe Irritation, (rabbit, 4 hr);

TOXICITY DATA: 710 mg/kg oral-rat LD50; >2000 mg/kg skin-rabbit LD50; 0.60 mg/L/4 hour(s) inhalation-rat LC50; **CHRONIC EXPOSURE:** Monosodium cyanurate was administered via drinking water to rats for 104 weeks at concentrations of 0, 400, 1200, 2400, and 5375 ppm (solubility limit). No compound-related effects on body weights, clinical signs of toxicity or food or water consumption were noted during the study. An increased incidence of gross lesions in the urinary tract, calculi in the kidney and lesions in the heart were observed in males receiving the highest dose level of 5375 ppm (solubility limit). The health effects seen in this study were due to precipitation of the test substance in the urinary tract when the test substance was fed at the solubility limit. Adverse health effects were not seen at lower doses where precipitation did not occur. **MUTAGENIC DATA:** Not mutagenic in 5 salmonella strains and 1 E. coli strain with or without mammalian microsomal activation. **REPRODUCTIVE EFFECTS DATA:** There are no known or recorded effects on reproductive function or fetal development. A 7 month diet rat study with sodium bromide followed with a 3 month control diet in the reversibility group showed complete infertility at the highest dose. No treatment-related effects were observed in reproductive performance, viability and bodyweight of the offspring in the second and third generations. Results of the reversibility group showed clearly that the effects of bromide on reproduction are reversible.

CARCINOGEN STATUS: THIS SUBSTANCE IS NOT A KNOWN CARCINOGEN.

12. ECOLOGICAL INFORMATION

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ECOTOXICITY DATA:

FISH TOXICITY: Sodium Dichloroisocyanurate/Sodium Bromide Formulation: This material is believed to be highly toxic to aquatic life. 0.4 mg/L 48 hour(s) LC50 Fathead Minnow; 1.5 mg/L 96 hours LC50 Inland Silverside;

INVERTEBRATE TOXICITY: Sodium Dichloroisocyanurate/Sodium Bromide Formulation: 1.35 mg/L 48 hour(s) LC50 Daphnia magna; 2.4 mg/L 96 hours LC50 Mysid Shrimp

ALGAL TOXICITY: 0.3 mg/L 96 hour(s) EC50 Selenastrum

FATE AND TRANSPORT:

BIODEGRADATION: This material is subject to hydrolysis. Cyanuric acid produced by hydrolysis is biodegradable.

PERSISTENCE: This material is believed not to persist in the environment. Free available halogen is rapidly consumed by reaction with organic and inorganic materials to produce chloride and bromide ions. The stable degradation products are chloride and bromide ions and cyanuric acid.

BIOCONCENTRATION: Trichloroisocyanuric acid hydrolyzes in water liberating chlorine and cyanuric acid. These products are not bioaccumulative.

OTHER ECOLOGICAL INFORMATION: This material 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 into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of EPA.

13. DISPOSAL CONSIDERATIONS

Use or reuse if possible. This material is a registered pesticide. Dispose in accordance with all applicable regulations. Do not put product, spilled product, or filled or partially filled containers into the trash or waste compactor. Contact with incompatible materials could cause a reaction and fire. DO NOT transport wet or damp material. Damp material should be neutralized to a non-oxidizing state. Contact OxyChem for instructions for handling and disposal of damp material. See product label for container disposal information. May be subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Dichloroisocyanuric acid salts mixture

ID NUMBER: UN2465

HAZARD CLASS OR DIVISION: 5.1

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PACKING GROUP: II
LABELING REQUIREMENTS: 5.1

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Dichloroisocyanuric acid salts mixture

UN NUMBER: UN2465

CLASS: 5.1

PACKING GROUP/RISK GROUP: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: Yes

FIRE: Yes

REACTIVE: Yes

SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

OTHER U.S. REGULATIONS: Federal Insecticide, Fungicide and Rodenticide Act (FIFRA): Registered pesticide (40 CFR 152).

STATE REGULATIONS:

California Proposition 65: Not regulated.

NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:

REPORTING REQUIREMENT:

SODIUM DICHORO-S-TRIAZINETRIONE 2893-78-9 88-90%

SODIUM BROMIDE 7647-15-6 6-8%

SODIUM CHLORIDE 7647-14-5 0.1-1.5%

SPECIAL HEALTH HAZARD SUBSTANCE LIST:

SODIUM DICHORO-S-TRIAZINETRIONE 2893-78-9 88-90% (Reactive)

PENNSYLVANIA RIGHT TO KNOW:

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REPORTING REQUIREMENT:

SODIUM DICHLORO-S-TRIAZINETRIONE 2893-78-9 88-90%
SODIUM BROMIDE 7647-15-6 6-8%

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Material is regulated as a pesticide, therefore is not regulated under WHMIS.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): All components of this product are listed on either the DSL or the NDSL.

16. OTHER INFORMATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=0 REACTIVITY=2

HMIS RATINGS (SCALE 0-4): HEALTH=3* FLAMMABILITY=0 REACTIVITY=2

This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.
Rated using 2nd Edition HMIS Instructions.

MSDS SUMMARY OF CHANGES

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
2. HAZARDS IDENTIFICATION
3. COMPOSITION, INFORMATION ON INGREDIENTS
4. FIRST AID MEASURES
5. FIRE FIGHTING MEASURES
8. EXPOSURE CONTROLS, PERSONAL PROTECTION
9. PHYSICAL AND CHEMICAL PROPERTIES
11. TOXICOLOGICAL INFORMATION
12. ECOLOGICAL INFORMATION
13. DISPOSAL CONSIDERATIONS
15. REGULATORY INFORMATION

Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.

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