Tributyltin bromide

sc-229554

Material Safety Data Sheet

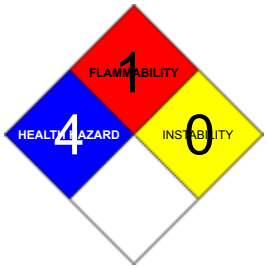
Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Tributyltin bromide

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C12-H27-Br-Sn, (CH3(CH2)3)3SnBr, "stannane, tributylobromo-", "tin, tri-n-butyl-, bromide", "tributylstannium bromide", "tri-n-butyltin bromide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability	1		
Toxicity	4		
Body Contact	2		
Reactivity	1		
Chronic	3		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Harmful in contact with skin.
Toxic if swallowed.
Toxic danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
Irritating to eyes and skin.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
■ Subchronic exposures to mono-, di- and tri- and tetra-substituted organotin compounds may elicit toxic response in the central nervous, immune and renal systems, the liver and bile duct and the skin.
■ Some trialkyl organotin compounds cause damage to the central nervous system, consisting of swelling through the white matter.
Lighter functional groups cause a more potent response.

EYE

■ This material can cause eye irritation and damage in some persons.
■ Organotin compounds may cause clouding of the cornea, strong eye irritation, and inflaming the conjunctiva even after immediate lavage.

SKIN

■ Skin contact with the material may be harmful; systemic effects may result following absorption.
■ This material can cause inflammation of the skin oncontact in some persons.
■ The material may accentuate any pre-existing dermatitis condition.
■ Irritation following contact with organotin compounds may be delayed.
In certain cases these may cause burns and inflammation of the skin.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
■ Trialkyl organotin compounds are well absorbed through the skin; healing of lesions it causes is slow and skin burns result.
The lower abdomen, thighs and groin are most often affected due to absorption by clothing.

INHALED

■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severely damaging effects to the health of the individual.
Relatively small amounts absorbed from the lungs may prove fatal.
■ There is some evidence to suggest that the material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary oedema.
■ The acute toxicity of inhaled organotin compounds resembles that found by other means of exposure.

CHRONIC HEALTH EFFECTS

■ Toxic danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. This has been demonstrated via both short- and long-term experimentation.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby.
Tributyltins and dibutyltins affect hormone function and reproduction. They also damage the nerves and suppress the body's immune system, making one fall ill easily and frequently. They may also cause cancers. Several organotin compounds also cause reproductive and developmental effects. They are classified as persistent, bioaccumulative and toxic.
Chronic intoxication with ionic bromides, historically, has resulted from medical use of bromides but not from environmental or occupational exposure; depression, hallucinosis, and schizophreniform psychosis can be seen in the absence of other signs of intoxication. Bromides may also induce sedation, irritability, agitation, delirium, memory loss, confusion, disorientation, forgetfulness (aphasias), dysarthria, weakness, fatigue, vertigo, stupor, coma, decreased appetite, nausea and vomiting, diarrhoea, hallucinations, an acne like rash on the face, legs and trunk, known as bronchoderma (seen in 25-30% of case involving bromide ion), and a profuse discharge from the nostrils (coryza).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
tributyltin bromide	1461-23-0	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.

EYE

If this product comes in contact with the eyes

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.

SKIN

If skin contact occurs

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

NOTES TO PHYSICIAN

■ For acute or short term repeated exposures to organic tin compounds

- Severe exposure results in tinnitus, deafness, memory loss, psychosis, coma, disorientation and respiratory depression after a latent period of 1-3 days.
- Permanent neurologic sequelae include extrapyramidal hyperkinesia.
- The material produces erythematous skin lesions.

- Management is primarily supportive.

Scanty animal data indicate that BAL may be useful against dialkyl but not trialkyl organotin compounds. D-penicillamine is thought to be inactive.
GOSSELIN, SMITH & HODGE Clinical Toxicology of Commercial Products, 5th Ed<.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG)	Not available
Upper Explosive Limit (%)	Not available
Specific Gravity (water=1)	1.338
Lower Explosive Limit (%)	Not available

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.

When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include carbon dioxide (CO2), hydrogen bromide, metal oxides, other pyrolysis products typical of burning organic material.
May emit clouds of acrid smoke.
May emit poisonous fumes.

FIRE INCOMPATIBILITY

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- DO NOT allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

RECOMMENDED STORAGE METHODS

- Glass container is suitable for laboratory quantities
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

<. All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

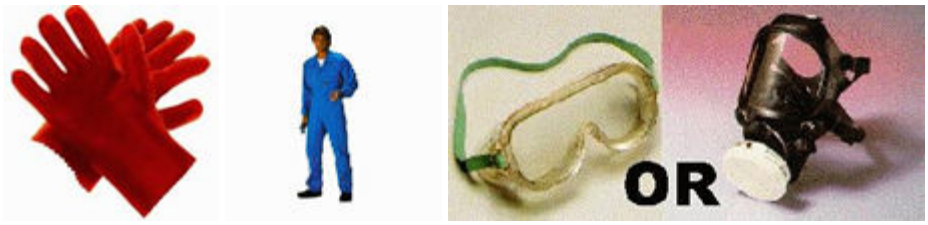
EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
US - Alaska Limits for Air Contaminants	tributyltin bromide (Tin oxide (as Sn))		2						
Canada - Northwest Territories Occupational Exposure Limits (English)	tributyltin bromide (Tin, inorganic compounds, except SnH and SnO (as Sn))		2		4				
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	tributyltin bromide (Tin, inorganic compounds, (as Sn) (except SnH4 and SnO2))	-	2	-	4				
US - Minnesota Permissible Exposure Limits (PELs)	tributyltin bromide (Tin, organic compounds (as Sn))		0.1						
US NIOSH Recommended Exposure Limits (RELs)	tributyltin bromide (Tin (organic compounds, as Sn))		0.1						[*Note The REL applies to all organic tin compounds except Cyhexatin.]; [skin]

US OSHA Permissible Exposure Levels (PELs) - Table Z1	tributyltin bromide (Tin, organic compounds (as Sn))		0.1				
US - Idaho - Limits for Air Contaminants	tributyltin bromide (Tin (organic compounds) as (Sn))		0.1				
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	tributyltin bromide (Tin, organic compounds (as Sn))		0.1				
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	tributyltin bromide (Tin, organic compounds (as Sn))		0.1				
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	tributyltin bromide (Tin, organic compounds (as Sn))		0.1				
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	tributyltin bromide (Tin, (as Sn) organic compounds)		0.1		0.2		Skin
US - Washington Permissible exposure limits of air contaminants	tributyltin bromide (Tin (as Sn) - Organic compounds)		0.1		0.3		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	tributyltin bromide (Tin, organic compounds (as Sn) - Skin)	-	0.1	-	0.2		
US - Hawaii Air Contaminant Limits	tributyltin bromide (Tin, organic compounds (as Sn))		0.1		0.2		
Canada - Nova Scotia Occupational Exposure Limits	tributyltin bromide (Tin - Organic compounds (as Sn))		0.1		0.2		
Canada - Northwest Territories Occupational Exposure Limits	tributyltin bromide (Tin, organic4 compounds2 (as Sn) - Skin)		0.1		0.2		

(English)					
US - Alaska Limits for Air Contaminants	tributyltin bromide (Tin, organic compounds (as Sn))		0.1		
Canada - British Columbia Occupational Exposure Limits	tributyltin bromide (Tin - Organic compounds, as Sn)		0.1	0.2	Skin
Canada - Alberta Occupational Exposure Limits	tributyltin bromide (Tin, as Sn Organic compounds)		0.1	0.2	
US - California Permissible Exposure Limits for Chemical Contaminants	tributyltin bromide (Tin, organic compounds, as Sn)		0.1	0.2	
Canada - Ontario Occupational Exposure Limits	tributyltin bromide (Organic compounds, as Sn / Composés organiques, en Sn)		0.1		Skin (organic compounds) / Peau (composés organiques)
US ACGIH Threshold Limit Values (TLV)	tributyltin bromide (Tin , as Sn Organic compounds)		0.1	0.2	TLV® Basis Eye & URT irr; headache; nausea; CNS & immune eff
Canada - Prince Edward Island Occupational Exposure Limits	tributyltin bromide (Tin , as Sn Organic compounds)		0.1	0.2	TLV® Basis Eye & URT irr; headache; nausea; CNS & immune eff
US - Oregon Permissible Exposure Limits (Z-1)	tributyltin bromide (Tin (organic compounds))	-	0.1		
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	tributyltin bromide (Tin Organic compounds (as Sn))		0.1	0.2	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	tributyltin bromide (Tin, organic compounds (as Sn))		0.1		

PERSONAL PROTECTION



RESPIRATOR

•Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 1432000 & 1492001, ANSI Z88 or national equivalent)

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

HANDS/FEET

- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

ENGINEERING CONTROLS

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid.
Does not mix with water.
Sinks in water.
Toxic or noxious vapours/gas.

State	Liquid	Molecular Weight	369.95
Melting Range (°F)	Not available	Viscosity	Not Available
Boiling Range (°F)	248- 252 (2 mm)	Solubility in water (g/L)	Immiscible

Flash Point (°F)	>230	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Not available
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	1.338
Lower Explosive Limit (%)	Not available	Relative Vapour Density (air=1)	>1.0
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

APPEARANCE
Liquid; does not mix with water.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

STORAGE INCOMPATIBILITY
- Avoid strong acids, bases.
- Avoid reaction with oxidising agents

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

tributyltin bromide

TOXICITY AND IRRITATION
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

CARCINOGEN

Tin , as Sn Organic compounds	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	A4
tributyltin bromide	US - Rhode Island Hazardous Substance List	IARC	
BROMINE COMPOUNDS (ORGANIC OR INORGANIC)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
CAS~	US - Maine Chemicals of High Concern List	Carcinogen	A4
VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	
CAS~	Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens	Notes	TLV® Basis Eye & URT irr; headache; nausea; CNS & immune eff
TWAPPM~	Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens	Notes	

SKIN

tributyltin bromide	US - Washington Permissible exposure limits of air contaminants - Skin	Skin	X

tributyltin bromide	US NIOSH Recommended Exposure Limits (RELs) - Skin	Skin	Yes
tributyltin bromide	US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs) - Skin	Skin	X
tributyltin bromide	US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs) - Skin	Skin	X
tributyltin bromide	US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants - Skin	Skin Designation	X
tributyltin bromide	Canada - British Columbia Occupational Exposure Limits - Skin	Notation	Skin
tributyltin bromide	US - Minnesota Permissible Exposure Limits (PELs) - Skin	Skin Designation	X
tributyltin bromide	US - Hawaii Air Contaminant Limits - Skin Designation	Skin Designation	X
tributyltin bromide	US OSHA Permissible Exposure Levels (PELs) - Skin	Skin Designation	X
tributyltin bromide	US - Oregon Permissible Exposure Limits (Z2) - Skin	Skin	X
tributyltin bromide	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	X
tributyltin bromide	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	S
tributyltin bromide	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
- Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its

intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

DOT:

Symbols:	None	Hazard class or Division:	6.1
Identification Numbers:	UN2788	PG:	I
Label Codes:	6.1	Special provisions:	A3, N33, N34, T14, TP2, TP13, TP27
Packaging: Exceptions:	None	Packaging: Non-bulk:	201
Packaging: Exceptions:	None	Quantity limitations: Passenger aircraft/rail:	1 L
Quantity Limitations: Cargo aircraft only:	30 L	Vessel stowage: Location:	B
Vessel stowage: Other:	40	S.M.P.:	Severe

Hazardous materials descriptions and proper shipping names:
Organotin compounds, liquid, n.o.s.

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	2788	Packing Group:	I
Special provisions:	A3		
Cargo Only			
Packing Instructions:	658	Maximum Qty/Pack:	30 L
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	652	Maximum Qty/Pack:	1 L
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	Forbidden	Maximum Qty/Pack:	Forbidden

Shipping name:ORGANOTIN COMPOUND, LIQUID, N.O.S.(contains tributyltin bromide)

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	P
UN Number:	2788	Packing Group:	I

EMS Number:	F-A,S-A	Special provisions:	43 274
Limited Quantities:	0	Marine Pollutant:	Yes

Shipping name:ORGANOTIN COMPOUND, LIQUID, N.O.S.(contains tributyltin bromide)

Section 15 - REGULATORY INFORMATION

tributyltin bromide (CAS: 1461-23-0) is found on the following regulatory lists;
"US - Alaska Limits for Air Contaminants","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - Minnesota Hazardous Substance List","US RCRA (Resource Conservation & Recovery Act) - Appendix IX to Part 264 Ground-Water Monitoring List 1","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Inorganic and Organic Constituents 1"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Inhalation may produce severe health damage*.
■ Cumulative effects may result following exposure*.
■ May produce discomfort of the respiratory system*.
■ May be harmful to the foetus/embryo*.
* (limited evidence).

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

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