

## MATERIAL SAFETY DATA SHEET

Date Printed: 04/22/2008

Date Updated: 01/31/2006

Version 1.7

## Section 1 - Product and Company Information

Product Name MERCURY(II) CHLORIDE, 99.5+%, A.C.S.  
REAGENT  
Product Number 215465  
Brand SIAL  
Company Sigma-Aldrich  
Address 3050 Spruce Street  
SAINT LOUIS MO 63103 US  
Technical Phone: 800-325-5832  
Fax: 800-325-5052  
Emergency Phone: 314-776-6555

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
MERCURIC CHLORIDE	7487-94-7	Yes

Formula HgCl<sub>2</sub>  
Synonyms Abavit B \* Bichloride of mercury \* Bichlorure de mercure (French) \* Calochlor \* Chlorid rtutnaty (Czech) \* Chlorure mercurique (French) \* Cloruro di mercurio (Italian) \* Corrosive mercury chloride \* Corrosive sublimate \* Dichloromercury \* Fungchex \* Mercuric bichloride \* Mercury bichloride \* Mercury(2+) chloride \* Mercury dichloride \* Mercury perchloride \* NCI-C60173 \* Perchloride of mercury \* Quecksilber chlorid (German) \* Sulem \* Sulema (Russian) \* Sublimat (Czech) \* Sublimate \* TL 898  
RTECS Number: OV9100000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Highly Toxic (USA) Very Toxic (EU). Dangerous for the environment. Causes burns. Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed. Very toxic in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Readily absorbed through skin. Target organ(s): Kidneys. Nerves.

## HMIS RATING

HEALTH: 4\*  
FLAMMABILITY: 0  
REACTIVITY: 0

## NFPA RATING

HEALTH: 4  
FLAMMABILITY: 0  
REACTIVITY: 0

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

---

#### Section 4 - First Aid Measures

---

##### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

##### INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

##### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

##### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

---

#### Section 5 - Fire Fighting Measures

---

##### FLASH POINT

N/A

##### AUTOIGNITION TEMP

N/A

##### FLAMMABILITY

N/A

##### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

##### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

---

#### Section 6 - Accidental Release Measures

---

##### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

##### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

##### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

---

#### Section 7 - Handling and Storage

---

##### HANDLING

User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Suitable: Keep tightly closed. Store in a cool dry place.

#### SPECIAL REQUIREMENTS

Light sensitive. Moisture sensitive.

---

### Section 8 - Exposure Controls / PPE

---

#### ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

#### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

#### EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	0.025 MG(HG)/M3
Remarks: Skin			
USA	MSHA Standard-air	TWA	0.05 MG(HG)/M3
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH	Ceiling	co0.1 MG/M3 (SK)

---

### Section 9 - Physical/Chemical Properties

---

Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	271.5 AMU	
pH	N/A	
BP/BP Range	302 °C	760 mmHg
MP/MP Range	277 °C	
Freezing Point	N/A	
Vapor Pressure	1.3 mmHg	236 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	5.44 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	

Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

---

## Section 10 - Stability and Reactivity

---

### STABILITY

Stable: Stable.

Conditions to Avoid: Light. Moisture.

Materials to Avoid: Strong oxidizing agents, Strong bases.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Mercury/mercury oxides.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

## Section 11 - Toxicological Information

---

### ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be fatal if absorbed through skin.

Eye Contact: Causes burns.

Inhalation: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: May be fatal if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Nerves. G.I. System.

### SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Prolonged exposure can cause: Stomach pains, vomiting, diarrhea.

### CONDITIONS AGGRAVATED BY EXPOSURE

May cause nervous system disturbances.

### TOXICITY DATA

Oral

Man

143 mg/kg

LDLO

Remarks: Kidney, Ureter, Bladder: Changes in tubules (including acute renal failure, acute tubular necrosis). Blood: Changes in leukocyte (WBC) count. Behavioral: Excitement.

Oral  
Man  
86 mg/kg  
LDLO  
Remarks: Gastrointestinal:Ulceration or bleeding from stomach.  
Gastrointestinal:Necrotic changes. Vascular:Change in plasma or  
blood volume.

Oral  
Human  
29 mg/kg  
LDLO  
Remarks: Gastrointestinal:Ulceration or bleeding from large  
intestine. Gastrointestinal:Nausea or vomiting.  
Gastrointestinal:Ulceration or bleeding from duodenum.

Oral  
Rat  
1 mg/kg  
LD50

Skin  
Rat  
41 mg/kg  
LD50

Intraperitoneal  
Rat  
3210 UG/KG  
LD50  
Remarks: Kidney, Ureter, Bladder:Changes in tubules (including  
acute renal failure, acute tubular necrosis).

Subcutaneous  
Rat  
14 MG/KG  
LD50

Intravenous  
Rat  
1272 UG/KG  
LD50

Oral  
Mouse  
6 mg/kg  
LD50  
Remarks: Behavioral:Somnolence (general depressed activity).  
Behavioral:Muscle weakness.

Intraperitoneal  
Mouse  
3900 UG/KG  
LD50

Subcutaneous  
Mouse  
4500 UG/KG  
LD50

Intravenous

Mouse  
4992 UG/KG  
LD50

Intramuscular  
Rabbit  
7300 UG/KG  
LD50

Oral  
Quail  
36 mg/kg  
LD50  
Remarks: Behavioral:Ataxia. Behavioral:Tremor.

Intramuscular  
Quail  
34 MG/KG  
LD50  
Remarks: Behavioral:Ataxia. Behavioral:Tremor.

Intramuscular  
Frog  
7579 UG/KG  
LD50  
Remarks: Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Other transferases. Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Phosphatases. Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Dehydrogenases.

#### IRRITATION DATA

Skin  
Rabbit  
500 mg  
24H  
Remarks: Severe irritation effect

Eyes  
Rabbit  
0.05 mg  
24H  
Remarks: Severe irritation effect

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

#### IARC CARCINOGEN LIST

Rating: Group 3

#### ACGIH CARCINOGEN LIST

Rating: A4

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 120 MG/KG

Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 2470 UG/KG  
Route of Application: Oral  
Exposure Time: (7D PREG)  
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).

Species: Rat  
Dose: 276 NG/M3/24H  
Route of Application: Inhalation  
Exposure Time: (1-22D PREG)  
Result: Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).

Species: Rat  
Dose: 80 MG/KG  
Route of Application: Subcutaneous  
Exposure Time: (13-22D PREG/10D POST)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Rat  
Dose: 1069 UG/KG  
Route of Application: Intravenous  
Exposure Time: (10D PREG)  
Result: Specific Developmental Abnormalities: Central nervous system.

Species: Rat  
Dose: 1069 UG/KG  
Route of Application: Intravenous  
Exposure Time: (14D PREG)  
Result: Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).

Species: Mouse  
Dose: 230 UG/M3/4H  
Route of Application: Inhalation  
Exposure Time: (9-12D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 2030 UG/KG  
Route of Application: Intravenous  
Exposure Time: (1D PREG)  
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).

Species: Mouse  
Dose: 3384 UG/KG  
Route of Application: Intravenous  
Exposure Time: (1D PREG)  
Result: Specific Developmental Abnormalities: Other

developmental abnormalities.

CHRONIC EXPOSURE - MUTAGEN

Species: Human  
Dose: 5 UMOL/L  
Cell Type: lymphocyte  
Mutation test: Micronucleus test

Species: Human  
Dose: 2 UMOL/L  
Cell Type: lymphocyte  
Mutation test: Other mutation test systems

Species: Human  
Dose: 10 MG/L  
Cell Type: HeLa cell  
Mutation test: Cytogenetic analysis

Species: Human  
Dose: 2 UMOL/L  
Cell Type: lymphocyte  
Mutation test: Cytogenetic analysis

Species: Rat  
Dose: 500 UMOL/L  
Cell Type: Ascites tumor  
Mutation test: DNA damage

Species: Rat  
Dose: 5 UMOL/L  
Cell Type: Embryo  
Mutation test: DNA damage

Species: Rat  
Route: Subcutaneous  
Dose: 8 MG/KG  
Mutation test: DNA inhibition

Species: Rat  
Route: Subcutaneous  
Dose: 8 MG/KG  
Mutation test: Other mutation test systems

Species: Rat  
Route: Oral  
Dose: 250 NG/KG  
Mutation test: Dominant lethal test

Species: Rat  
Route: Unreported  
Dose: 2500 UG/KG  
Mutation test: Dominant lethal test

Species: Mouse  
Route: Intraperitoneal  
Dose: 1 MG/KG  
Mutation test: DNA inhibition

Species: Mouse  
Dose: 50 UMOL/L  
Cell Type: Other cell types

Mutation test: DNA inhibition

Species: Mouse  
Dose: 10 UMOL/L  
Cell Type: sperm  
Mutation test: DNA inhibition

Species: Mouse  
Dose: 6 MG/L (+S9)  
Cell Type: lymphocyte  
Mutation test: Mutation in microorganisms

Species: Mouse  
Dose: 100 UMOL/L  
Cell Type: lymphocyte  
Mutation test: DNA damage

Species: Mouse  
Dose: 50 NMOL/L  
Cell Type: Embryo  
Mutation test: DNA damage

Species: Mouse  
Dose: 1 UMOL/L  
Cell Type: Other cell types  
Mutation test: Unscheduled DNA synthesis

Species: Mouse  
Dose: 10 UMOL/L  
Cell Type: Other cell types  
Mutation test: DNA inhibition

Species: Mouse  
Dose: 100 NMOL/L  
Cell Type: lymphocyte  
Mutation test: DNA inhibition

Species: Mouse  
Dose: 10 UMOL/L  
Cell Type: lymphocyte  
Mutation test: Other mutation test systems

Species: Mouse  
Route: Oral  
Dose: 3 MG/KG  
Mutation test: Other mutation test systems

Species: Mouse  
Route: Oral  
Dose: 3 MG/KG  
Mutation test: Cytogenetic analysis

Species: Mouse  
Route: Intraperitoneal  
Dose: 2 MG/KG  
Mutation test: Dominant lethal test

Species: Mouse  
Dose: 400 UG/L  
Cell Type: lymphocyte  
Mutation test: Mutation in mammalian somatic cells.

Species: Mouse  
Route: Intraperitoneal  
Dose: 2 MG/KG  
Mutation test: Heritable translocation test

Species: Hamster  
Dose: 50 UMOL/L  
Cell Type: Embryo  
Mutation test: Morphological transformation.

Species: Hamster  
Dose: 10 UMOL/L  
Cell Type: lung  
Mutation test: DNA damage

Species: Hamster  
Dose: 2500 NMOL/L  
Exposure Time: 1H  
Cell Type: ovary  
Mutation test: DNA damage

Species: Hamster  
Dose: 25 UMOL/L  
Exposure Time: 1H  
Cell Type: ovary  
Mutation test: DNA damage

Species: Hamster  
Dose: 40 UMOL/L  
Cell Type: ovary  
Mutation test: DNA inhibition

Species: Hamster  
Dose: 2700 UG/L  
Cell Type: ovary  
Mutation test: Other mutation test systems

Species: Hamster  
Route: Subcutaneous  
Dose: 6400 UG/KG  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 1100 NMOL/L  
Cell Type: ovary  
Mutation test: Sister chromatid exchange

Species: Hamster  
Route: Intraperitoneal  
Dose: 1 MG/KG  
Mutation test: Sister chromatid exchange

Species: Chicken  
Dose: 3 UMOL/L  
Cell Type: Other cell types  
Mutation test: DNA damage

Species: Mammal  
Dose: 33 PPH  
Cell Type: lymphocyte  
Mutation test: DNA damage

Species: Cattle, Horse  
Dose: 10 UMOL/L  
Cell Type: kidney  
Mutation test: DNA inhibition

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Woman  
Dose: 50 UG/KG  
Route of Application: Oral  
Exposure Time: (10W PREG)  
Result: Effects on Fertility: Abortion.

Species: Rat  
Dose: 126 MG/KG  
Route of Application: Oral  
Exposure Time: (84D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Rat  
Dose: 240 MG/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 919 MG/KG  
Route of Application: Oral  
Exposure Time: (12W MALE/2W PRE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.  
Paternal Effects: Prostate, seminal vesicle, Cowper's gland, accessory glands. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat  
Dose: 2720 NG/M3/24H  
Route of Application: Inhalation  
Exposure Time: (1-22D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death.

Species: Rat  
Dose: 19540 NG/M3/24H  
Route of Application: Inhalation  
Exposure Time: (1-22D PREG)  
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Rat  
Dose: 60 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rat

Dose: 4500 UG/KG

Route of Application: Intraperitoneal

Exposure Time: (90D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Paternal Effects: Other effects on male.

Species: Rat

Dose: 4500 UG/KG

Route of Application: Intraperitoneal

Exposure Time: (90D MALE)

Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal

Effects: Testes, epididymis, sperm duct.

Species: Rat

Dose: 5430 UG/KG

Route of Application: Subcutaneous

Exposure Time: (1D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rat

Dose: 21719 UG/KG

Route of Application: Intratesticular

Exposure Time: (1D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Mouse

Dose: 25 MG/KG

Route of Application: Oral

Exposure Time: (40D MALE/16D PRE-3W POST)

Result: Effects on Fertility: Other measures of fertility

Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Species: Mouse

Dose: 49 MG/KG

Route of Application: Oral

Exposure Time: (40D MALE/16D PRE-3W POST)

Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive). Effects on Fertility: Other measures of fertility Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Species: Mouse

Dose: 230 UG/M3/4H

Route of Application: Inhalation

Exposure Time: (9-12D PREG)

Result: Effects on Embryo or Fetus: Fetal death. Effects on

Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Mouse

Dose: 30 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse  
Dose: 5430 UG/KG  
Route of Application: Subcutaneous  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse  
Dose: 1353 UG/KG  
Route of Application: Intravenous  
Exposure Time: (5D PREG)  
Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Species: Mouse  
Dose: 2706 UG/KG  
Route of Application: Intravenous  
Exposure Time: (12D PREG)  
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Guinea pig  
Dose: 60 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Hamster  
Dose: 30 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Hamster  
Dose: 8660 UG/KG  
Route of Application: Subcutaneous  
Exposure Time: (1D PRE)  
Result: Maternal Effects: Oogenesis.

Species: Hamster  
Dose: 24 MG/KG  
Route of Application: Subcutaneous  
Exposure Time: (3D PRE)  
Result: Effects on Fertility: Other measures of fertility

Species: Hamster  
Dose: 34648 UG/KG  
Route of Application: Subcutaneous  
Exposure Time: (1D PRE)  
Result: Maternal Effects: Oogenesis.

Species: Hamster  
Dose: 8 MG/KG  
Route of Application: Parenteral  
Exposure Time: (1D PRE)  
Result: Maternal Effects: Uterus, cervix, vagina.

---

## Section 12 - Ecological Information

---

No data available.

---

## Section 13 - Disposal Considerations

---

### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

---

## Section 14 - Transport Information

---

### DOT

Proper Shipping Name: Mercuric chloride  
UN#: 1624  
Class: 6.1  
Packing Group: Packing Group II  
Hazard Label: Toxic substances.  
PIH: Not PIH

### IATA

Proper Shipping Name: Mercuric chloride  
IATA UN Number: 1624  
Hazard Class: 6.1  
Packing Group: II

---

## Section 15 - Regulatory Information

---

### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: T+-N  
Indication of Danger: Very toxic. Dangerous for the environment.  
R: 28-34-48/24/25-50/53  
Risk Statements: Very toxic if swallowed. Causes burns. Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
S: 36/37/39-45-60-61  
Safety Statements: Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Highly Toxic (USA) Very Toxic (EU).  
Dangerous for the environment.  
Risk Statements: Causes burns. Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed. Very toxic in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Safety Statements: Do not breathe dust. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.  
US Statements: Readily absorbed through skin. Target organ(s):

Kidneys. Nerves.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes

NOTES: This product is subject to SARA section 313 reporting requirements.

TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

---

Section 16 - Other Information

---

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.