

# Material Safety Data Sheet

Arsenic Trioxide



## Section 1. Product and Company Identification

**Product name** : Arsenic Trioxide  
**Product code** : 118  
**Synonym** : Arsenous Acid; Arsenious Oxide  
**Material uses** : Other non-specified industry: Analytical reagent.  
**Manufacturer** : EMD Chemicals Inc.  
P.O. Box 70  
480 Democrat Road  
Gibbstown, NJ 08027  
856-423-6300 Technical Service  
Monday - Friday: 8:00 - 5:00 PM  
**Validation date** : **8/1/2006.**  
**Print date** : 9/5/2006.  
**In case of emergency** : 800-424-9300 CHEMTREC (USA)  
613-996-6666 CANUTEC (Canada)  
24 Hours/Day: 7 Days/Week

## Section 2. Hazards Identification

**Physical state** : Solid. (Crystals or powder)  
**Odor** : Odorless.  
**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
**Emergency overview** : DANGER!  
MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.  
CANCER HAZARD.  
CAN CAUSE CANCER.  
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LIVER, CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM.  
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.  
Do not ingest. Do not get in eyes or on skin or clothing. Do not breathe dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.  
**Routes of entry** : Dermal contact. Eye contact. Inhalation. Ingestion.  
**Potential acute health effects**  
**Eyes** : Irritating to eyes.  
**Skin** : Very toxic in contact with skin. Irritating to skin.  
**Inhalation** : Very toxic by inhalation. Irritating to respiratory system.  
**Ingestion** : Very toxic if swallowed.  
**Carcinogenic effects** : Can cause cancer. Risk of cancer depends on duration and level of exposure.  
**Mutagenic effects** : No known significant effects or critical hazards.  
**Teratogenicity / Reproductive toxicity** : No known significant effects or critical hazards.  
**Medical conditions aggravated by over-exposure** : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

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## Section 3. Composition/Information on Ingredients

### United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Arsenic Trioxide	1327-53-3	100

## Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

## Section 5. Fire Fighting Measures

**Flammability of the product** : No specific hazard.

### Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

## Section 7. Handling and Storage

- Handling** : Do not ingest. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Do not breathe dust. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8. Exposure Controls/Personal Protection

### Product name

### Exposure limits

### United States

Arsenic Trioxide

**ACGIH TLV (United States, 1/2006). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. Substances for which there is a Biological Exposure Index or Indices Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Refers to Appendix A -- Carcinogens.**

TWA: 0.01 mg/m<sup>3</sup> 8 hour/hours. Form: All forms

**NIOSH REL (United States, 12/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen**

CEIL: 0.002 mg/m<sup>3</sup> 15 minute/minutes. Form: Inorganic

**OSHA PEL (United States, 8/1997).**

TWA: 10 µg/m<sup>3</sup> 8 hour/hours. Form: All forms

**OSHA PEL 1989 (United States, 3/1989). Notes: Sec. 1910.1018 Inorganic arsenic.**

TWA: 10 µg/m<sup>3</sup> 8 hour/hours. Form: All forms

**Consult local authorities for acceptable exposure limits.**

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.  
Recommended: safety glasses with side-shields
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.  
Body: Recommended: lab coat
- Respiratory** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: neoprene
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## Section 9. Physical and Chemical Properties

Physical state	: Solid. (Crystals or powder)
Color	: White.
Odor	: Odorless.
Molecular weight	: 197.84 g/mole
Molecular formula	: As <sub>2</sub> O <sub>3</sub>
Boiling/condensation point	: 459.85°C (859.7°F)
Melting/freezing point	: 312.3°C (594.1°F)
Relative density	: 3.7 (Water = 1)

## Section 10. Stability and Reactivity

Stability and reactivity	: The product is stable.
Incompatibility with various substances	: Reactive or incompatible with the following materials: acids.
Hazardous polymerization	: Will not occur.

## Section 11. Toxicological Information

### Toxicity data

#### United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Arsenic Trioxide	LD50	10 mg/kg	Oral	Rat
	LD50	20 mg/kg	Oral	Mouse
	LDLo	10 mg/kg	Oral	Dog
	LDLo	29 mg/kg	Oral	man
	LDLo	30 mg/kg	Oral	cattle

**Chronic effects on humans** : **CARCINOGENIC EFFECTS** Classified A1 (Confirmed for humans.) by ACGIH, 1 (Proven for humans.) by IARC, 1 (Known to be human carcinogens.) by NTP, + (Proven.) by OSHA, + (Proven.) by NIOSH, 1 (Proven for humans.) by European Union. Causes damage to the following organs: liver, cardiovascular system, upper respiratory tract, skin, central nervous system (CNS).

**Other toxic effects on humans** : Extremely hazardous in case of skin contact (permeator), of ingestion, . Very hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant). Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of inhalation (lung corrosive).

### Specific effects

<b>Carcinogenic effects</b>	: Can cause cancer. Risk of cancer depends on duration and level of exposure.
<b>Mutagenic effects</b>	: No known significant effects or critical hazards.
<b>Teratogenicity / Reproductive toxicity</b>	: No known significant effects or critical hazards.

### Sensitization

<b>Ingestion</b>	: No known significant effects or critical hazards.
<b>Inhalation</b>	: Irritating to respiratory system.
<b>Eyes</b>	: Irritating to eyes.
<b>Skin</b>	: Irritating to skin.

## Section 12. Ecological Information

### Ecotoxicity data

#### United States

Product/ingredient name	Species	Period	Result
Arsenic Trioxide	Oncorhynchus mykiss (LC50)	96 hour/hours	20.2 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	21 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	>1000 mg/l

**Environmental precautions** : Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

**Products of degradation** : Some metallic oxides.

**Toxicity of the products of biodegradation** : The products of degradation are less toxic than the product itself.

## Section 13. Disposal Considerations


**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1561	ARSENIC TRIOXIDE	6.1	II		<b>Reportable quantity</b> 1 lb. (0.4536 kg)

PG\* : Packing group

## Section 15. Regulatory Information

### United States

**HCS Classification** : Highly toxic material  
Irritating material  
Carcinogen  
Target organ effects

**U.S. Federal regulations** : TSCA 8(b) inventory: Listed

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## Section 15. Regulatory Information

SARA 302/304/311/312 extremely hazardous substances: Arsenic Trioxide  
 SARA 302/304 emergency planning and notification: Arsenic Trioxide  
 SARA 302/304/311/312 hazardous chemicals: Arsenic Trioxide  
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Arsenic Trioxide : Immediate (acute) health hazard, Delayed (chronic) health hazard  
 Clean Water Act (CWA) 307: Arsenic Trioxide  
 Clean Water Act (CWA) 311: Arsenic Trioxide  
 Clean Air Act (CAA) 112 accidental release prevention: No products were found.  
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.  
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

### SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
<b>Form R - Reporting requirements</b>	: Arsenic Trioxide	1327-53-3	100
<b>Supplier notification</b>	: Arsenic Trioxide	1327-53-3	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations** : Pennsylvania RTK: Arsenic Trioxide : (special hazard, environmental hazard, generic environmental hazard)  
 Massachusetts RTK: Arsenic Trioxide  
 New Jersey: Arsenic Trioxide

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Arsenic Trioxide	Yes.	Yes.	No.	No.

### Canada

**WHMIS (Canada)** : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).  
 Class D-2A: Material causing other toxic effects (Very toxic).  
 Class D-2B: Material causing other toxic effects (Toxic).

**CEPA DSL/CEPA NDSL** : CEPA DSL: Arsenic Trioxide

**This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.**

### EU regulations

**Hazard symbol/symbols** :



**Risk phrases** : R45- May cause cancer.  
 R28- Very toxic if swallowed.  
 R34- Causes burns.  
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety phrases** : S53- Avoid exposure - obtain special instructions before use.  
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
 S60- This material and its container must be disposed of as hazardous waste.  
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

### International regulations

## Section 15. Regulatory Information

**International lists** : Australia (NICNAS): Arsenic Trioxide

China: Arsenic Trioxide

Germany water class: Arsenic Trioxide

Japan (METI): Arsenic Trioxide

Korea (TCCL): Arsenic Trioxide

Philippines (RA6969): Arsenic Trioxide

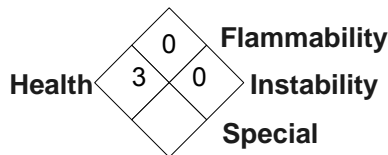
## Section 16. Other Information

**Label requirements** : DANGER!

MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.  
 CANCER HAZARD.  
 CAN CAUSE CANCER.  
 CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  
 CAUSES DAMAGE TO THE FOLLOWING ORGANS: LIVER, CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM.

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

**National Fire Protection Association (U.S.A.)** :



### Notice to reader

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