













# MSDS: Cyanide Antidote Kit

## Section 7 – HANDLING PRECAUTIONS

<b>Respiratory Protection:</b>	Not normally required
<b>Eye Protection:</b>	Chemical splash goggles
<b>Ventilation:</b>	Laboratory fume hood and good local ventilation
<b>Other Protective Equipment:</b>	Impervious gloves and body covering to prevent skin contact
<b>Other Handling Precautions:</b>	Not normally required

## Section 8 – SPILL, LEAK AND DISPOSAL PROCEDURES

**Spills:** Prevent further migration into the environment. Use absorbent/adsorbent material to solidify liquids. Solidification may not suppress vapors. Vacuuming liquids or solidified material may disperse vapors. Wear protective equipment, including eye protection, to avoid exposure.

**Waste Disposal:** Dispose of any cleanup materials and waste residue according to applicable federal, state, and local regulations.

## Section 9 – SHIPPING INFORMATION

(Proper Shipping Name/Hazard Class/UN Number)

DOT:	Not regulated for surface transport
ICAO:	Not regulated for air transport
IMO:	Not regulated for water transport

**Section 1 - IDENTIFICATION**

**Common/Trade Name:** Sodium Thiosulfate  
**Chemical Name:** Sodium Thiosulfate  
**Chemical Family:** Cyanide Poison Antidote  
**Chemical Formula:** Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>·5H<sub>2</sub>O  
**CAS No.:** 10102177  
**RTECS No.:** WE6660000

**Section 2 – HAZARDOUS INGREDIENTS/COMPOSITION INFORMATION**

<b>Component</b>	<b>OSHA PEL</b>	<b>ACGIH TLV</b>
Sodium Thiosulfate	N/A	N/A

**Section 3 – PHYSICAL & CHEMICAL CHARACTERISTICS**

**DESCRIPTION:** Sodium Thiosulfate Injection, USP is a sterile, nonpyrogenic, solution of Sodium Thiosulfate pentahydrate in Water for Injection (pH 8.0-9.5)

**Appearance & Odor:** Clear, colorless solution; odorless

**Boiling Point:** N/A

**Solubility in Water:** Soluble

**Vapor Pressure:** N/A

**Vapor Density:** N/A

**Latex Free:** Yes

**Section 4 – FIRE & EXPLOSION DATA**

**Flash Point:** N/A

**Extinguishing Media:** Water spray, carbon dioxide, dry chemical, or foam as appropriate for surrounding fire and materials.

**Flammable Limits: (LEL):** N/A **(UEAL):** N/A

**Unusual Fire and Explosion Hazards:** Emits toxic fumes

**Hazardous Decomposition Products:** Sodium Thiosulfate emits toxic oxides of Sodium and Sulfur when heated to decomposition.

**Special Fire Fighting Procedures:** Firefighters should use self-contained breathing apparatus and protective clothing.

**Section 5 – REACTIVITY DATA**

**Stability:** Stable

**Conditions/Materials to Avoid:** Reacts violently with Sodium Nitrate, Potassium Nitrate, and Sodium Nitrite. Do not mix with other drugs.

**Hazardous Polymerization:** Will not occur

**Section 6 – HEALTH HAZARD DATA**

**Primary Routes of Exposure:** Inhalation, Ingestion, and Skin Absorption

**Chemical Listings as Carcinogen**

**National Toxicology Program:** No  
**IARC Monographs:** No  
**OSHA:** No

**Toxicity Data**

LD<sub>50</sub>: 2.5 g/Kg intravenous-rat

**Signs and Symptoms of Overexposure**

Eye, skin, and/or respiratory tract irritation and diarrhea

**Emergency & First Aid Procedures**

**Inhalation:** Remove person to fresh air. Remove contaminated clothing. Seek medical attention

**Ingestion:** Flush mouth out with water. Seek medical attention

**Skin Contact:** Remove contaminated clothing. Flush area with water. Seek medical attention

**Eye Contact:** Flush with water. Seek medical attention

**FOR ADDITIONAL INFORMATION, REFER TO THE PRODUCT INSERT.**

**Section 7 – PROTECTIVE EQUIPMENT DATA**

**Ventilation:** Local exhaust recommended  
**Respiratory:** N/A, however, NIOSH-approved respirator should be available  
**Eyes:** Safety Goggles  
**Gloves:** Disposable surgical latex gloves  
**Clothing:** Disposable protective apparel (protect exposed skin)

**Section 8 – STORAGE & HANDLING DATA**

**Precautions:** As a general rule, when handling pharmaceutical products, avoid all contact and inhalation of dust, fumes, mist, and/or vapors associated with the product. Do not mix with other drugs.

**Section 9 – ACCIDENTAL SPILL PROCEDURES/WASTE DISPOSAL DATA**

**Containment/Clean Up:** Wear recommended personal protective equipment. Vacuum spillage with a vacuum cleaner having a high efficiency particulate (HEPA) filter, or absorb liquid with paper towels. Wipe working surfaces to dryness, then wash with soap and water.

**Waste Disposal:** Though not EPA regulated, waste should be disposed of in accordance with federal, state, and local regulations. Do not mix with other substances.

**GLOSSARY**



## MSDS: Cyanide Antidote Kit

(Abbreviations Used in Material Safety Data Sheets)

<b>ACGIH:</b>	American Conference of Governmental Industrial Hygienists
<b>BEL:</b>	Biological Exposure Limit
<b>CAS Number:</b>	Chemical Abstract Service Registry Number
<b>CERCLA:</b>	Comprehensive Environmental Response Compensation and Liability Act (of 1980)
<b>CWA:</b>	Clean Water Act
<b>DOT:</b>	Department of Transportation
<b>EP:</b>	Extraction Procedure as defined under RCRA Regulations
<b>EPA:</b>	Environmental Protection Agency
<b>HEPA:</b>	High Efficiency Particulate Air (Filter)
<b>HSDB:</b>	Hazardous Substance Data Base
<b>IARC:</b>	The International Agency for Research on Cancer
<b>ICAO:</b>	International Civil Aviation Organization
<b>IMO:</b>	International Maritime Organization
<b>LEL:</b>	Lower Explosive Limit
<b>MSDS:</b>	Material Safety Data Sheet
<b>NA:</b>	Not Applicable
<b>NAIF:</b>	No Applicable Information Found
<b>NCI/NTP:</b>	National Cancer Institute/National Toxicology Program
<b>NIOSH:</b>	National Institute for Occupational Safety and Health
<b>NOS:</b>	Not Otherwise Specified
<b>OHS:</b>	Occupational Health Services
<b>OSHA:</b>	Occupational Safety and Health Administration
<b>PEL:</b>	Permissible Exposure Limit
<b>PSN:</b>	Proper-Shipping Name
<b>RCRA:</b>	Resource Conservation and Recovery Act
<b>RTECS:</b>	Registry of Toxic Effects of Chemical Substances
<b>STEL:</b>	Short Term Exposure Limit
<b>TLV:</b>	Threshold Limit Value
<b>TSCA:</b>	Toxic Substance Control Act
<b>TWA:</b>	Time Weighted Average/8 Hours Unless Otherwise Noted
<b>UEL:</b>	Upper Explosive Limit
<b>UN:</b>	United Nations



## MSDS: Cyanide Antidote Kit

### INSTRUCTIONS FOR THE TREATMENT OF CYANIDE POISONING

Without proper treatment, cyanide poisoning may be rapidly fatal. Exposure, followed by collapse, difficulty in breathing, or bluish discoloration of the skin, indicated immediate need for treatment.

#### *Initial Therapy (at location of accident)*

1. Remove patient to noncontaminated area
2. Call doctor immediately
3. If patient has stopped breathing, administer artificial respiration until normal respiration has started. Administer artificial respiration again, if necessary. This may be done with a respirator or a manual bag with pure O<sub>2</sub>. If neither is immediately available, then the prone-pressure or mouth-to-mouth method of resuscitation may be used.

NOTE: *Maintaining an adequate airway is mandatory*

4. While administering artificial respiration, have an assistant break an ampoule of Amyl Nitrite Inhalant, USP, in a handkerchief and hold it in front of the patient's mouth for 15 seconds – followed by removal for 15 seconds. Repeat steps as needed.
5. Wash off any cyanide present on the skin. Remove clothing that is contaminated by cyanide.
6. Keep the patient warm

#### *Specific Therapy (to be used at the discretion of doctor, nurse, or paramedic)*

1. Initiate inhalation of O<sub>2</sub> immediately while preparing for intravenous administration.
2. Simultaneously with the oxygen, administer Amyl Nitrite Inhalant for 15 to 30 seconds every 2 or 3 minutes.
3. Discontinue Amyl Nitrite and then inject adults with 300 mg (10 mL of a 3% solution) of sodium nitrite intravenously at the rate of 2.5 to 5 mL/minute. The recommended dose of sodium nitrite for children is 6 to 8 mL/square meter (approximately 0.2 mL/kg of body weight) but is not to exceed 10 mL.
4. Immediately thereafter, inject adults with 12.5 g (50 mL of a 25% solution) of sodium thiosulfate. The dosage for children is 7 g/square meter of body surface area, but dosage should not exceed 12.5 g. The same needle and vein may be used for steps 3 and 4.
5. If the poison was taken by mouth, gastric lavage should be performed as soon as possible, but this should not delay the treatments outlined above. Lavage may be done concurrently by a third person – a physician or a nurse, if one is available. One should take quick action without waiting for positive diagnostic tests.

The patient should be watched closely for at least 24 to 48 hours. If signs of poisoning reappear, injection of both sodium nitrite and sodium thiosulfate should be repeated, but each in one-half the original dose. Even if the patient seems perfectly well, the medication may be given for prophylactic purposes 2 hours after the first injections.

### WARNING

Both sodium nitrite and amyl nitrite in excessive doses induce dangerous methemoglobinemia and can cause death. The amounts found in a single Cyanide Antidote Package are not excessive for an adult. The doses for children should be calculated on a surface area or on a weight basis, with the dosage adjusted so that excessive Methemoglobin is not found.

If signs of excessive methemoglobinemia develop (i.e., blue skin and mucous membranes, vomiting, shock, and coma), 1% methylene blue solution be given intravenously. A total dose of 1 to 2 mg/kg of body weight should be administered over a period of 5 to 10 minutes and should be repeated in 1 hour, if necessary.

In addition, oxygen inhalation and transfusion of whole fresh blood should be considered.

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