

SODIUM CYANIDE :: Systemic Agent

CAS #: 143-33-9

RTECS #: VZ7525000

UN #: 1689 (Guide 157)

Common Names:

- Sodium salt of hydrocyanic acid

Agent Characteristics

- **APPEARANCE:** White crystalline or granular powder.
- **DESCRIPTION:** Sodium cyanide releases hydrogen cyanide gas, a highly toxic chemical asphyxiant that interferes with the body's ability to use oxygen. Exposure to sodium cyanide can be rapidly fatal. It has whole-body (systemic) effects, particularly affecting those organ systems most sensitive to low oxygen levels: the central nervous system (brain), the cardiovascular system (heart and blood vessels), and the pulmonary system (lungs). Sodium cyanide is used commercially for fumigation, electroplating, extracting gold and silver from ores, and chemical manufacturing. Hydrogen cyanide gas released by sodium cyanide has a distinctive bitter almond odor (others describe a musty "old sneakers smell"), but a large proportion of people cannot detect it; the odor does not provide adequate warning of hazardous concentrations. Sodium cyanide is odorless when dry. Sodium cyanide is shipped as pellets or briquettes. It absorbs water from air (is hygroscopic or deliquescent).
- **METHODS OF DISSEMINATION:**
 - Indoor Air: Sodium cyanide can be released into indoor air as fine droplets, liquid spray (aerosol), or fine particles.
 - Water: Sodium cyanide can be used to contaminate water.
 - Food: Sodium cyanide can be used to contaminate food.
 - Outdoor Air: Sodium cyanide can be released into outdoor air as fine droplets, liquid spray (aerosol), or fine particles.
 - Agricultural: If sodium cyanide is released as fine droplets, liquid spray (aerosol), or fine particles, it has the potential to contaminate agricultural products.
- **ROUTES OF EXPOSURE:** Sodium cyanide can affect the body through ingestion, inhalation, skin contact, or eye contact.

Personal Protective Equipment

- **GENERAL INFORMATION:** First Responders should use a NIOSH-certified Chemical, Biological, Radiological, Nuclear (CBRN) Self Contained Breathing Apparatus (SCBA) with a Level A protective suit when entering an area with an unknown contaminant or when entering an area where the concentration of the contaminant is unknown. Level A protection should be used until monitoring results confirm the contaminant and the concentration of the contaminant.
NOTE: Safe use of protective clothing and equipment requires specific skills developed through training and experience.
- **LEVEL A: (RED ZONE):** Select when the greatest level of skin, respiratory, and eye protection is required. This is the maximum protection for workers in danger of exposure to unknown chemical hazards or levels above the IDLH or greater than the AEGL-2.
 - A NIOSH-certified CBRN full-face-piece SCBA operated in a pressure-demand mode or a pressure-demand supplied air hose respirator with an auxiliary escape bottle.

- A Totally-Encapsulating Chemical Protective (TECP) suit that provides protection against CBRN agents.
 - Chemical-resistant gloves (outer).
 - Chemical-resistant gloves (inner).
 - Chemical-resistant boots with a steel toe and shank.
 - Coveralls, long underwear, and a hard hat worn under the TECP suit are optional items.
- **LEVEL B: (RED ZONE):** Select when the highest level of respiratory protection is necessary but a lesser level of skin protection is required. This is the minimum protection for workers in danger of exposure to unknown chemical hazards or levels above the IDLH or greater than AEGL-2. It differs from Level A in that it incorporates a non-encapsulating, splash-protective, chemical-resistant splash suit that provides Level A protection against liquids but is not airtight.
 - A NIOSH-certified CBRN full-face-piece SCBA operated in a pressure-demand mode or a pressure-demand supplied air hose respirator with an auxiliary escape bottle.
 - A hooded chemical-resistant suit that provides protection against CBRN agents.
 - Chemical-resistant gloves (outer).
 - Chemical-resistant gloves (inner).
 - Chemical-resistant boots with a steel toe and shank.
 - Coveralls, long underwear, a hard hat worn under the chemical-resistant suit, and chemical-resistant disposable boot-covers worn over the chemical-resistant suit are optional items.
- **LEVEL C: (YELLOW ZONE):** Select when the contaminant and concentration of the contaminant are known and the respiratory protection criteria factors for using Air Purifying Respirators (APR) or Powered Air Purifying Respirators (PAPR) are met. This level is appropriate when decontaminating patient/victims.
 - A NIOSH-certified CBRN tight-fitting APR with a canister-type gas mask or CBRN PAPR for air levels greater than AEGL-2.
 - A NIOSH-certified CBRN PAPR with a loose-fitting face-piece, hood, or helmet and a filter or a combination organic vapor, acid gas, and particulate cartridge/filter combination or a continuous flow respirator for air levels greater than AEGL-1.
 - A hooded chemical-resistant suit that provides protection against CBRN agents.
 - Chemical-resistant gloves (outer).
 - Chemical-resistant gloves (inner).
 - Chemical-resistant boots with a steel toe and shank.
 - Escape mask, face shield, coveralls, long underwear, a hard hat worn under the chemical-resistant suit, and chemical-resistant disposable boot-covers worn over the chemical-resistant suit are optional items.
- **LEVEL D: (GREEN ZONE):** Select when the contaminant and concentration of the contaminant are known and the concentration is below the appropriate occupational exposure limit or less than AEGL-1 for the stated duration times.
 - Limited to coveralls or other work clothes, boots, and gloves.

Emergency Response

- **CHEMICAL DANGERS:**
 - Sodium cyanide is water-reactive.
 - Sodium cyanide decomposes on contact with acids, acid salts, water, moisture, and carbon dioxide, producing highly toxic, flammable hydrogen cyanide gas.
 - Sodium cyanide solution in water is a strong base; it reacts violently with acid and is corrosive.
 - Sodium cyanide is incompatible with strong oxidants.

- Carbon dioxide from the air is sufficiently acidic to liberate toxic hydrogen cyanide gas on contact with sodium cyanide.
- **EXPLOSION HAZARDS:**
 - Sodium cyanide reacts violently with strong oxidants such as nitrates, chlorates, nitric acid, and peroxides, causing an explosion hazard.
 - Upper and lower explosive (flammable) limits in air are not available for sodium cyanide.
 - Containers may explode when heated or if they are contaminated with water.
- **FIRE FIGHTING INFORMATION:**
 - Sodium cyanide is non-combustible.
 - The agent itself does not burn.
 - Sodium cyanide releases highly flammable and toxic hydrogen cyanide gas on contact with acids or water.
 - Fire will produce irritating, corrosive, and/or toxic gases.
 - Note: Most foams will react with the agent and release corrosive/toxic gases.
 - For small fires, do not use carbon dioxide; use dry chemical, dry sand, or alcohol-resistant foam.
 - For large fires, use water spray, fog, or alcohol-resistant foam. Move containers from the fire area if it is possible to do so without risk to personnel. Use water spray or fog; do not use straight streams. Dike fire control water for later disposal; do not scatter the material.
 - For fire involving tanks or car/trailer loads, fight the fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after the fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tanks. Always stay away from tanks engulfed in fire.
 - Run-off from fire control or dilution water may be corrosive and/or toxic, and it may cause pollution.
 - If the situation allows, control and properly dispose of run-off (effluent).
- **INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES:**
 - If a tank, rail car, or tank truck is involved in a fire, isolate it for 0.5 mi (800 m) in all directions; also consider initial evacuation for 0.5 mi (800 m) in all directions.
 - Small spills (when spilled in water)
 - First isolate in all directions: 200 ft (60 m).
 - Then protect persons downwind during the day: 0.1 mi (0.2 km).
 - Then protect persons downwind during the night: 0.4 mi (0.7 km).
 - Large spills (when spilled in water)
 - First isolate in all directions: 1300 ft (390 m).
 - Then protect persons downwind during the day: 0.8 mi (1.3 km).
 - Then protect persons downwind during the night: 3.0 mi (4.9 km).
- **PHYSICAL DANGERS:**
 - Vapors may collect and stay in confined areas (e.g., sewers, basements, and tanks).
 - Hazardous concentrations may develop quickly in enclosed, poorly-ventilated, or low-lying areas. Keep out of these areas. Stay upwind.
 - Hydrogen cyanide gas produced from sodium cyanide mixes well with air; explosive mixtures are easily formed.

- **NFPA 704 Signal:**

- Health: 3
- Flammability: 0
- Reactivity: 0
- Special:



- **SAMPLING AND ANALYSIS:**

- OSHA: Not established/determined
- NIOSH: 6010, 7904

- **ADDITIONAL SAMPLING AND ANALYSIS INFORMATION:**

References are provided for the convenience of the reader and do not imply endorsement by NIOSH.

- AIR MATRIX

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- OTHER

No references were identified for this sampling matrix for this agent.

- SOIL MATRIX

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- SURFACES

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- WATER

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Ikebukuro K, Shimomura M, Onuma N, Watanabe A, Nomura Y, Nakanishi K, Arikawa Y, Karube L [1996]. A novel biosensor system for cyanide based on a chemiluminescence reaction. *Anal Chim Acta* 329(1-2):111-116.

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Signs/Symptoms

- **TIME COURSE:** Effects occur rapidly following exposure to sodium cyanide. Inhalation exposure to hydrogen cyanide gas released from sodium cyanide produces symptoms within seconds to minutes; death may occur within minutes.
- **EFFECTS OF SHORT-TERM (LESS THAN 8-HOURS) EXPOSURE:** Early symptoms of cyanide poisoning include lightheadedness, giddiness, rapid breathing, nausea, vomiting (emesis), feeling of neck constriction and suffocation, confusion, restlessness, and anxiety. Accumulation of fluid in the lungs (pulmonary edema) may complicate severe intoxications. Rapid breathing is soon followed by respiratory depression/respiratory arrest (cessation of breathing). Severe cyanide poisonings progress to stupor, coma, muscle spasms (in which head, neck, and spine are arched backwards), convulsions (seizures), fixed and dilated pupils, and

death. The CNS is the most sensitive target organ of cyanide poisoning. Cardiovascular effects require higher cyanide doses than those necessary for CNS effects. In serious poisonings, the skin is cold, clammy, and diaphoretic. Blue discoloration of the skin may be a late finding. Severe signs of oxygen deprivation in the absence of blue discoloration of the skin suggest cyanide poisoning.

- **EYE EXPOSURE:**
 - Redness, pain, and severe deep burns.
 - Contact with the eyes can contribute to whole-body (systemic) toxicity. See Inhalation Exposure.

- **INGESTION EXPOSURE:**
 - Nausea, vomiting (emesis), abdominal pain, and irritation or corrosion of the lining of the esophagus and stomach.
 - Whole-body (systemic) toxicity can occur. See Inhalation Exposure.

- **INHALATION EXPOSURE:**
 - Mild to moderate: CNS effects: headache, confusion, anxiety, dizziness, weakness (malaise), and loss of consciousness. Cardiovascular effects: palpitations. Respiratory effects: respiratory tract irritation, difficulty breathing or shortness of breath (dyspnea), and transient increase in rate and depth of breathing (hyperpnea). GI effects: nausea and vomiting (emesis).
 - Severe: CNS effects: coma, seizures, and dilated pupils (mydriasis). Cardiovascular effects: shock, abnormal or disordered heart rhythms (dysrhythmias), critically low blood pressure, and cardiac arrest. Respiratory effects: abnormally rapid, followed by abnormally slow respirations; accumulation of fluid in the lungs (pulmonary edema); and respiratory arrest. Eye effects: dilated pupils, inflammation of the surface of the eye, and temporary blindness.

- **SKIN EXPOSURE:**
 - Irritation, tissue damage (ulceration), burning sensation, and pain.
 - Absorption through the skin can contribute to whole-body (systemic) toxicity. See Inhalation Exposure.

Decontamination

- **INTRODUCTION:** The purpose of decontamination is to make an individual and/or their equipment safe by physically removing toxic substances quickly and effectively. Care should be taken during decontamination, because absorbed agent can be released from clothing and skin as a gas. Your Incident Commander will provide you with decontaminants specific for the agent released or the agent believed to have been released.

- **DECONTAMINATION CORRIDOR:** The following are recommendations to protect the first responders from the release area:
 - Position the decontamination corridor upwind and uphill of the hot zone. The warm zone should include two decontamination corridors. One decontamination corridor is used to enter the warm zone and the other for exiting the warm zone into the cold zone. The decontamination zone for exiting should be upwind and uphill from the zone used to enter.
 - Decontamination area workers should wear appropriate PPE. See the PPE section of this card for detailed information.
 - A solution of detergent and water (which should have a pH value of at least 8 but should not exceed a pH value of 10.5) should be available for use in decontamination procedures. Soft brushes should be available to remove contamination from the PPE. Labeled, durable 6-mil polyethylene bags should be available for disposal of contaminated PPE.

- **INDIVIDUAL DECONTAMINATION:** The following methods can be used to decontaminate an individual:
 - Decontamination of First Responder:
 - Begin washing PPE of the first responder using soap and water solution and a soft brush. Always move in a downward motion (from head to toe). Make sure to get into all areas, especially folds in the clothing. Wash and rinse (using cold or warm water) until the contaminant is thoroughly removed.

- Remove PPE by rolling downward (from head to toe) and avoid pulling PPE off over the head. Remove the SCBA after other PPE has been removed.
 - Place all PPE in labeled durable 6-mil polyethylene bags.
- Decontamination of Patient/Victim:
 - Remove the patient/victim from the contaminated area and into the decontamination corridor.
 - Remove all clothing (at least down to their undergarments) and place the clothing in a labeled durable 6-mil polyethylene bag.
 - Thoroughly wash and rinse (using cold or warm water) the contaminated skin of the patient/victim using a soap and water solution. Be careful not to break the patient/victim's skin during the decontamination process, and cover all open wounds.
 - Cover the patient/victim to prevent shock and loss of body heat.
 - Move the patient/victim to an area where emergency medical treatment can be provided.

First Aid

- **GENERAL INFORMATION:** Careful observation, supplemental oxygen, and supportive care may be sufficient therapy for the patient/victim who does not exhibit physical findings of cyanide toxicity. For the patient/victim exhibiting physical findings of cyanide toxicity, initial treatment consists of administration of antidotes under a physician's direction, respiratory and circulatory support (oxygen and IV fluids), correction of chemical imbalances in the blood, and seizure control. Speed is critical. Avoid mouth-to-mouth resuscitation regardless of route of exposure. Avoid contact with vomitus, which may off-gas hydrogen cyanide.
- **ANTIDOTE:** Amyl nitrite, sodium nitrite, and sodium thiosulfate are antidotes for cyanide toxicity; however, amyl nitrite and sodium nitrite should not be administered to patient/victims suffering from smoke inhalation. In these cases, only administer sodium thiosulfate. The described administration of nitrites is based on a patient having normal hemoglobin levels. Below normal hemoglobin levels require titration of nitrites.
For mild to moderate physical findings such as nausea, vomiting, palpitations, confusion, anxiety, dizziness (vertigo), and/or abnormally fast or deep respiration (hyperventilation):
 - **Child (less than 55 lb (25 kg))** Observe the patient/victim and administer 0.75 mL per pound of a 25% solution (1.65 mL per kilogram of a 25% solution) of sodium thiosulfate intravenously over a period of 10 minutes.
 - **Adult** Observe the patient/victim and administer 12.5 g of a 25% solution (50 mL of a 25% solution) of sodium thiosulfate intravenously over a period of 10 minutes.
For severe physical findings such as coma; cessation of breathing (apnea); seizures; slowness of the heart rate, usually to fewer than 60 beats per minute (bradycardia); abnormally low blood pressure (hypotension); bluish skin coloring due to abnormally low levels of oxygen in the blood (cyanosis); irregular heart beat (dysrhythmias); and/or accumulation of fluid in the lungs (pulmonary edema):
 - **Child (less than 55 lb (25 kg))** Until sodium nitrite becomes available, break one ampule of amyl nitrite into a cloth. Out of every minute, hold the cloth containing amyl nitrite in front of the patient's mouth for 30 seconds, and then remove it for 30 seconds, until sodium nitrite can be administered. A new ampule of amyl nitrite should be broken into a cloth every 3 minutes. Discontinue use of amyl nitrite when sodium nitrite becomes available. Administration of an entire dose (10 mL of a 3% solution) of sodium nitrite to a child can produce overwhelming lethal methemoglobinemia. Therefore, children should receive 0.15 mL per pound of body weight of sodium nitrite (0.33 mL per kg body weight of 3% sodium nitrite) over a period of 5 to 20 minutes.
 - Next, administer 0.75 mL per pound body weight of 25% sodium thiosulfate (1.65 mL per kilogram body weight of 25% sodium thiosulfate) intravenously over a period of 10 minutes. If physical findings persist for 30 minutes after antidote administration, sodium nitrite and sodium thiosulfate may be readministered at half their original respective doses. However, methemoglobin levels should be monitored and not allowed to exceed 40%.
 - **If a child weighs more than 55 lb (25 kg)**, administer antidote as described for the adult (see below).
 - **Adult** Until sodium nitrite becomes available, break one ampule of amyl nitrite into a cloth. Out of every minute, hold the cloth containing amyl nitrite in front of the patient's mouth for 30 seconds, and then remove it for 30 seconds, until sodium nitrite can be administered. A new ampule of amyl nitrite

should be broken into a cloth every 3 minutes. Discontinue use of amyl nitrite when sodium nitrite becomes available. Administer 300 mg of a 3% solution (10 mL of a 3% solution) of sodium nitrite intravenously over a period of 5 to 20 minutes.

- Next, administer 12.5 g (50 mL of a 25% solution) of sodium thiosulfate intravenously over a period of 10 minutes. If physical findings persist for 30 minutes after antidote administration, sodium nitrite and sodium thiosulfate may be readministered at half their original respective doses. However, methemoglobin levels should be monitored and not allowed to exceed 40%.

- **EYE:**

- Immediately remove the patient/victim from the source of exposure.
- Immediately wash eyes with large amounts of tepid water for at least 15 minutes.
- Monitor the patient/victim for signs of whole-body (systemic) effects.
- If signs of whole-body (systemic) poisoning appear, see the Inhalation section for treatment recommendations.
- Seek medical attention immediately.

- **INGESTION:**

- Immediately remove the patient/victim from the source of exposure.
- Establish secure large-bore IV access.
- Ensure that the patient/victim has an unobstructed airway.
- Do not induce vomiting (emesis).
- Immediately administer 100% oxygen.
- Prepare a cyanide antidote kit, for use under a physician's direction, for symptomatic patient/victims. See the Antidote section for antidote administration procedures.
- Treat seizures with benzodiazepines.
- Seek medical attention immediately.

- **INHALATION:**

- Immediately remove the patient/victim from the source of exposure.
- Evaluate respiratory function and pulse.
- Ensure that the patient/victim has an unobstructed airway.
- Immediately administer 100% oxygen.
- Assist ventilation as required.
- If breathing has ceased (apnea), provide artificial respiration.
- Establish secure large-bore intravenous (IV) access.
- Prepare a cyanide antidote kit, for use under a physician's direction, for symptomatic patient/victims. See the Antidote section for antidote administration procedures.
- Monitor for respiratory distress.
- Seek medical attention immediately.

- **SKIN:**

- Immediately remove the patient/victim from the source of exposure.
- See the Decontamination section for patient/victim decontamination procedures.
- Monitor the patient/victim for signs of whole-body (systemic) effects.
- If signs of whole-body (systemic) poisoning appear, see the Inhalation section for treatment recommendations.
- Seek medical attention immediately.

Long-Term Implications

- **MEDICAL TREATMENT:** Evidence for the benefit of gastric decontamination in cases of cyanide ingestion is limited at best and should come after all other known life-saving measures have been instituted. Gastric lavage (stomach pumping) is recommended only if it can be done shortly after ingestion (generally within 1 hour), in an emergency department, and after the airway has been secured. Activated charcoal may be administered as a slurry (240 mL water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old. Patient/victims who have ingested hydrogen cyanide solutions or patient/victims who have direct skin or eye contact should be observed in the Emergency Department for at least 4 to 6 hours for the development of delayed symptoms. Patient/victims with significant inhalation exposure should be monitored for the accumulation of fluid in the lungs (pulmonary edema), which may occur up to 24 to 72 hours following exposure.
- **DELAYED EFFECTS OF EXPOSURE:** Usually death occurs rapidly or there is prompt recovery. Survivors of severe cyanide exposures may suffer brain damage due to a direct effect of the poison (toxin) on nerve cells, or to a lack of oxygen, or possibly due to insufficient blood circulation. Examples of long-term neurological effects caused by cyanide poisoning include personality changes, memory loss, and disturbances in movement (both voluntary and involuntary movement disorders); some damage may be permanent.
- **EFFECTS OF CHRONIC OR REPEATED EXPOSURE:** Hydrogen cyanide has not been classified for cancer-causing (carcinogenic) effects, and no carcinogenic effects have been reported for hydrogen cyanide. No reproductive or developmental effects of hydrogen cyanide have been reported. Chronically exposed workers may complain of headache, eye irritation, easy fatigue, chest discomfort, palpitations, loss of appetite (anorexia), and nosebleeds (epistaxis). Workers such as electroplaters and picklers, who are exposed daily to cyanide solutions, may develop a "cyanide" rash, characterized by itching and by macular, papular, and vesicular eruptions. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irritation of the upper respiratory tract and eyes.

On-Site Fatalities

- **INCIDENT SITE:**
 - Consult with the Incident Commander regarding the agent dispersed, dissemination method, level of PPE required, location, geographic complications (if any), and the approximate number of remains.
 - Coordinate responsibilities and prepare to enter the scene as part of the evaluation team along with the FBI HazMat Technician, local law enforcement evidence technician, and other relevant personnel.
 - Begin tracking remains using waterproof tags.
- **RECOVERY AND ON-SITE MORGUE:**
 - Wear PPE until all remains are deemed free of contamination.
 - Establish a preliminary (holding) morgue.
 - Gather evidence, and place it in a clearly labeled impervious container. Hand any evidence over to the FBI.
 - Remove and tag personal effects.
 - Perform a thorough external evaluation and a preliminary identification check.
 - See the Decontamination section for decontamination procedures.
 - Decontaminate remains before they are removed from the incident site.

See Guidelines for Mass Fatality Management During Terrorist Incidents Involving Chemical Agents, U.S. Army Soldier and Biological Chemical Command (SBCCOM), November, 2001 for detailed recommendations.

Occupational Exposure Limits

- **NIOSH REL:**
 - Ceiling: 5 mg/m³ (4.7 ppm)

- **OSHA PEL:**
 - TWA (10-minute): 5 mg/m³

- **ACGIH TLV:**
 - Ceiling: 5 mg/m³ (skin) (as CN [cyanide ion])

- **NIOSH IDLH:** 25 mg/m³ (as CN [cyanide ion])

- **DOE TEEL:**
 - TEEL-0: 5 mg/m³
 - TEEL-1: 5 mg/m³
 - TEEL-2: 5 mg/m³
 - TEEL-3: 40 mg/m³

- **AIHA ERPG:**
 - ERPG-1: Not established/determined
 - ERPG-2: Not established/determined
 - ERPG-3: Not established/determined

Acute Exposure Guidelines

	5 min	10 min	30 min	1 hr	4 hr	8 hr
AEGL 1 (discomfort, non-disabling) - mg/m³	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined
AEGL 2 (irreversible or other serious, long-lasting effects or impaired ability to escape) - mg/m³	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined
AEGL 3 (life-threatening effects or death) - mg/m³	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined	Not established/determined

See the Emergency Response Card for Hydrogen Cyanide for AEGLs established for the toxic gas released by sodium cyanide.

Decontamination (Environment and Equipment)

- **ENVIRONMENT/SPILLAGE DISPOSAL:** The following methods can be used to decontaminate the environment/spillage disposal:
 - Do not touch or walk through the spilled agent if at all possible. However, if you must, personnel should wear the appropriate PPE during environmental decontamination. See the PPE section of this card for detailed information.
 - Keep combustibles (e.g., wood, paper, and oil) away from the spilled agent. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact the spilled agent.

- Do not direct water at the spill or the source of the leak.
 - Stop the leak if it is possible to do so without risk to personnel, and turn leaking containers so that gas rather than liquid escapes.
 - Prevent entry into waterways, sewers, basements, or confined areas.
 - Isolate the area until gas has dispersed.
 - Ventilate the area.
- **EQUIPMENT:** Agents can seep into the crevices of equipment making it dangerous to handle. The following methods can be used to decontaminate equipment:
 - Not established/determined

Agent Properties

Chemical Formula NaCN

Aqueous solubility Soluble

Boiling Point 2725°F (1496°C)

Density 1.60 g/mL at 77°F (25°C)

Flammability Noncombustible

Flashpoint Not established/determined

Ionization potential Not established/determined

Log K_{benzene-water} Not established/determined

Log K_{ow} (estimated) -1.69

Melting Point 1045°F (563°C)

Molecular Mass 49.01

Soluble In Ammonia, alcohol (slightly soluble)

Specific Gravity 1.60

Vapor Pressure Approximately 0 mm Hg at 68°F (20°C)

Volatility Not established/determined

Hazardous Materials Warning Labels/Placards

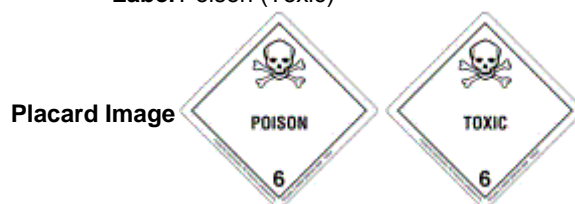
Shipping Name Sodium cyanide, solid or solution

Identification Number 1689 (Guide 157)

Hazardous Class or Division 6.1

Subsidiary Hazardous Class or Division

Label Poison (Toxic)



Trade Names and Other Synonyms

- | | |
|------------------------------|---------------------------------|
| • Cianuro di sodio (Italian) | • Cyanure de sodium (French) |
| • Cyanasalt H | • Cymag |
| • Cyanasalt S | • Hydrocyanic acid, sodium salt |
| • Cyanide of sodium | • Kyanid sodny (Czech) |
| • Cyanobrik | • M-44 cyanide capsules |
| • Cyanogran | • Prussiate of soda |

Who to Contact in an Emergency

In the event of a poison emergency, call the poison center immediately at 1-800-222-1222. If the person who is poisoned cannot wake up, has a hard time breathing, or has convulsions, call 911 emergency services.

For information on who to contact in an emergency, see the CDC website at http://www.bt.cdc.gov/emcontact/index.asp or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY).

Important Notice

The user should verify compliance of the cards with the relevant STATE or TERRITORY legislation before use. NIOSH, CDC 2003.
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