

NIOSH EMERGENCY RESPONSE CARD

BLOOD AGENT

HYDROGEN CYANIDE

UN #: 1051 Guide 117 (anhydrous or greater than 20% solution) Hydrocyanic acid
 Prussic acid
 UN #: 1613 Guide 154 (less than 20% solution) AC
 CAS #: 74-90-8 Chemical Formula: HCN
 RTECS #: MW6825000 Molecular weight: 27.03

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ CLINICAL SIGNS/ SYMPTOMS	PREVENTION/ PERSONAL PROTECTIVE EQUIPMENT	FIRST AID/ FIRE FIGHTING
FIRE	Extremely flammable. Gives off irritating or toxic gases in a fire.	NO open flames, NO sparks, and NO smoking.	Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out; in other cases extinguish with powder, water spray, foam, carbon dioxide.
EXPLOSION	Gas/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting.	In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

ROUTE OF EXPOSURE

Synopsis:	May be absorbed through skin and eyes.	AVOID ALL CONTACT!	IN ALL CASES refer for medical attention! Triage procedures and medical management guidelines - see ATSDR medical management guidelines for Hydrogen Cyanide.
Inhalation:	<ul style="list-style-type: none"> ● Headache ● Dizziness ● Confusion ● Nausea ● Shortness of breath ● Convulsions ● Vomiting ● Weakness ● Anxiety ● Irregular heart beat ● Tightness in the chest ● Unconsciousness ● Effects may be delayed. 	Ventilation, local exhaust, or breathing protection. Gas mask with HC (Hydrogen Cyanide) canister (escape). Pressure demand, self-contained breathing apparatus (SCBA) (SCBA CBRN, if available) is recommended in response to non-routine emergency situations CBRN, Full Facepiece APR (when available) is recommended in non-routine, emergency situation environments less than IDLH but above REL or PEL levels.	Fresh air, rest. Half-upright position. Avoid mouth to mouth resuscitation, administer oxygen by trained personnel. Seek medical attention immediately. (See Notes.) Triage procedures and medical management guidelines - see ATSDR medical management guidelines for Hydrogen Cyanide.
Skin:	MAY BE ABSORBED! (See <i>Inhalation</i> for other symptoms.)	Butyl rubber gloves. Teflon, Responder, or Tychem Protective clothing. See NIOSH Protective Clothing .	Remove contaminated clothes. Rinse skin with plenty of water or shower. Wear protective gloves when

			administering first aid. Seek medical attention immediately.
Eyes:	VAPOR WILL BE ABSORBED! Redness. <i>(See Inhalation for other symptoms.)</i>	Safety goggles, face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then seek medical attention immediately.
Ingestion:	Burning sensation. <i>(See Inhalation for other symptoms.)</i>	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. See inhalation. Do NOT induce vomiting. Seek medical attention immediately. <i>(See Notes.)</i>

OCCUPATIONAL EXPOSURE LIMITS (OELs):	OSHA PEL: TWA 10 ppm (11 mg/m ³) skin NIOSH REL: ST (short term) 4.7 ppm (5 mg/m ³) skin ACGIH TLV : 4.7 ppm; 5 mg/m ³ (ceiling value) (skin) (ACGIH 2002). NIOSH IDLH: 50 ppm <i>(See Acute Exposure Guideline levels below.)</i>
SAMPLING AND ANALYTICAL METHODS:	NIOSH 6010 (HYDROGEN CYANIDE) NIOSH 7904 (CYANIDES, aerosol and gas)

DECONTAMINATION	Patients/victims: Wet contaminated clothing should be removed and the underlying skin washed with soap and water or water alone for 2-3 minutes. Equipment: N/A Environment: <i>(See Spillage Disposal.)</i>
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SPILLAGE DISPOSAL	Evacuate danger area immediately! Consult an expert! Ventilation. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. NEVER direct water jet on liquid. Prevent from entering confined spaces. Do NOT let this chemical enter the environment. Extra personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. STORAGE: Fireproof. Separated from food and feedstuffs. Cool. Store only if stabilized.
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PACKAGING & LABELLING	UN# 1051 (Guide 117)(anhydrous or greater than 20% solution) UN# 1613 (Guide 154) (less than 20% solution)
	Marine pollutant.
	F+ symbol
	T+ symbol
	R: 12-26
	S: 1/2-7/9-16-36/37-38-45
	Hazard Class: 6.1
	Subsidiary Risks: 3
	Packing Group: I
	NFPA 704 Signal: Health - 4 Flammability - 4 Reactivity - 2

Special -

IMPORTANT DATA	<p>PHYSICAL STATE; APPEARANCE: Colorless Gas or Liquid, with characteristic odor.</p> <p>PHYSICAL DANGERS: The gas mixes well with air, explosive mixtures are easily formed.</p> <p>CHEMICAL DANGERS: The substance may polymerize due to warming, under the influence of base(s), over 2% water, or temperatures above 184°C, or if not chemically stabilized, with fire or explosion hazard. On combustion, forms toxic and corrosive gases, including nitrogen oxides. The solution in water is a weak acid. Reacts violently with oxidants, hydrogen chloride in alcoholic mixtures, causing fire and explosion hazard.</p> <p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance irritates the eyes and the respiratory tract. Cyanides poison the vital organs of the body (for example the lungs and heart) including areas of the brain that regulate proper functioning of those organs. Exposure may result in convulsions, unconsciousness and in death. (See Notes.)</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: N/A</p>
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PHYSICAL PROPERTIES	Melting Point: 8.6°F (-13°C)
	Boiling Point: 78.8°F (26°C)
	Vapor Pressure (20°C): 618.7 mm Hg
	Relative vapor density (air = 1): 0.94
	Volatility: N/A
	Relative vapor density (water = 1): 0.69
	Aqueous Solubility(20°C): miscible
	estimated log K _{ow} : N/A
	Flashpoint: -0.4°F (-18°C) c.c
	Flammability: N/A
	Auto-ignition temperature: 1000.4°F (538°C)
	Explosive limits, vol% in air: 5.6-40.0
	Octanol/water partition coefficient as log Pow: 0.35

ENVIRONMENTAL DATA	The substance is very toxic to aquatic organisms.
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ACUTE EXPOSURE GUIDELINES (AEGLs) Final		10 min	30 min	1hr	4 hr	8 hr
	AEGL 1 (discomfort, non-disabling) - ppm	2.5	2.5	2.0	1.3	1.0
	AEGL 2 (irreversible or other serious, long-lasting effects or impaired ability to escape) - ppm	17	10	7.1	3.5	2.5
	AEGL 3 (life-threatening effects or death) - ppm	27	21	15	8.6	6.6

NOTES

Minimum fatal dose level is about 50 mg for adults. 90 ppm is fatal in 30 minutes and 300 ppm is fatal within in a few minutes.

Mineral acids are commonly used as stabilizers. The occupational exposure limit value should not be exceeded during any part of the working exposure. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. The odor warning when the exposure limit value is exceeded is insufficient. The recommendations on this Card also apply to hydrogen cyanide, stabilized, absorbed in a porous inert material. Another UN number: 1614, hydrogen cyanide stabilized, absorbed in a porous inert material.

<p>ADDITIONAL INFORMATION</p>	<p>Trade Names and Other Synonyms</p> <ul style="list-style-type: none"> ● Carbon hydride nitride ● Cyclon ● Cyclone B ● Evercyn ● Formic anammonide ● Formonitrile
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<p>GLOSSARY OF ACRONYMS</p>	<p>APR - Air-purifying Respirator CBRN - Chemical, Biological, Radiological, Nuclear IDLH - Immediately Dangerous to Life and Health REL - Recommended Exposure Limit PEL - Permissible Exposure Limit SCBA - Self-Contained Breathing Apparatus</p>
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<p>IMPORTANT NOTICE:</p>	<p>HYDROGEN CYANIDE (ERC74-90-8) The user should verify compliance of the cards with the relevant STATE or TERRITORY legislation before use. NIOSH, CDC 2003</p>
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