

## **Hydrogen Cyanide**

### **Fact Sheet**

#### **What is hydrogen cyanide?**

At room temperature, hydrogen cyanide is a volatile, colorless-to-blue liquid (also called hydrocyanic acid). It rapidly becomes a gas that can produce death in minutes if breathed. Hydrogen cyanide is used in making fibers, plastics, dyes, pesticides, and other chemicals, and as a fumigant to kill rats. It is also used in electroplating metals and in developing photographic film.

#### **What immediate health effects can be caused by exposure to hydrogen cyanide?**

Breathing small amounts of hydrogen cyanide may cause headache, dizziness, weakness, nausea, and vomiting. Larger amounts may cause gasping, irregular heartbeats, seizures, fainting, and even rapid death. Generally, the more serious the exposure, the more severe the symptoms. Similar symptoms may be produced when solutions of hydrogen cyanide are ingested or come in contact with the skin.

#### **Can hydrogen cyanide poisoning be treated?**

The treatment for cyanide poisoning includes breathing pure oxygen, and in the case of serious symptoms, treatment with specific cyanide antidotes. Persons with serious symptoms will need to be hospitalized. Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:

- ❖ difficulty breathing, shortness of breath, or chest pain
- ❖ confusion or fainting
- ❖ increased pain or a discharge from your eyes
- ❖ increased redness, pain, or a pus-like discharge in the area of a skin burn

#### **Are any future health effects likely to occur?**

A single small exposure from which a person recovers quickly is not likely to cause delayed or long term effects. After a serious exposure, a patient may have brain or heart damage.

#### **What tests can be done if a person has been exposed to hydrogen cyanide?**

Specific tests for the presence of cyanide in blood and urine generally are not useful to the doctor. If a severe exposure has occurred, blood and urine analyses and other tests may show whether the brain or heart has been injured. Testing is not needed in every case.

This information was obtained from the Agency for Toxic Substances and Disease Registry. For additional information contact:

Agency for Toxic Substances and Disease Registry  
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TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ CLINICAL SIGNS/ SYMPTOMS	PREVENTION/ PERSONAL PROTECTIVE EQUIPMENT	FIRST AID/ FIRE FIGHTING
<b>FIRE</b>	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.
<b>EXPLOSION</b>	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

<b>Synopsis:</b>	May be absorbed through skin and eyes.	<b>AVOID ALL CONTACT!</b>	<b>IN ALL CASES refer for medical attention!</b>  Triage procedures and medical management guidelines
<b>Inhalation:</b>	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
<b>Skin:</b>	MAY BE ABSORBED! (See <i>Inhalation</i> for other symptoms.)	Butyl rubber gloves. Teflon, Responder, or Tychem Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Wear protective gloves when administering first aid.  Seek medical attention immediately.
<b>Eyes:</b>	VAPOR WILL BE ABSORBED! Redness.	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.
<b>Ingestion:</b>	Burning sensation.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. See inhalation. Do NOT induce vomiting.  Seek medical attention immediately.

<b>IMPORTANT DATA</b>	<p><b>PHYSICAL STATE; APPEARANCE:</b> Colorless Gas or Liquid, with characteristic odor.</p> <p><b>PHYSICAL DANGERS:</b> The gas mixes well with air, explosive mixtures are easily formed.</p> <p><b>CHEMICAL DANGERS:</b> 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><b>ROUTES OF EXPOSURE:</b> The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p><b>INHALATION RISK:</b> A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p><b>EFFECTS OF SHORT-TERM EXPOSURE:</b> 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.</p>
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