

HYDROGEN CYANIDE

What is hydrogen cyanide?

Cyanide is a fast-acting, potentially deadly chemical that prevents the cells of the body from using oxygen properly. When this happens, the cells die. Cyanide is released from natural substances found in some foods, such as apple seeds and peach pits, and in certain plants. Cyanide is in cigarette smoke and the substances released when materials, such as plastic, burn. Cyanide is used to make paper, textiles and plastics. It is in the chemicals used to develop photographs. Cyanide gas is used to kill pests on ships and in buildings.

Cyanide can exist in different forms. One form is hydrogen cyanide, which is a colorless gas. It has a "bitter almond" smell – an odor that may not be easily recognized.

Hydrogen cyanide was used as a weapon by the Germans in World War II. Reports have indicated that during the Iran-Iraq War in the 1980s, hydrogen cyanide gas may have been used along with other chemical agents.

How can someone come into contact with hydrogen cyanide?

- Someone could come into contact with cyanide by breathing air, drinking water, eating food or touching soil that contains the chemical.
- Cyanide enters water, soil or air as a result of both natural processes and industrial activities. In air, cyanide is present mainly as the gas hydrogen cyanide.
- Smoking cigarettes is one of the major sources of cyanide exposure for people who do not work in industries in which cyanide is used.

Hydrogen cyanide as a weapon: Cyanide can be an "agent of opportunity." This means that someone could explode the vehicle of transportation (truck, train) that is being used to ship the chemical, or destroy tanks that store the chemical. Cyanide would then be released into the air.

Cyanide also can be manufactured by mixing certain chemicals together to create cyanide gas.

Please note: Just because you come into contact with hydrogen cyanide does not mean you will get sick from it.

How can someone protect themselves from hydrogen cyanide poisoning?

The main way people may be poisoned by hydrogen cyanide is by breathing in air contaminated with the gas. Leave the area where the cyanide gas was released and move to fresh air.

- If you cannot get out of the area where the cyanide gas was released, stay as low to the ground as possible because cyanide gas rises.
- If the release of cyanide gas was indoors, get out of the building.

If you are near an area where cyanide gas was released, emergency personnel may tell you to either leave the area or "shelter in place" (stay put and take cover) inside a building to avoid coming into contact with the chemical.

What happens if someone gets sick from hydrogen cyanide?

The seriousness of poisoning caused by cyanide depends on the amount of cyanide a person comes into contact with, the way a person comes into contact with it and the length of time that a

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person is exposed. Breathing in cyanide gas causes the most harm, but swallowing cyanide can be a danger as well.

People who come into contact with a small amount of cyanide by breathing it, absorbing it through their skin or eating foods that contain it may have some or all of the following symptoms within minutes:

- rapid breathing
- restlessness
- dizziness
- weakness
- headache
- nausea and vomiting
- rapid heart rate

A large amount of cyanide by any route/method may cause these other health effects as well:

- convulsions
- low blood pressure
- slow heart rate
- loss of consciousness
- lung injury
- respiratory failure leading to death

Survivors of serious cyanide poisoning may develop heart and brain damage.

How likely is someone to die from contact with hydrogen cyanide?

The effects of hydrogen cyanide will depend on the concentration of exposure, length of time and way the person is exposed. A highly concentrated solution or large amount of the gas is more likely to cause severe effects, including death.

What is the treatment for hydrogen cyanide poisoning?

- **Prevention of illness after contact:** First, leave the area where the hydrogen cyanide was released and move to fresh air.
 - **Remove clothing.**
 - Then, quickly take off clothing that may have cyanide on it. If possible, any clothing that has to be pulled over the head should be cut off the body instead so the chemical does not get near the eyes, mouth or nose. If helping other people remove their clothing, try to avoid touching any contaminated areas.
 - **Wash affected areas.**
 - As quickly as possible, wash any cyanide from the skin with lots of soap and water.
 - If the eyes are burning or vision is blurred, rinse your eyes with plain water for 10 to 15 minutes.
 - If contact lenses are worn, remove them and put them with the contaminated clothing. Do not put the contacts back in. If eyeglasses are worn, wash them with soap and water. Eyeglasses can be put back on after they are washed.
 - If you are wearing jewelry that you can wash with soap and water, wash it and put it back on. If it cannot be washed, put it with the contaminated clothing.
 - **Discard contaminated items.**
 - Place the clothing and any other contaminated items inside a plastic bag. Avoid touching contaminated areas of the clothing. If you can't avoid touching contaminated areas, or you aren't sure where the contaminated areas are, wear rubber gloves or use tongs, sticks or similar objects. Anything that touches the contaminated clothing should also be placed in the bag.
 - Seal the bag, and then seal that bag inside another plastic bag.
 - Call the local county health department right away. (Visit www.idph.state.il.us//local/alpha.htm for a listing of all county health departments in Illinois or check your local phone book.)
 - When the local or state health department or emergency personnel arrive, tell them what you did with your clothes. The health department or emergency personnel will arrange for further disposal. Do not handle the plastic bags yourself.

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- **Treatment of illness:** Cyanide poisoning is treated with specific antidotes and supportive medical care (intravenous fluids, medicine to control pain) in a hospital setting. The most important thing is for injured, ill or stricken victims to seek medical treatment as soon as possible.

Is there a vaccine for hydrogen cyanide poisoning?

No, there is no vaccine for hydrogen cyanide poisoning.

What should be done if someone comes into contact with hydrogen cyanide?

If you think that you or someone you know may have come into contact with hydrogen cyanide, contact the local county health department right away. (Visit www.idph.state.il.us//local/alpha.htm for a listing of all county health departments in Illinois or check your local phone book.)

If you or someone you know is showing symptoms of hydrogen cyanide poisoning, call your health care provider or the Illinois Poison Center right away. The toll-free number for the poison center is 1-800-222-1222.

Where can one get more information about hydrogen cyanide?

- U.S. Centers for Disease Control and Prevention www.bt.cdc.gov/agent/cyanide/index.asp
- Illinois Department of Public Health www.idph.state.il.us
- Illinois Poison Center www.IllinoisPoisonCenter.org