



Hydrogen Bromide

(CAS #10035-10-6)

Information for the Public

What is hydrogen bromide?

Hydrogen bromide is a colorless, or sometimes faint yellow, highly toxic gas with a sharp, irritating odor. It can also be found as a liquid, either as hydrobromic acid (hydrogen bromide dissolved in water) or as a compressed gas under pressure (anhydrous hydrogen bromide). It is an extremely dangerous substance and must be handled with caution as it can cause severe health effects and death.

Hydrogen bromide can react violently when mixed with some chemicals, metals or water, forming a flammable, explosive gas. When hydrogen bromide is released into indoor air, dangerous levels will be reached very quickly. The gas is heavier than air and can travel to low-lying or confined areas. Containers of hydrogen bromide may explode when heated.

How is hydrogen bromide used?

Hydrogen bromide is used to make chemicals and drugs, as a solvent and as a veterinary drug. Before working with hydrogen bromide, employee training should be provided on proper safe handling and storage procedures.

How can people be exposed to hydrogen bromide?

Significant exposure usually occurs in the industries where hydrogen bromide is produced or used. Heating, pouring, spraying, spills and evaporation create conditions that increase the risk of employee exposure. Though unlikely, the general population may be exposed by breathing contaminated air or by drinking contaminated water from a facility using or storing hydrogen bromide, by skin or eye contact with the gas or liquid, or by eating food that has been contaminated with hydrogen bromide.

How can hydrogen bromide affect my health?

The degree of adverse health effects to any chemical exposure depends on three main factors: the amount one is exposed to, the route of exposure (breathing, touching, ingestion), and the length of time of the exposure. Populations of special concern (children, pregnant women, the chronically ill, the elderly, etc.) may be more sensitive to exposures than the general population.

Exposure can occur by:

- **Breathing** – Breathing hydrogen bromide gas is the most common route of exposure.
- **Eating/Drinking** – While food and water contamination would be possible with a solution of hydrogen bromide, this is not a likely route of exposure due to its irritating

properties. In the workplace, do not eat, smoke or drink where hydrogen bromide is used to avoid breathing or swallowing the chemical.

- **Skin/Eye Contact** – The gas can irritate moist areas of the skin and eyes. Skin contact with anhydrous liquid can cause frostbite.

Short term (acute) effects -

The following **acute** effects may be noted immediately or shortly after exposure:

- When the skin is exposed to the liquid, redness, pain, frostbite and blisters can occur.
- Severe burns can occur when the skin is exposed to the gas.
- Eye contact with the liquid can cause redness, pain, severe burns and possible permanent eye damage.
- Exposure to hydrogen bromide gas may result in nose and throat irritation, watery eyes, bloody nose, nausea, vomiting, chest pain and/or lightheadedness. Immediately or within a few hours after breathing the gas, the lungs can become irritated, causing coughing and/or shortness of breath. In addition to the effects listed above, higher exposure can cause swelling and spasms in the airway and a build-up of fluid in the lungs (pulmonary edema), severe shortness of breath, loss of consciousness, low blood pressure, rapid heartbeat, kidney failure, coma and death.
- Drinking a solution of hydrogen bromide can cause severe burns in the mouth and stomach.

Long term (chronic) effects -

The following **chronic** health effects can occur after high or repeated exposure and can last for months or years:

- Repeated inhalation can cause nasal discharge and respiratory tract irritation including coughing, shortness of breath and bronchitis.
- Smoking may worsen symptoms of diseases/conditions related to hydrogen bromide exposure.

What should I do if exposure to hydrogen bromide occurs?

Seek professional medical attention immediately!

- **Eye contact** – Flush the eye(s) with large amounts of water.
- **Skin contact** – If skin has been come in contact with liquid hydrogen bromide, submerge the affected area in warm water prior to removing the clothing. Wash the area with large amounts of water.
If the skin has come in contact with hydrogen bromide gas, remove the clothing and wash the area with large amounts of water. Remove any jewelry to prevent skin damage caused by hydrogen bromide contact with metal. If the clothing has been removed, double bag and place the contaminated clothing in closed containers until it can be disposed of properly.

- **Breathing** – Leave the area of the exposure and move to a source of fresh air. Keep the exposed individuals warm and allow them to rest. Professional medical care may be needed to provide oxygen and respiratory assistance.
- **Ingestion** – Rinse the mouth with large amounts of water. Do not induce vomiting. Keep the individual warm and allow them to rest.

Are there medical tests to show whether I have been exposed to hydrogen bromide?

If repeated exposures or overexposure is suspected the following may be useful:

- Chest x-rays for patients with breathing problems should be considered.
- Monitoring kidney function in patients with severe burns may be necessary.
- Serum bromine level test is recommended for chronic exposures. However, this test is not useful to acute medical management.

How can I prevent or minimize exposure to hydrogen bromide?

- Under normal working conditions, use proper handling and storage methods. Be sure to follow posted hazard and warning information. Enclose operations and/or use local exhaust ventilation. Personal protective equipment and respiratory protection may be required. Wash hands before eating, drinking or smoking. Wash thoroughly at the end of the work shift and immediately after exposure.
- In the event of accidental or intentional release, leave the area immediately. If indoors, leave the building. If outdoors, move away from the cloud or smell.

Note: Do not rely on sight or smell alone to indicate an exposure to a chemical release. Some individuals do not have the ability to smell an odor or see a chemical cloud.

For more information on hydrogen bromide:

- Michigan Department of Community (MDCH) Health Toxics and Health Hotline:
1-800-648-6942
- Michigan Occupational Health and Safety Administration (MIOSHA): 517-322-1814
- Contact your local public health department. Check <http://www.malph.org/page.cfm/108/> for your jurisdiction.
- Agency for Toxic Substances and Disease Registry (ATSDR): 1-888-422-8737
- Centers for Disease Control and Prevention (CDC) Public Response Service Hotline:
English: 1-888-246-2675
Español: 1-888-246-2857
TTY: 1-866-874-2646

For immediate assistance, call the Poison Control Center hotline: 1-800-222-1222.