Fact Sheet

Hydrogen Bromide

ST. CLAIR COUNTY HEALTH DEPARTMENT
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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.

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

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

Exposure

Most significant exposures usually occur in the industries where hydrogen bromide is produced or used.. 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.

Populations of special concern (children, pregnant women, the chronically ill, the elderly, etc.) may be more sensitive to exposures than the general population.

Health Effects

The degree of adverse health effects to any chemical exposure depends on three main factors: the amount, route and length of time of the exposure. 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. Smoking may worsen symptoms of diseases/conditions related to hydrogen bromide exposure.
- 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 may occur 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. Drinking a solution of hydrogen bromide can cause severe burns in the mouth and stomach.

- Eye contact with the liquid can cause redness, pain, severe burns and possible permanent eye damage.
- Breathing gas may cause nose and throat irritation, watery eyes, bloody nose, nausea, vomiting, chest pain and/or lightheadedness. Immediately or within a few hours. The lungs can become irritated, causing coughing and/or shortness of breath.

Long-Term (Chronic) Effects may 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.
- Higher exposure can cause swelling and spasms in the airway and a build-up of fluid in the lungs (pulmonary edema), more severe shortness of breath, loss of consciousness, low blood pressure, rapid heartbeat, kidney failure, coma and death.

Treatment

Seek professional medical attention immediately! Do not allow anyone else in the contaminated area, inform first responders of what occurred and what has been done.

Eye contact – Flush the eye(s) with large amounts of water.

Skin Contact – Submerge the affected area in warm water prior to removing the clothing. 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. Once 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.

Ingestion – Rinse the mouth with large amounts of water. Do not induce vomiting. Keep the individual warm and allow them to rest.

Diagnosis

If repeated exposures or overexposure is suspected chest x-rays may be done for patients with breathing problems. A serum bromine level test is recommended for chronic exposures. However, this test is not useful to acute medical management.

Prevention

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.

For more sources of information on this topic visit or contact:

ST. CLAIR COUNTY HEALTH DEPARTMENT www.scchealth.co
MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES www.michigan.gov/mdhhs
CENTERS FOR DISEASE CONTROL AND PREVENTION www.cdc.gov
MICHIGAN DEPARTMENT OF COMMUNITY HEALTH TOXICS AND HEALTH HOTLINE: 1-800-648-6942
MICHIGAN OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (MIOSHA): 517-322-1814
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY: www.atsr.cdc.gov 1-888-422-8737