

Anhydrous Hydrogen Chloride (AHCl) Release Fact Sheet

What is Anhydrous Hydrogen Chloride (AHCl)?

Hydrogen chloride, anhydrous, also referred to as hydrogen chloride gas, anhydrous hydrogen chloride, or AHCl is a clear, colorless, gas with an extremely sharp odor. Under high pressure, AHCl is a liquid, but quickly vaporizes at atmospheric conditions.

It is used as a fundamental raw material in the manufacturing of a variety of high value chemical products used in industrial, electronic, pharmaceutical and consumer applications.

Warning Signs of an Anhydrous HCl Release

The sharp, choking odor of AHCl and its highly irritating properties are typically sufficient warning for potentially exposed persons to leave the area. Most people can detect AHCl at 1 – 5 ppm. Concentrations above 5 ppm can become acutely uncomfortable. The National Institute for Occupational Safety and Health (NIOSH) has set guidelines that at 50 ppm, AHCl is immediately dangerous to life or health. Concentrations on the order of 1,000 – 2,000 ppm may be lethal to humans within a few minutes.¹

Physical Properties of Anhydrous HCl

AHCl is a gas at atmospheric pressure and is a stable compound. AHCl will react with alkalis, many organic materials and oxidizing agents to generate heat and potentially chlorine gas. AHCl is nonflammable. It is readily absorbed in water to form hydrochloric acid. In moist air, it forms a white vapor, which may form a mist of hydrochloric acid. AHCl is heavier than air and may settle in low lying areas.

Effects of Exposure to Anhydrous HCl

The effects of exposure are dependent on the duration and concentration of exposure. Vapor exposure to eyes may cause tearing and burning. In the unlikely event AHCl liquid contacts the skin, a frost-bite type injury may result, due to rapid cooling. A short single exposure may cause severe skin burns. Inhalation of hydrogen chloride vapor may damage the upper respiratory tract.

¹ Source: National Oceanic and Atmospheric Administration's Cameo Chemicals, <https://cameochemicals.noaa.gov/chemical/8731>

For first aid treatment to exposure of AHCl, refer to the supplier's AHCl Safety Data Sheet and medical personnel. Responders should take the necessary precautions to protect themselves from any exposure to AHCl while administering first aid and should move the victim from any contaminated area as quickly as possible.

Emergency Response

Options for the protection of employees and the public include sheltering-in-place, evacuation from the affected area, or a combination of the two. Those affected should listen to local first response officials and news outlets for guidance during an emergency.

Shelter-in-Place

Persons in an area affected by an AHCl release may be advised by local emergency authorities to shelter-in-place. This is frequently done to protect people and pets until the risk of exposure to the chemical has passed.

Additional guidance for sheltering-in-place can be found at:

- <https://emergency.cdc.gov/shelterinplace.asp>
- <https://www.osha.gov/SLTC/etools/evacuation/shelterinplace.html>

Evacuation

Evacuation of a large segment of population is always very difficult and time consuming. Evacuation can also expose both the public and responders to the hazardous material. When the leak of hazardous material is large or will continue for an extended period of time it may be necessary to proceed with an evacuation.

More Information

Local emergency phone number for immediate medical attention in the U.S.: 911

Regional Poison Control Center phone number in the U.S.: 1-800-222-1222

Refer to a Safety Data Sheet (SDS)

The information provided in this Fact Sheet is not meant to be complete. For more information on first aid, refer to your Safety Data Sheet (SDS) for AHCl. Visit <https://bookstore.chlorineinstitute.org/> to download free copies of pertinent pamphlets.