

Hydrochloric acid

also applied to hydrogen chloride gas

Substance	Hazard	Comment
Hydrogen chloride Gas	  CORROSIVE TOXIC	DANGER. It causes severe skin burns and eye damage. It is toxic if breathed in. For a 15-minute exposure, the concentration in the atmosphere should not exceed 8 mg m^{-3} . Effects of exposure by inhalation may or may not be immediately apparent and can develop and/or increase over time. Inhalation by those with known breathing difficulties (eg, asthma) may exacerbate such pre-existing conditions.
Concentrated hydrochloric acid (if 6.8 M or more)	  CORROSIVE IRRITANT	DANGER. It causes burns. The vapour irritates the lungs.
Moderately concentrated hydrochloric acid (if less than 6.8 M but 2.7 M or more)	 IRRITANT	WARNING. It may irritate the eyes, and respiratory system.
Dilute hydrochloric acid (if less than 2.7 M)	Currently not classified as hazardous	This includes stomach acid. Dilute acid may still cause harm to the eyes or the skin. Treat as for more concentrated samples.

Typical control measures to reduce risk

- Use the lowest concentration possible.
- Use the smallest volume possible.
- Wear eye protection; goggles for concentrated acids.
- **Avoid breathing the gas or fumes from concentrated solutions, eg, by use of a fume cupboard.**

Assessing the risks

- What are the details of the activity to be undertaken? What are the hazards?
- What is the chance of something going wrong?
eg hazardous products (such as chlorine) produced as a result of a reaction with the acid or choking fumes if the concentrated acid is over-heated.
- How serious would it be if something did go wrong?
NB There are occasional reports of students being taken to hospital as a result of breathing in chlorine.
- How can the risk(s) be controlled for this activity?
eg can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

In all emergency situations, alert the responsible adult immediately. Be aware that actions may include the following:

- In the eye Irrigate the eye with gently running tap water for at least 20 minutes. Call 999/111.
- Vapour breathed in Remove to fresh air. Call 999/111 if breathing is difficult.
- In the mouth/swallowed Do no more than wash out the mouth with drinking water. Do **not** induce vomiting. Call 999/111.
- Spilt on the skin or clothing Remove contaminated clothing. Quickly use a dry cloth or paper towel to wipe as much liquid off the skin as possible. Irrigate the affected area with gently-running tap water for at least 20 minutes. If a large area is affected or symptoms occur, call 999/111.
- Spilt on the floor, bench, etc **For release of gas, including larger spills, consider the need to evacuate the laboratory and open all windows.** For large spills, and especially for (moderately) concentrated acid, cover with mineral absorbent (eg cat litter), then scoop into a bucket. Neutralise with sodium carbonate. Rinse with plenty of water. Wipe up small amounts with a damp cloth and rinse well.