




Ammonia (gas & solution)

also applies to Ammonium hydroxide

Substance	Hazard	Comment
Ammonia (gas)	 TOXIC	It is irritating to the eyes and lungs; breathing it can lead to severe poisoning. However, the human nose can detect ammonia at well below danger levels. For a 15-minute exposure, the concentration in the atmosphere should not exceed 25 mg m ⁻³ . (It is also DANGEROUS FOR THE ENVIRONMENT because it is very toxic to aquatic organisms.)
Concentrated ammonia solution (If 6 M or more)	 CORROSIVE	'880' ammonia, (ammonium hydroxide solution). It causes burns; it is dangerous to the eyes (goggles should be worn). It causes severe internal damage if swallowed. Ammonia gas will be present and the pressure of gas builds up on hot days . (It is also DANGEROUS FOR THE ENVIRONMENT because it is very toxic to aquatic organisms.)
Moderately-concentrated ammonia solution (If less than 6 M but 3 M or more)	 IRRITANT	(Ammonium hydroxide solution). This includes 'household' ammonia. It is irritating to the eyes and skin. Its odour can cause distress.
Dilute ammonia solution (If less than 3 M)	LOW HAZARD	(Dilute ammonium hydroxide solution) It may still cause harm in eyes or in a cut.

Typical control measures to reduce risk

- Use the lowest concentration and smallest volume possible.
- **Wear suitable eye protection**, including when making or disposing of solutions.
- Use a fume cupboard for all but test-tube amounts of the gas and more-concentrated solutions (including opening bottles); ensure good laboratory ventilation.
- If smelling the gas, follow the safe technique for sniffing gases: use your hand to waft the gas towards your nose.

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, Solution spurting out of test tubes when being heated; release of ammonia gas as a product of a chemical reaction; possibility of the ammonia gas concentration reaching dangerous levels.*
- *How serious would it be if something did go wrong?*
NB Alkali in the eye causes more damage than acid of equivalent concentration.
- *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 the eye** Flood the eye with gently-running tap water for at least 20 minutes (for alkalis). See a doctor. If it is necessary to go to hospital, continue washing the eye during the journey in an ambulance.
- **Vapour breathed in** Remove the casualty to fresh air. Call a doctor if breathing is difficult.
- **Swallowed** Do no more than wash out the mouth with water. Do **not** induce vomiting. Sips of water may help cool the throat and help keep the airway open. See a doctor.
- **Spilt on the skin or clothing** Remove contaminated clothing. Drench the skin with plenty of water. If a large area is affected or blistering occurs, see a doctor.
- **Spilt on the floor, bench, etc** **Consider the need to evacuate the laboratory and open windows** if large amounts are spilt and especially for (moderately) concentrated solutions. Cover with mineral absorbent (eg, cat litter) and scoop into a bucket. Neutralise with citric acid. Rinse with plenty of water. Wipe up small amounts with a damp cloth and rinse it well.