









Ammonia (gas & solution)

also applies to Ammonium hydroxide

Substance	Hazard	Comment
Ammonia (Gas)	  CORROSIVE TOXIC  ENVIRONMENT	DANGER: Causes severe skin burns and eye damage. Toxic if inhaled. Flammable gas. Very toxic to aquatic organisms. For a 15-minute exposure, the concentration in the atmosphere should not exceed 25 mg m^{-3} . Effects of exposure develop or increase over some time. Inhalation may exacerbate the problems of those with asthma etc. However, the human nose can detect ammonia at well below danger levels.
Concentrated ammonia solution (If 3 M or more) Ammonium hydroxide solution; 35 % w/w (18 M) ammonia is commercially available, density 0.880 g cm^{-3} , hence often called '880 ammonia'.	  CORROSIVE IRRITANT  ENVIRONMENT	DANGER: Causes severe skin burns and eye damage. Respiratory irritant. Very toxic to aquatic organisms. Ammonia gas will be present and the pressure of gas builds up on hot days – open cautiously in a fume cupboard. 'Household' ammonia is about 6 M.
Moderately concentrated ammonia solution (If less than 3M but 1.8 M or more)	 CORROSIVE	DANGER: Causes severe eye damage; irritates skin. Its odour can cause distress.
Moderately dilute ammonia solution (If less than 1.8 M but 0.6 M or more)	 IRRITANT	WARNING: irritates skin and eyes.
Dilute ammonia solution (If less than 0.6 M)	LOW HAZARD	It may still cause harm in eyes or in a cut.

Typical control measures to reduce risk

- Use the lowest concentration 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. Consult a medic. 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. Consult a medic if breathing is difficult.
- **Swallowed** Do no more than wash out the mouth with drinking water. Do **not** induce vomiting. Consult a medic.
- **Spilt on the skin or clothing** Remove contaminated clothing. Then drench the skin with plenty of water. If a large area is affected or blistering occurs, consult a medic .
- **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.