





Substance	Hazard	Comment
Ammonium chloride <i>Solid and concentrated solution (if 1.8 M or more)</i>	 HARMFUL	WARNING: harmful if swallowed, causes serious eye irritation. It decomposes on heating to form ammonia gas (see CLEAPSS Student Safety Sheet 30) and hydrogen chloride gas (see CLEAPSS Student Safety Sheet 20) but they recombine on cooling. Warming with alkali will generate ammonia gas. Old name: <i>sal ammoniac</i> .
Ammonium chloride <i>Dilute solution (if less than 1.8 M)</i>	LOW HAZARD	Warming with alkali will generate ammonia gas (see CLEAPSS Student Safety Sheet 30).
Ammonium sulfate(VI) <i>Solid and solutions</i>	LOW HAZARD	It decomposes on heating to form ammonia gas (see CLEAPSS Student Safety Sheet 30) and sulfuric acid 'gas' (see CLEAPSS Student Safety Sheet 22) but they recombine on cooling. Warming with alkali will generate ammonia gas. It is an approved food additive, E517.
Ammonium carbonate <i>Solid and concentrated solution (if 1.0 M or more)</i>	 HARMFUL	WARNING: harmful if swallowed. The solid decomposes, even at room temperature, to ammonia (see CLEAPSS Student Safety Sheet 30) and carbon dioxide (see CLEAPSS Student Safety Sheet 58). Warming with alkali generates ammonia gas. It is an approved food additive, E503. Old name: <i>sal volatile</i> ; used as smelling salts.
Ammonium carbonate <i>Dilute solution (if less than 1.0 M)</i>	LOW HAZARD	Warming with alkali generates ammonia gas (see CLEAPSS Student Safety Sheet 30).
Ammonium nitrate(V) <i>Solid</i>	  OXIDISER IRRITANT	WARNING: oxidiser, causes serious eye irritation, may cause skin or respiratory irritation. It may decompose explosively if heated or on grinding; many industrial accidents have occurred in this way. Warming with alkali will generate ammonia gas (see CLEAPSS Student Safety Sheet 30).
Ammonium nitrate(V) <i>Solution</i>	LOW HAZARD	The solution does have oxidising properties. Do not heat the solution to dryness. Warming with alkali will generate ammonia gas (see CLEAPSS Student Safety Sheet 30).
Ammonium dichromate(VI)		See CLEAPSS Student Safety Sheet 47.

Typical control measures to reduce risk

- Wear eye protection when handling hazardous solids and solutions.
- Do not heat solid ammonium nitrate(V) and do not heat ammonium nitrate(V) solution to dryness.
- Avoid exposure to hazardous decomposition products if ammonium carbonate, chloride or sulfate(VI) are heated, eg, by using a fume cupboard.
- Avoid exposure to ammonia gas when reacting ammonium salts with alkalis, eg, by using 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, specks of solid transferred into the eye, by rubbing with a contaminated finger.
- **How serious would it be if something did go wrong?**
- **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 10 minutes. Consult a medic if pain persists.
- **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** Brush solid off contaminated clothing. Rinse clothing or skin as necessary.
- **Spilt on the floor, bench, etc** Brush up solid spills, trying to avoid raising dust, then wipe with a damp cloth. Wipe up solution spills with a cloth and rinse it well.