





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 <i>Student Safety Sheet 30</i>) and hydrogen chloride gas (see CLEAPSS <i>Student Safety Sheet 20</i>) 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 <i>Student Safety Sheet 30</i>).
Ammonium sulfate(VI) <i>Solid and solutions</i>	LOW HAZARD	It decomposes on heating to form ammonia gas (see CLEAPSS <i>Student Safety Sheet 30</i>) and sulfuric acid 'gas' (see CLEAPSS <i>Student Safety Sheet 22</i>) 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 <i>Student Safety Sheet 30</i>) and carbon dioxide (see CLEAPSS <i>Student Safety Sheet 58</i>). 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 <i>Student Safety Sheet 30</i>).
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 <i>Student Safety Sheet 30</i>).
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 <i>Student Safety Sheet 30</i>).
Ammonium dichromate(VI)		See CLEAPSS <i>Student Safety Sheet 47</i> .

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.