BASF Chemical Emergency Medical Guidelines

Ammonia (NH_3) A 1

Information and recommendations for first responders

- **Before approaching the patient, the first responder must make sure that he does not risk exposing himself to ammonia.**
- **Patients exposed only to ammonia gas do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with ammonia-containing liquids can secondarily contaminate rescue and medical personnel by direct contact or through off-gassing ammonia.**
- **Ammonia gas or solution is highly irritating and can cause serious corrosive burns to eyes or skin.**
- **Irritation of the respiratory tract can result in rhinorrhea, coughing, and dyspnea. Swelling of the throat and signs of accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur.**
- **There is no antidote to be administered to counteract the effects of ammonia. Treatment consists of supportive measures.**

1. Substance information

Ammonia (NH_3), CAS 7664-41-7
Synonyms include ammonia gas, anhydrous ammonia and liquid ammonia. Ammonia dissolves readily in water to form a caustic alkaline solution of ammonium hydroxide.
Ammonia is lighter than air. In case of an accidental release of liquid Ammonia under pressure, rapid cooling down causes formation of a dense cloud that hugs the ground.
Ammonia is widely used as a catalyst and reagent in the manufacture of fertilizers, plastics, explosives, pesticides, other chemicals, and as a refrigerant. It is found in many household and industrial-strength cleaning solutions.

2. Routes of exposure

Inhalation

Inhalation is a significant route of exposure. Ammonia's odor and irritant properties may provide adequate warning of hazardous concentrations. However, olfactory fatigue may occur, making the presence of lower concentrations difficult to detect with prolonged exposure.

Skin/eye contact

Fairly low concentrations of ammonia produce rapid irritation of the eye and moist skin. **Direct contact with liquid ammonia or concentrated gas on moist skin or eyes causes severe chemical burns.**

Ingestion

Accidental ingestion of ammonia is unlikely. Ammonia solutions may cause corrosive injury to the mouth, throat, and stomach if ingested.

3. Acute health effects

Ammonia exposure usually causes eye, nose, and throat irritation. Respiratory distress with coughing, dyspnea, upper airway obstruction, narrowing of bronchi and accumulation of fluid in the lungs may occur.
If the skin is wet or moist, contact with ammonia can cause burning pain, inflammation, blisters, and ulceration. Contact with liquid ammonia under pressure can result in frostbite.

Low gas concentrations cause burning discomfort, spasmodic blinking or involuntary closing of the eyelids, redness, and tearing. After exposure to higher concentrations or liquid ammonia, corneal burns occur and may lead to blindness.

4. Actions

Rescuer self-protection	**If the zone which has to be entered by the rescuer is suspected of containing ammonia in a concentration of 500 ppm or greater, pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn; do not use equipment that is contaminated itself.** Rescuer exposure to a concentration lower than 500 ppm might be accepted without protective measures only for acute rescue operations. Patients exposed only to ammonia gas do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with ammonia-containing liquids may secondarily contaminate rescue and medical personnel by direct contact or through off-gassing ammonia.
Patient recovery	Patients should be removed from the contaminated zone immediately. Patients who are unable to walk may be removed on backboards or stretchers; if these are not available, carefully remove/transport patients with appropriate action to a safe zone, taking into account your self-protection. Immediate priorities must follow the "**A, B, C's**" of resuscitation: **A) Airway** (make sure the airway is not blocked by the tongue or a foreign body) **B) Breathing** (check to see if the patient is breathing, provide ventilations with use of appropriate barrier devices, e.g. with a pocket face mask, if breathing is absent) **C) Circulation** (start CPR in any unresponsive person with absent or abnormal breathing)
Decontamination	Patients exposed only to ammonia gas who have no evidence of skin or eye irritation do not need decontamination. All others require decontamination. Patients who are able and cooperative may assist with their own decontamination. If the exposure involved liquid ammonia and if clothing is contaminated, remove and double-bag the clothing. **Irrigate exposed or irritated eyes with plain water or saline for at least 20 minutes**. Remove contact lenses if present and easily removable without additional trauma to the eye. Continue other basic care during flushing. **Flush exposed skin and hair with plain water for at least 15 minutes**. Protect eyes during flushing of skin and hair. Continue other basic care during flushing.
Further actions	**Each potentially exposed person should seek immediate medical advice and treatment.**

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