BASF Chemical Emergency Medical Guidelines

Aliphatic amines A 1

Information and recommendations for first responders

- **These guidelines are based on information about the aliphatic amines mono-, di-, trimethylamine, and mono-, di-, triethylamine. Recommendations for other aliphatic amines might be similar. However, these guidelines do not cover special features potentially related to other aliphatic amines.**
- **Patients exposed only to gas/vapor of aliphatic amines do not pose a significant risk of secondary contamination. Victims whose clothing or skin is contaminated with liquid aliphatic amines can secondarily contaminate rescue and medical personnel by direct contact or through off-gassing/ evaporation of aliphatic amines.**
- **Gas, vapor or liquid of aliphatic amines is highly irritating and can cause serious injuries 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) may occur.**
- **There is no antidote to be administered to counteract the effects of aliphatic amines. Treatment consists of supportive measures.**

1. Substance information

Aliphatic amines: (Mono-)methylamine (CH_3NH_2) CAS 74-89-5, dimethylamine ($(CH_3)_2NH$) CAS 124-40-7, trimethylamine ($(CH_3)_3N$) CAS 75-50-3, (mono-)ethylamine ($CH_2CH_2NH_2$) CAS 75-04-7, diethylamine ($(CH_3CH_2)_2NH$) CAS 109-89-7, triethylamine ($(CH_3CH_2)_3N$) CAS 121-44-8
The lower aliphatic amines discussed here are alkyl derivatives of ammonia. At room temperature, methylamine and ethylamine are colorless gasses, the other aliphatic amines are volatile liquids. These aliphatic amines are soluble to slightly soluble in water. They all have a distinctly unpleasant odor. In high concentrations their odor is like ammonia, in lower concentrations their odor is fishlike.
Aliphatic amines are widely used as basic materials for chemical syntheses, as intermediates and as solvents in the manufacture of plastics, crop protection products, explosives, dyes, surfactants, catalysts and other chemicals.

2. Routes of exposure

Inhalation

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

Skin/eye contact

Fairly low concentrations of aliphatic amines produce rapid irritation of the eye and moist skin. **Direct contact with liquid aliphatic amines or concentrated gas/vapor on moist skin or eyes causes severe chemical injuries.**

Ingestion

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

3. Acute health effects

Aliphatic amines exposure usually causes eye, nose, and throat irritation. Respiratory distress with coughing, dyspnea, upper airway obstruction, bronchitis, pneumonitis, and accumulation of fluid in the lungs may occur.
If the skin is wet or moist, contact with gas or vapor of aliphatic amines can cause burning pain, inflammation, blisters, and ulceration. Contact with liquid aliphatic amines under pressure can result in frostbite.
Low gas/vapor concentrations can cause edema of the corneal epithelium without pain accompanied by hazing of vision, blue/gray vision and halos. After exposure to higher concentrations or liquid aliphatic amines, conjunctival hemorrhages, corneal opacities, and keratitis may occur. Additional symptoms like burning discomfort, spasmodic blinking or involuntary closing of the eyelids, redness, and tearing may result.
After inhalation, transient headache, nausea, faintness, and anxiety may occur.

4. Actions

Rescuer self-protection

If the zone which has to be entered by the rescuer is suspected of containing aliphatic amines in a concentration of 50 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 50 ppm might be accepted without protective measures only for acute rescue operations.
Patients exposed only to gas/vapor of aliphatic amines do not pose a significant risk of secondary contamination. Victims whose clothing or skin is contaminated with liquid aliphatic amines may secondarily contaminate rescue and medical personnel by direct contact or through off-gassing/evaporation of aliphatic amines.

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 by 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

Victims exposed only to gas/vapor of aliphatic amines who have no evidence of skin or eye irritation do not need decontamination. All others require decontamination.
Victims who are able and cooperative may assist with their own decontamination. If the exposure involved liquid aliphatic amines 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	In case of ingestion of aliphatic amines, **do not induce emesis. Each potentially exposed person should seek immediate medical advice and treatment.**

In this document BASF has made a diligent effort to ensure the accuracy and currency of the information presented but makes no claim that the document comprehensively addresses all possible situations related to this topic. This document is intended as an additional resource for first responders in assessing the condition and managing the treatment of patients exposed to aliphatic amines. It is not, however, a substitute for the judgement of a first responder and must be interpreted in the light of specific information regarding the patient available to such a first responder and in conjunction with other sources of authority.

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