
Information and recommendations for first responders

- Before approaching the patient, the first responder must make sure that he does not risk exposing himself to hydrazine.
 - Patients exposed only to hydrazine vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with hydrazine liquid can secondarily contaminate rescue and medical personnel by direct contact or through off-gassing hydrazine.
 - Hydrazine vapor or liquid is irritating and can cause corrosive burns to eyes or skin.
 - Inhalation of the vapor 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, coughing) may occur.
 - Systemic toxicity comprises of nausea, vomiting, abdominal pain, CNS depression, trembling, ataxia, seizure, and methemoglobinemia.
 - Treatment consists of symptomatic and supportive measures. In case of neurological symptoms, pyridoxine can be used as antidote. Symptomatic methemoglobinemia is treated with toluidine blue or methylene blue.
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1. Substance information

Hydrazine (NH₂-NH₂), CAS 302-01-2
Hydrazine hydrate (N₂H₄-H₂O), CAS 10217-52-4
(contains 55% Hydrazine w/w); CAS 7803-57-8 (contains 64% Hydrazine w/w)
Synonymes: diamide, diamine
Hydrazine is at room temperature a colorless, fuming, oily liquid with an ammonia-like or fishy odor. The substance decomposes producing ammonia fumes, hydrogen and nitrogen oxides, causing fire and explosion hazard (boiling point 113.5 °C, flash point 37.8 °C). Hydrazine has been used as a rocket fuel, for corrosion prevention, as chemical reactant, and in the urethane coating production.

2. Routes of exposure

Inhalation

Inhalation is a significant route of exposure. Hydrazine's odor and irritant properties may provide adequate warning of hazardous concentrations. Swelling of the throat and signs of accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, coughing) may occur.

Skin/eye contact

Rapid and significant absorption may occur. **Direct contact with liquid hydrazine or concentrated vapor on skin or eyes causes irritation/chemical burns.** Hypersensitivity reactions have also been reported with dermal exposures.

Ingestion

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

3. Acute health effects

Hydrazine exposure usually causes eye and nose irritation. Breathing of hydrazine for short periods may cause coughing and irritation of the throat and lungs, convulsions, tremors, seizure, or methemoglobinemia. Breathing hydrazine for long periods may cause liver and kidney damage. Hydrazine is a sensitizer and a suspected carcinogen.

4. Actions

Rescuer self-protection

If the zone entered by the rescuer is suspected of containing hydrazine in a concentration of 1 ppm or greater, pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn; do not use equipment that is contaminated itself.

Patients exposed only to hydrazine vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with hydrazine-containing liquids may secondarily contaminate rescue and medical personnel by direct contact or through off-gassing hydrazine.

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 hydrazine vapor who have no evidence of skin or eye irritation do not need decontamination. All others require decontamination. Hydrazine can spontaneously ignite upon contact with cloth; clothing should be removed immediately.

Patients who are able and cooperative may assist with their own decontamination. If the exposure involved liquid hydrazine 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.

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 hydrazine. 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.

BASF SE
Corporate Health Management
Carl-Bosch-Straße 38
67056 Ludwigshafen
Germany

BASF Corporation
Medical Department
100 Park Avenue
Florham Park, NJ 07932
USA