
Information and recommendations for first responders

- Patients whose clothing or skin is contaminated with liquid sulfuric acid can cause secondary contamination of rescue and medical personnel by direct contact. Patients exposed only to sulfuric acid mists do not pose a significant risk of secondary contamination.
 - Sulfuric acid is rapidly corrosive to all tissues. Eye contact causes severe burns and loss of vision. Contact with the skin causes severe burns, which may be delayed. Mists are irritating to the skin, eyes, and respiratory tract and causing irritation, coughing, chest pain and dyspnea. Swelling of the throat and 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 sulfuric acid. Treatment consists of supportive measures.
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1. Substance information

Sulfuric acid (H₂SO₄), CAS 7664-93-9

Synonyms: oil of vitriol, battery acid.

Sulfuric acid is a clear, colorless nonflammable oily liquid with a choking odor when hot. Its brownish color may be due to organic impurities, which have been charred by the high affinity for water. Sulfuric acid is used as a feedstock in the manufacture of other chemical commodities, synthetic fertilizers, nitrate explosives, artificial fibers, dyes, pharmaceuticals, detergents, glue, paint, and paper. It is an electrolyte in storage batteries. It is used in the leather, fur, food processing, wool, manufacture of plastics, petroleum refining, metal cleaning and pickling, and uranium industries, for gas drying, and as a laboratory reagent.

2. Routes of exposure

Inhalation

Exposures may occur by inhalation of mists. Sulfuric acid's odor and upper respiratory tract irritant properties generally provide adequate warning of hazardous concentrations.

Skin/eye contact

Most exposures occur by direct contact of the skin and the eyes with liquid sulfuric acid. Contact with the skin and the eyes causes severe burns which may be delayed in onset.

Ingestion

Ingestion causes severe corrosive injury of the mucous membranes of the throat and esophagus.

3. Acute health effects

Respiratory

Exposure to sulfuric acid mists usually causes sore throat and coughing. Rapid development of respiratory distress with chest pain, dyspnea, laryngospasm, and accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur. Lung injury may progress over several hours. Sulfuric acid exposure may cause respiratory failure.

Skin

Deep burns of the skin and mucous membranes are caused by direct contact with liquid sulfuric acid; disfiguring scars may result. Contact with sulfuric acid mists can cause burning pain, redness, inflammation, and blisters.

Eye Eye contact with liquid sulfuric acid causes severe burns and loss of vision. Contact with mists cause burning discomfort, spasmodic blinking or involuntary closing of the eyelids, redness, and tearing.

4. Actions

Rescuer self-protection

If the zone that has to be entered by the rescuer is suspected of containing sulfuric acid, pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn.

Patients exposed only to sulfuric acid mists do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid sulfuric acid may secondarily contaminate rescue and medical personnel by direct contact.

Patient recovery

Patients should be removed from the contaminated zone immediately. If patients can walk, they should walk. Patients who are unable to walk may be removed on backboards or stretchers; if these are not available, carefully carry or drag patients to safety.

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 ventilation with use of appropriate barrier devices, e.g. with a pocket facemask, if breathing is absent)
- C) Circulation** (start CPR in any unresponsive person with absent or abnormal breathing)

Decontamination

Patients exposed only to sulfuric acid mists 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 sulfuric acid 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 sulfuric acid. 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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