
Information and recommendations for first responders

- Patients exposed only to styrene vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid styrene (boiling point 145°C, 293°F, respectively) can secondarily contaminate rescue and medical personnel by direct contact or evaporation of styrene.
 - Styrene is irritating when it comes in contact with the eyes, skin, nose and throat and causes headache, nausea, vertigo, dizziness, weakness, disorientation, and unconsciousness. Central and peripheral neuropathy has been noted.
 - There is no antidote to be administered to counteract the effects of styrene. Treatment consists of supportive measures.
-

1. Substance information

Styrene (C₈H₈), CAS 100-42-5

Synonyms: vinylbenzene

Styrene is, at room temperature, a colorless to yellow, oily liquid with a boiling point of 145°C, 293°F, respectively. Both vapor and liquid are potential fire and explosion hazards. Styrene has a sweet, sharp odor at air concentrations of 0.017 – 1.9 ppm, with rapid olfactory fatigue. It is slightly soluble in water, but soluble in alcohol, ether, and acetone. Styrene undergoes spontaneous polymerization. Carbon monoxide may be released in a styrene fire.

Styrene is an organic solvent with a high evaporation rate used in the manufacture of polystyrene plastics, protective coatings, styrenated polyesters, copolymer resins with acrylonitrile and butadiene, and as a chemical intermediate. Styrene-butadiene rubber is the most widely employed type of synthetic rubber.

2. Routes of exposure

Inhalation

Most exposures occur by inhalation. Styrene is readily absorbed by the lungs.

Skin/eye contact

It is absorbed through the skin causing systemic effects.

Ingestion

Styrene is absorbed by the gut. Ingestion is uncommon in occupational settings. However, aspiration is possible.

3. Acute health effects

Systemic

Styrene causes headache, nausea, vertigo, dizziness, weakness, disorientation, and unconsciousness. Acute exposure to high concentrations may produce signs of upper respiratory irritation, followed by asphyxia, muscular weakness, cardiac arrhythmia, coma and death from respiratory paralysis. Central and peripheral neuropathy and alterations in liver enzymes have been noted after long-term exposure.

Respiratory

Styrene is irritating to the nose and throat.

Dermal

Irritation of the skin may be caused by direct contact to liquid styrene.

Ocular

Eye contact to vapor or liquid styrene causes irritation with burning discomfort, spasmodic blinking or involuntary closing of the eyelids, redness, and tearing

4. Actions

Rescuer self-protection

If the zone which has to be entered by the rescuer is suspected of containing styrene, pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn; do not use equipment that is contaminated itself.

Patients whose clothing or skin is contaminated with liquid styrene may secondarily contaminate rescue and medical personnel by direct contact.

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 ventilation 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 to styrene require decontamination.

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

Following ingestion rinse mouth and afterwards administer charcoal as a slurry (240 ml water/30 g charcoal). Emesis not recommended due to the potential for esophageal irritation and aspiration.

Further actions

Each potentially exposed person should seek medical advice and treatment.

<p>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 styrene. 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.</p>
--

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

BASF Corporation
Medical Department
100 Campus Drive, M/S F 221
Florham Park, NJ 07932
USA