
Information and recommendations for first responders

- Patients whose clothing or skin is contaminated with liquid acrylonitrile can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of acrylonitrile. Patients exposed only to acrylonitrile vapor (boiling point 77°C, 171°F, respectively) do not pose a significant risk of secondary contamination. Acrylonitrile's odor provides inadequate warning of hazardous concentrations.
 - Acrylonitrile irritates skin, eyes, and the respiratory tract. It is well absorbed by the lungs, the gastrointestinal tract and through the intact skin and causes systemic effects which may include shortness of breath, drowsiness, unconsciousness, irregular heartbeat, low blood pressure, and jaundice.
 - Treatment consists of supportive care and initial administration of oxygen. Specific antidotal treatment should be considered.
-

1. Substance information

Acrylonitrile (CH₂=CH-CN), CAS 107-13-1

Synonyms: Vinyl cyanide, propenenitrile.

At room temperature (boiling point 77°C, 171°F, respectively) acrylonitrile is a clear, colorless-yellow, volatile, and flammable liquid with an unpleasant odor. It is slightly soluble in water and soluble in most organic solvents.

Acrylonitrile is used in the production of acrylic fibers, styrene plastics and adhesives. Such fibers and plastics are used in clothing, furniture, construction materials, motor vehicles and food packing.

2. Routes of exposure

Inhalation

Most exposures occur by inhalation. Acrylonitrile's odor does not provide adequate warning of hazardous concentrations. Olfactory fatigue develops rapidly. Acrylonitrile is heavier than air and may cause asphyxiation in poorly ventilated, low-lying, or enclosed spaces.

Skin/eye contact

Liquid acrylonitrile or high vapor concentrations are well absorbed through the intact skin and lead to systemic toxicity.

Ingestion

Ingestion of acrylonitrile causes acute toxic effects; fatal poisoning may result.

3. Acute health effects

Systemic

All routes of exposure to acrylonitrile can result in systemic effects and may include shortness of breath, chest tightness, headache, drowsiness, convulsions, loss of consciousness, irregular heartbeat, low blood pressure, and jaundice. The systemic toxicity of acrylonitrile may be due to metabolic release of cyanide, a cellular asphyxiant, as well as to acrylonitrile itself. The onset of symptoms may be delayed up to 12 hours.

Respiratory

Acute inhalation exposure irritates the respiratory tract. Sneezing, tearing, chest discomfort, cough, shortness of breath, and gasping respiration can result.

Skin/eye

Direct contact with liquid acrylonitrile or concentrated vapor causes severe skin irritation, eye irritation and lacrimation and corneal injury.

4. Actions

Rescuer self-protection

If the zone which has to be entered by the rescuer is suspected of containing acrylonitrile vapor or contact with liquid acrylonitrile, 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 acrylonitrile vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid acrylonitrile may secondarily contaminate rescue and medical personnel by direct contact or through evaporation of acrylonitrile.

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 acrylonitrile vapor 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 acrylonitrile and if clothing is contaminated, remove and double-bag the clothing.

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.

Irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes. Remove contact lenses if present and easily removable without additional trauma to the eye. 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 acrylonitrile. 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 Campus Drive, M/S F 221
Florham Park, NJ 07932
USA