

Chemical Emergency Medical Guideline

Information and recommendations for first responders and patients

Toluene

CAS No.: 108-88-3

GHS symbols:



GHS07

Acute toxicity



GHS08

Health hazard

Signal word: Danger

Hazard statements:

- | | |
|-------|---|
| H304 | May be fatal if swallowed and enters airways. |
| H315 | Causes skin irritation. |
| H336 | May cause drowsiness or dizziness. |
| H373 | May cause damage to organs (central nervous system) through prolonged or repeated exposure. |
| H361d | May cause harm to the unborn child. |

Overview

- There is no danger from contact with patients who have only been exposed to toluene vapors. A patient who is wet with liquid toluene (boiling point 110.6°C) or whose clothing is wet with liquid toluene may endanger other people through direct contact or through evaporating toluene.
- Toluene irritates the skin, eyes and respiratory tract and can cause headaches, nausea, dizziness, weakness, confusion and unconsciousness. Disorders of the central and peripheral nervous system have been observed.
- There is no known specific antidote. Treatment depends on the extent of exposure and the symptoms.

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1. Information about the substance

Toluene (C₆H₅-CH₃), CAS 108-88-3

Synonyms: methylbenzene, phenylmethane

At room temperature (boiling point 110.6°C), toluene is a clear, colorless liquid. The vapor and liquid are flammable. Toluene has an aromatic odor. The odor threshold is 2.5ppm. It is slightly soluble in water but highly soluble in organic solvents. Combustion produces carbon monoxide.

Toluene is an organic solvent with high vapor pressure and is mainly obtained from the refining of crude oil. It is used in the manufacture of benzene, trinitrotoluene, nylon, plastics and polyurethane.

2. Exposition

2.1. Inhalation

Exposure to toluene occurs mainly through inhalation. Toluene is rapidly absorbed through the lungs.

2.2. Skin/eye contact

Toluene is absorbed through the skin and can lead to general symptoms of poisoning.

2.3. Ingestion

Toluene is absorbed through the gastrointestinal tract. However, ingestion is rare in the workplace. If swallowed, it can enter the respiratory tract.

3. Acute health effects

Toluene can cause general symptoms of poisoning such as headaches, nausea, dizziness, weakness, confusion and loss of consciousness. Exposure to high concentrations can cause signs of upper respiratory tract irritation, followed by oxygen deficiency, muscle weakness, cardiac arrhythmia, coma and respiratory arrest. Disorders of the central and peripheral nervous system and liver enzyme changes have been observed with chronic exposure. High concentrations can lead to temporary kidney dysfunction with acidosis and electrolyte disturbances.

Toluene irritates the upper respiratory tract. Local exposure to liquid toluene can cause skin irritation. Local exposure of the eyes to liquid toluene or high vapor concentrations can cause irritation with redness, burning, tearing or spasmodic eyelid closure.

A single, short-term exposure to toluene, from which the affected person recovers quickly, does not normally cause delayed or lasting damage to health.

Disorders of the central and peripheral nervous system (coordination and concentration disorders, memory disorders, sensory disturbances in the limbs, reduced nerve conduction velocity), elevated liver enzymes and hearing damage have been observed in chronically exposed individuals. After inhaling relevant amounts of toluene, permanent respiratory disorders and increased susceptibility to lung infections have been described. Exposure to high concentrations of toluene can lead to temporary kidney dysfunction.

4. Measures

4.1. Self-protection of first aiders

If there is a suspicion that the area the helper must enter contains toluene, a self-contained breathing apparatus and a chemical protection suit must be worn. Contaminated equipment should not be used.

There is no danger from contact with patients who have only been exposed to toluene vapors. A patient who is wet with liquid toluene or whose clothing is wet with liquid toluene may endanger other people through direct contact or through evaporating toluene.

4.2. Rescue

Patients should be removed from the danger zone immediately. If they are unable to walk unaided, they should be removed from the danger zone quickly using appropriate means, taking care to protect themselves. The "A, B, C procedure" has absolute priority in this case.

- A) Clear the airways** (check for blockages caused by the tongue or foreign objects)
- B) Ventilation** (check the patient's breathing; if necessary, begin ventilation with adequate self-protection, e.g. breathing mask)
- C) Circulation** (begin resuscitation for any person who does not respond to verbal commands and is not breathing normally)

4.3. Cleaning

Patients who have only been exposed to toluene vapors and show no signs of skin or eye irritation do not require any special cleaning measures, unlike all others.

If possible, patients should assist with their own cleaning. If liquid toluene has been exposed and clothing is contaminated, it must be removed and securely wrapped.

If the eyes have been exposed to toluene or if there is eye irritation, rinse with water or neutral saline solution for 15 minutes. Remove any contact lenses, if possible, without causing additional danger to the eye. Continue other important first aid measures during this time.

Rinse affected skin and hair with water for at least 15 minutes. Protect eyes while rinsing. Continue other important first aid measures during this time.

Rinse the mouth and then give 200–300 ml of water to dilute the substance, provided the patient is awake and responsive. Do not induce vomiting under any circumstances; this may cause irritation of the esophagus and may lead to toluene entering the lungs.

4.4. Further measures

Anyone who may have been exposed to toluene should seek medical attention immediately.

Patients who are conscious and able to swallow should, if possible, be given 50 g of activated charcoal (or 1 g/kg body weight for children weighing up to 50 kg). Activated charcoal may be administered repeatedly at any time to complete decontamination if there are signs or suspicion of ongoing absorption. For multiple doses, start with the single-dose amount mentioned above, followed by the same dose every four hours or half the dose every two hours. Avoid inhaling the product.

Avoid vomiting; it can cause irritation of the esophagus and aspiration.

4.5. Instructions for further rules of conduct

Consult your family doctor or the emergency department of the nearest hospital if any abnormalities or symptoms occur within the next 24 hours, in particular:

- Coughing, wheezing or whistling breath
- Breathing difficulties or shortness of breath
- Increased pain or abnormalities in the affected skin areas or eyes
- Headache, nausea, dizziness

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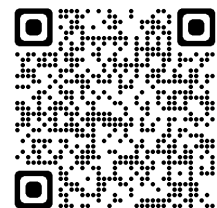
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