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Chemical Emergency Medical Guideline

Information and recommendations for first responders and patients

Acrylamide

CAS No.: 79-06-1

GHS symbols:

GHS06
Acute toxicity

GHS08
Health hazard

Signal word: Danger

Hazard statements:

H301	Toxic if swallowed.
H317	May cause allergic skin reactions.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H340	May cause genetic defects.
H350	May cause cancer.
H372	Damages organs through prolonged or repeated exposure.
H361f	May damage fertility.

Overview

- There is no danger from contact with patients who have only been exposed to acrylamide vapors. A patient who is wet with aqueous acrylamide solution (boiling point 150°C) or whose clothing is wet with it may endanger other people through direct contact or through evaporating acrylamide.
- Acrylamide irritates the skin, eyes and respiratory tract and can cause hallucinations, a drop in blood pressure, cramps, gastrointestinal and respiratory problems. Disorders of the central and peripheral nervous system may occur.
- 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

Acrylamide (CH_2=CHCONH_2), CAS 79-06-1
Synonyms: acrylic acid amide, ethylene carboxamide, vinylamide
At room temperature (melting point 84.5°C), acrylamide is present in the form of colorless and odorless crystals. It is soluble in acetone and ether and miscible with water and alcohol. Acrylamide is stable at room temperature, but it is highly reactive and polymerizes rapidly when heated to its melting point or exposed to UV light. For this reason, acrylamide is usually handled as a stabilized aqueous solution. Thermal decomposition products include carbon monoxide, carbon dioxide, ammonia and nitrogen oxides.
Acrylamide is used as a reactive monomer and intermediate in the production of organic chemicals and for the manufacture of acrylamide polymers and copolymers, such as adhesives, fibers, paper additives, molded parts, flocculants and textiles.

2. Exposition

2.1. Inhalation

Exposure to acrylamide occurs mainly through inhalation. Acrylamide is rapidly absorbed through the lungs.

2.2. Skin/eye contact

Acrylamide is absorbed through the skin and can cause symptoms of poisoning.

2.3. Ingestion

Acrylamide is absorbed through the gastrointestinal tract. Ingestion is rare in the workplace.

3. Acute health effects

In most cases, acrylamide poses a hazard when its vapors are inhaled.
Low concentrations irritate the skin, eyes and upper respiratory tract and can cause hallucinations, a drop in blood pressure, cramps and gastrointestinal complaints. Disorders of the central and peripheral nervous system may occur. Severe effects can lead to respiratory disorders and circulatory collapse.

Acrylamide irritates the nose and throat.

Local exposure to aqueous acrylamide solution can cause skin irritation. Local exposure to aqueous acrylamide solution or high vapor concentrations can cause eye irritation with redness, burning, tearing or spasmodic eyelid closure.

Acrylamide can cause symptoms of poisoning such as hallucinations, drop in blood pressure, convulsions, gastrointestinal and respiratory problems. Disorders of the central and peripheral nervous system may occur. Respiratory depression and circulatory collapse may occur. These symptoms may also occur hours after acute, high-dose exposure.

A single, short-term exposure to acrylamide, 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 (weakness, sensory disturbances, fatigue, listlessness, reduced sensitivity to touch and vibration, weakened reflexes, scaling of the palms and soles of the feet, sweating, and peripheral circulatory disorders) have been observed in chronically exposed workers. Some individuals who inhaled large amounts of acrylamide developed permanent respiratory disorders and were subsequently more susceptible to infectious lung diseases.

4. Measures

4.1. Self-protection of first aiders

If there is a suspicion that the area the helper must enter contains acrylamide, 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 acrylamide vapors. A patient who is wet with aqueous acrylamide solution, or whose clothing is wet with it, may endanger other people through direct contact or through evaporating acrylamide.

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 acrylamide 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 they have been exposed to an aqueous acrylamide solution and their clothing is contaminated, it must be removed and securely wrapped.
If the eyes have been exposed to acrylamide or if there is eye irritation, they must be rinsed with water or a neutral saline solution for 15 minutes. Contact lenses must be removed, if possible, without causing additional danger to the eye. Other important emergency measures must be continued 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.
Avoid vomiting; this may cause irritation of the esophagus and penetration into the lungs.

4.4. Further measures

Anyone who may have been exposed to acrylamide 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
- Difficulty breathing or shortness of breath
- Increased pain or abnormalities in the affected skin areas or eyes
- Headache, nausea, dizziness, hallucinations, sensory disturbances

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