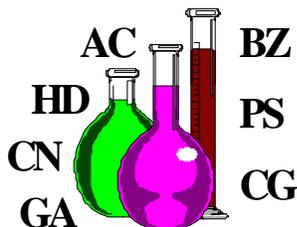


U.S. Army Center for Health Promotion and Preventive Medicine



General Facts About Blood Agent Hydrogen Cyanide (AC)

218-31-1096

General

Hydrogen cyanide is a fast acting, highly poisonous material. It may be fatal if inhaled, swallowed, or absorbed through the skin. It is an extremely hazardous liquid and vapor under pressure. With prompt treatment following overexposure, recovery is normally quick and complete. AC inactivates the enzyme cytochrome oxidase, preventing the utilization of oxygen by the cells. The toxic hazard is high for inhalation, ingestion, and skin and eye exposure, but AC is primarily an inhalation hazard due to its high volatility.

Synonyms

Hydrocyanic acid;
Formonitrile.

Description

Pure AC is a nonpersistent, colorless liquid that is highly volatile. It has a faint odor similar to bitter almonds that sometimes cannot be detected even at lethal concentrations. It is one of the quickest acting poisons. It hinders the vital oxidation-reduction reactions in the body resulting in anoxia affecting the central nervous system resulting in respiratory paralysis.

Overexposure Effects

AC poisoning causes a deceptively healthy pink to red skin color. However, if physical injury or lack of oxygen is involved, the skin color may be bluish. Human health effects of overexposure by inhalation, ingestion, or skin contact may include nonspecific symptoms such as reddening of the eyes, flushing of the skin, nausea, headaches, dizziness, rapid respiration, vomiting, drowsiness, drop in blood pressure, rapid pulse, weakness, and loss of consciousness; central nervous system stimulation followed by central nervous system depression, hypoxic convulsions, and death due to respiratory arrest; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, and inadequate circulation. Higher AC inhalation exposures may lead to fatality.

In a few cases, disturbances of vision or damage to the optic nerve or retina have been reported, but the exposures have been acute and at lethal or near-lethal concentrations. Skin permeation can occur in amounts capable of producing systemic toxicity. There are no reports of human sensitization.

Emergency and First Aid Procedures

Inhalation: remove patient to fresh air, and lay patient down; administer oxygen and amyl nitrite; keep patient quiet and warm; even with inhalation poisoning, thoroughly check clothing and skin to assure no cyanide is present; seek medical attention immediately.

Eye Contact: flush eyes immediately with plenty of water; remove contaminated clothing; keep patient quiet and warm; seek medical attention immediately.

Skin Contact: wash skin promptly to remove the cyanide while removing all contaminated clothing, including shoes; do not delay; skin absorption can occur from cyanide dust, solutions, or HCN vapor; absorption is slower than inhalation, usually measured in minutes compared to seconds; HCN is absorbed much faster than metal cyanides from solutions such as sodium, potassium or copper cyanide solutions; even after washing the skin, watch the patient for at least 1 to 2 hours because absorbed cyanide can continue to work into the bloodstream; wash clothing before reuse and destroy contaminated shoes.

Ingestion: give patient one pint of one percent sodium thiosulfate solution (or plain water) immediately by mouth and induce vomiting; repeat until vomit fluid is clear; never give anything by mouth to an unconscious person; give oxygen; seek medical attention immediately.

For more information, contact:
Kenneth E. Williams
USACHPPM
Aberdeen Proving Ground, MD 21010-5422
Commercial (410) 671-2208; DSN: 584-2208
email: kwilliam@aeha1.apgea.army.mil