Poison Facts:

Low Chemicals: Isopropyl Chloroformate

Properties of the Chemical

DO NOT CONFUSE ISOPROPYL CHLOROFOMATE WITH CHLOROFORM. Isopropyl chloroformate is a colorless liquid with corrosive properties and a pungent odor. It is a highly flammable chemical. Isopropyl chloroformate decomposes when heated, producing toxic and corrosive fumes, including hydrogen chloride and phosgene. The chemical reacts with water to produce alcohol and hydrogen chloride. Hydrolysis would yield chloroformic acid, which is considered a strong acid.

Uses of the Chemical

Isopropyl chloroformate is used in the production of weed killers and as an intermediate in the production of other chemicals. This chemical is found only in the industrial setting.

Absorption, Distribution, Metabolism and Excretion (ADME)

Isopropyl chloroformate is highly volatile and, therefore, occupational exposure may occur through inhalation. The injury and health hazards of isopropyl chloroformate are due to its highly caustic properties.

Clinical Effects of Acute Exposure

Isopropyl chloroformate damages the eyes, skin, mucous membranes and lungs. It is essential to remove the substance from all exposed areas. Eye irritation, irritation of the upper respiratory tract and surface burns have been found in exposed humans.

- **Ocular exposures:** Eye irritation may persist for some time after the exposure, and effects may be permanent.
- **Dermal exposures:** This chemical can cause deep skin burns. Sensitization may also occur.
- **Inhalation exposures:** Depending on the concentration, inhalation may produce anything from coughing and irritation to severe lung damage due to the chemical's high irritant nature. Isopropyl chloroformate is capable of causing death or permanent injury.
- **Ingestion exposures:** Burns of the esophagus and gastrointestinal tract have been reported.

In-Field Treatment Prior to Arrival at a Health Care Facility

Move the patient from the contaminated area. Remove clothing, and flood skin and eyes with water.

- **Ocular exposures:** Flush eyes for 10 to 15 minutes with room-temperature, low-pressure water.

- **Dermal exposures:** Flood skin with water, and then begin repeated soap and water washings.
- **Inhalation exposures:** If the patient is having difficulty breathing, provide oxygen if available.
- **Ingestion exposures:** Give the patient very small amounts of water. Do not give more than 1 cup of water to an adult or 1/2 cup of water to a child. EMESIS IS NOT RECOMMENDED.

Special note to first responders:

- Wear a positive-pressure Self-Contained Breathing Apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer.

Treatment of Exposures in a Health Care Facility

- **Ocular exposures:** Irrigate the eyes with copious amounts of room temperature 0.9 percent saline solution for at least 15 minutes. Perform an eye examination to determine the extent of damage.
- **Dermal exposures:** Irrigate the skin initially with water, and then use repeated soap and water washings to make sure the chemical is completely removed. Treat the patient for an acid burn.
- **Inhalation exposures:** Administer oxygen, and assist with ventilation as required. If respiratory tract irritation is present, monitor pulmonary function tests. If respiratory depression is evident, monitor ABGs, and get a chest x-ray. This chemical has produced late-onset non-cardiogenic pulmonary edema. Symptomatic patients should be admitted for 24 to 72 hours.
- **Ingestion exposures:** Give patient small amounts of water – no more than 8 ounces or 240 ml for adults and 4 ounces or 120 ml for children. Stomach decontamination is contraindicated due to potential complications of bleeding and perforation. Significant ingestions will require endoscopy.

For more poison prevention and first aid information, call the

Poison Control Center

Serving the Residents of Kansas

Toll-free Hotline

1-800-222-1222

THE UNIVERSITY OF KANSAS HOSPITAL

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