

CAUSTIC ACIDS: Health Care Information

Acids are used in a variety of industries and are stored and transported in large containers throughout the country. Acids may be released accidentally from manufacturing plants or transportation vehicles or released intentionally as a vapor, liquid or aerosol. Acids commonly used in industry include hydrochloric, hydrocyanic, phosphoric and sulfuric acids.

Recognition and Triage: Acids in aerosol, vapor or liquid form may produce **caustic injury and/or necrosis of the skin and mucous membranes (pharyngitis, rhinitis, conjunctivitis)**, as well as **lower airway necrosis, pneumonitis and cough**. Patients may be triaged as follows:

Immediate: Respiration >30/min, hypoxemia, upper airway edema or significant skin burns

Delayed: Minimal skin burns

Minor: Asymptomatic

Personal Protective Equipment (PPE) (at the health care site): The primary risk to the health care worker is exposure to acid by splash or contact with contaminated clothing. Personnel who decontaminate patients should wear splash-proof PPE (waterproof outer garment and chemical-resistant gloves) and a filtered-air respirator. Personnel treating decontaminated patients require no PPE other than universal precautions.

Decontamination (at the health care site): Sufficient decontamination includes removal of ALL clothing and jewelry and thorough washing of the skin and hair with water for 3 to 5 minutes.

Diagnosis and Treatment: Treatment is largely supportive. After life-saving maneuvers, decontamination followed by supportive treatment are the priorities. **Decontaminate** any exposed skin with copious water. Exposed or painful eyes should be flushed with 1 to 2 liters of water or normal saline; then continue flushing until the ophthalmic pH is between 7 and 8. An ophthalmic anesthetic should be used prior to flushing. **Oxygen** may be required for hypoxemia. **Early intubation should be considered for upper airway swelling or severe pneumonitis with impaired oxygen exchange.** Upper airway edema may be treated with **inhaled racemic epinephrine and corticosteroids**. **Bronchodilators** (e.g., albuterol) may be used for wheezing or cough. **Do not use alkaline products to neutralize acid on the skin, mucosal membranes or the gastrointestinal tract.** Contact the Poison Center (1 800 222 1222) for specific questions or advice on individual patients.

Patient Monitoring: Most acids have no systemic effects; they simply cause caustic injury to any surface that they contact. Continuous monitoring of pulse oximetry and end-tidal carbon dioxide may help assess oxygen exchange; however, patients with impending airway obstruction should be intubated early. Patients with significant symptoms should have cardiac monitoring. Distal circulation should be repeatedly assessed in patients with circumferential burns. Patients exposed to acids with systemic effects (e.g., anions of arsenic, fluoride and cyanide), may require cardiovascular monitoring and additional laboratory evaluation. Call the Poison Center (1 800 222 1222) for guidance.

Disposition Criteria (when to send patient home): Patients with airway or lung irritation should be admitted to the hospital. Caustic injuries that are circumferential around an extremity or the trunk, or involve greater than 10% body surface area, or involve the face, hands, feet or genitalia, should be discussed with a burn center and admitted to the hospital.

Reporting/Coordination Link: Call the Poison Center (1 800 222 1222) for information on specific patients. Contact the local or state public health authority to report a mass casualty incident. (see attached contact list).