IRRITANT GASES

ACIDS & ACID MISTS, AMMONIA AND CHLORINE GAS

Notes on Acids & Acid Mists (NOT including Hydrofluoric Acid)

BACKGROUND:
Acids act as direct irritants and corrosive agents to moist mucous membranes and to intact skin to a lesser extent. Concentrated acids may cause sever skin burns. Generally, these substances have very good warning properties: even fairly low airborne concentrations of acids produce rapid onset of eye, nose and throat irritation. Higher concentrations can produce cough, shortness of breath, wheezing, chemical pneumonia or non-cardiogenic pulmonary edema. Occasionally, pulmonary edema may be delayed for several hours, especially with low-solubility gases such as nitrogen oxides produced from nitric acid. Ingestion of acids can result in severe injury to the upper airway, esophagus and stomach.

Notes on Ammonia (Liquid and Gas)

BACKGROUND:
Ammonia (NH3) is a direct irritant and alkaline corrosive agent to moist mucous membranes and, to a lesser extent, to intact skin. Ammonia has very good warning properties. Even fairly low airborne concentrations produce rapid onset of eye, nose and throat irritation. Higher concentrations can produce cough, shortness of breath, wheezing, chemical pneumonia or non-cardiogenic pulmonary edema. The onset of pulmonary edema is usually rapid but may occasionally be delayed for 12-24 hours. Ingestion of concentrated ammonia solutions (e.g., >5%) may cause serious corrosive injury to the esophagus and stomach.

Notes on Chlorine Gas

BACKGROUND
Chlorine is a highly irritating gas which rapidly forms hydrochloric acid after contact with the moist mucous membranes in the upper airway and in the lungs. Symptoms occur rapidly and provide good warning properties for exposure. Low concentrations produce eye, nose and throat irritation. Higher concentrations produce cough, shortness of breath, wheezing, choking, chemical pneumonitis, or pulmonary edema. Ingestion of concentrated hypochlorite (bleach) solutions can cause serious corrosive injury to the esophagus and stomach.

INITIAL DECONTAMINATION PRIOR TO PREHOSPITAL MANAGEMENT:

Decontamination when necessary should include flushing the victim with water spray, and if clothing has been soaked or gas is likely to be trapped in clothing, the clothing should be removed, double-bagged and skin flushed for 1 – 2 minutes. With Acids, Acid Mists and Ammonia, injured eyes should be irrigated.

POTENTIAL FOR SECONDARY CONTAMINATION:

Small amounts of acid mists, ammonia vapor or chlorine gas can be trapped in clothing after an overwhelming exposure but are usually not sufficient to create a hazard for health care personnel

away from the scene. However, skin or clothing which has become exposed to the liquid may be corrosive to rescuers. Once the victim has been stripped and flushed with water, there is no significant risk of secondary contamination. Decontamination is not necessary for victims with inhalation of acid mists and chlorine gas exposure only.

PREHOSPITAL MANAGEMENT AFTER INITIAL DECONTAMINATION:

ACIDS & ACID MISTS	AMMONIA	CHLORINE GAS
(NOT including Hydrofluoric Acid) FORMS: Gas, Liquid (Variable Concentrations) mixtures with water and aerosolized dusts.	FORMS: Gas (anhydrous) and liquid (aqueous solutions, variable concentrations). NOTE: liquefied compressed gas may produce cryogenic (freezing) hazard as it is released into the atmosphere.	FORMS: Gas (anhydrous) or liquid (aqueous chlorine usually in the form of hypochlorite, the liquid hypochlorite (bleach) solutions are very unstable and react with acids to release chlorine gas. NOTE: liquefied compressed gas may produce cryogenic (freezing) hazard as it is released into the atmosphere.

EVALUATE AIRWAY *

- Oxygen – High flow/NRM
- Flush affected skin and eyes with copious water or saline
- Cardiac Monitor
- Transport

BASE

- Consider: I.V. TKO
- Albuterol 0.3 cc in 2.5 cc NaCl

Ingestion: DO NOT induce vomiting. Immediately dilute with 1 glass of water or milk in patients who are awake and have intact gag reflex.

* Intubation should be considered if the victim develops severe respiratory distress.

Ingestion of acids, concentrated ammonia solutions and concentrated hypochlorite solutions can cause serious corrosive injury to the esophagus and stomach; therefore, an EOA should not be considered as an airway adjunct.