DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Emergency Medical Services

CHLORINE

Agent information: Chlorine (Cl2) can be used as a drinking water and swimming pool disinfectant, as bleach, in chemical synthesis, in rubber and plastic production, and as a chemical warfare agent. Chlorine is a yellow-green, noncombustible gas with a pungent, irritating odor. It is a strong oxidizing agent and can react explosively or form explosive compounds with many common substances. Chlorine is heavier than air and may collect in low-lying areas. Chlorine is toxicologically part of a group of compounds known as moderately water-soluble irritant gases.

Route of exposure: Primary route is inhalation. Significant dermal absorption or ingestion is unlikely since chlorine is a gas at room temperature. Chlorine gas is highly corrosive when it contacts moist tissues such as the eyes, skin, and upper respiratory tract. Direct contact with liquid chlorine or concentrated vapor causes severe chemical burns, leading to cell death and ulceration.

Signs and symptoms: Signs and symptoms vary depending on the route and level of exposure. Signs include pulmonary edema with some mucosal irritation (the greater the water solubility of the agent would lead to greater mucosal irritation), leading to Acute Respiratory Distress Syndrome or non-cardiogenic pulmonary edema, pulmonary infiltrate.

Symptoms include shortness of breath, chest tightness, wheezing, cough, laryngeal spasm, mucosal and dermal irritation, and redness. Acute exposure to chlorine gas initially causes coughing, eye and nose irritation, lacrimation, and a burning sensation in the chest. Onset is one to 24 hours up to 72 hours. Delayed onset is not common but there may be a period of hours where patient is asymptomatic. Chlorine irritates the skin and can cause burning pain, inflammation, and blisters. Exposure to liquefied chlorine can result in frostbite.

Protective measures:	Utilize appropriate Level Personal Protective Equipment (PPE) as identified by the Environmental Protection Agency and Hazmat protocols. Rescue personnel are at low risk of secondary contamination from victims who have been exposed only to chlorine gas. However, clothing or skin soaked with industrial strength bleach or similar solutions may be corrosive to rescuers and may release harmful chlorine gas. Self-protect with chemical-resistant protective equipment designed to protect from respiratory system and skin absorption.
Prophylaxis:	N/A.
Treatment:	There is no antidote for chlorine. Treatment consists of supportive care.
Reporting:	Any suspect cases should be reported immediately to the Division of Public Health, 1-888-295-5156 (24/7 coverage).
Additional information:	For additional information, visit the Centers for Disease Control and Prevention website: https://emergency.cdc.gov/.