DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Emergency Medical Services

PHOSGENE

Agent Information:

Used in dye and pesticide production, chemical synthesis, and as a chemical warfare and a riot control agent; $COCl_2$. Synonyms include carbonic acid dichloride, carbonic dichloride, carbon oxychloride, carbonyl chloride, and chloroformyl chloride. At room temperature, phosgene is a colorless, nonflammable gas with a suffocating odor like new mown hay. Odor provides insufficient warning of hazardous concentrations. Below 47°F, it is a colorless, fuming liquid; contact with the liquid can cause frostbite. In the presence of water (sweat, saliva, tears), the liquid or gas slowly hydrolyzes to hydrochloric acid, which can irritate and damage cells. Phosgene is toxicologically, part of a group of compounds known as slightly water-soluble irritant gases.

Signs and Symptoms:

Signs and symptoms vary depending on the route of exposure and level of the 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 ARDS or non-cardiogenic pulmonary edema, pulmonary infiltrate; symptoms include shortness of breath, chest tightness, wheezing, laryngeal spasm, mucosal and dermal irritation and redness. Onset is 1-24 hours up to 72 hours, delayed onset is not common; may have a period of hours where patient is asymptomatic.

Route of Exposure:

Inhalation is the major route of exposure. Phosgene is absorbed to some extent by the lungs, but not by intact skin. Systemic damage is usually a secondary result of anoxia caused by loss of lung function. It is corrosive to the lungs and intact skin. Ingestion is unlikely because it is a gas at room temperature.

Protective Measures:

Utilize appropriate Level PPE as identified by the Environmental Protection Agency and Hazmat protocols.

Persons exposed only to phosgene gas do not pose substantial risks of secondary contamination. Persons whose clothing or skin is contaminated with liquid phosgene (ambient temperature below 47°F) can secondarily contaminate response personnel through direct contact or off-gassing vapor.

Prophylaxis:

N/A

Treatment:

There is no antidote for phosgene. Supportive care. Victims should be kept warm and quiet. Any activity subsequent to exposure may increase the likelihood of death.

Reporting:

Any suspect cases should be reported immediately to the Division of Public Health, Epidemiology Branch: 1-888-295-5156 (24/7 coverage). For additional information, view the CDC website for Emergency Preparedness and Response at www.bt.cdc.gov/.