DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Medical

AMMONIA (NH_3)

Agent information: Ammonia is an industrial chemical with the potential to cause mass casualty incidents. At room temperature, it is a colorless gas. Under pressure, it is a liquid. Once exposed to air, liquid ammonia quickly returns to its gaseous state. It dissolves readily in water to form ammonium hydroxide, a corrosive, alkaline solution, in high concentrations. Ammonia's pungent odor and irritating properties usually provide adequate warning of its presence. However, olfactory fatigue can occur. Inhalation can result in fatalities**.**

Route of exposure: Inhalation, dermal, ocular, and ingestion are all possible. Inhalation may cause nasopharyngeal and tracheal burns, bronchiolar and alveolar edema, and airway destruction, resulting in respiratory distress or failure. Ocular exposure rapidly leads to eye and nose irritation from airborne concentrations (100 ppm); higher concentrations may cause severe eye injury. Ammonia as a gas or solution can cause serious burns. As a liquid, it can cause frostbite. Ingesting concentrated NH_3 (not household) causes corrosive damage to the mouth, throat, and stomach.

Signs and symptoms: Signs and symptoms vary, depending on the route and level of exposure. Ammonia is highly irritating to eyes and the respiratory tract, causing swelling and narrowing of the throat and bronchi, coughing, and fluid accumulation in the lungs. Inhalation leads to rapid onset of a burning sensation in the eyes, nose, and throat, accompanied by lacrimation, rhinorrhea, coughing, and upper airway swelling. Pulmonary edema may lead to airway obstruction. Prolonged skin contact can cause corrosive injury.

Protective measures: Persons exposed only to ammonia gas do not pose significant risk of secondary contamination to personnel outside the hot zone. However, persons whose clothing or skin is contaminated with liquid ammonium hydroxide can secondarily contaminate response personnel by direct contact or through off-gassing ammonia vapor. Medical Personal protective Equipment (PPE) includes hooded Powered Air Purifying Respirator, chemical-resistant suit, gloves, and boots.

Evaluation: No tests available.

Prophylaxis: Appropriate PPE to avoid secondary contamination**.**

Treatment: There is no antidote for ammonia poisoning. Treatment is supportive care: providing humidified oxygen, bronchodilators, and airway management; and treating skin and eyes with copious irrigation. Since pulmonary injury may continue to evolve over 18 to 24 hours, carefully monitor patients for progressive symptoms.

Reporting: Report suspect cases immediately to Division of Public Health, 1-888-295-5156 (24/7 coverage).

For more information: Visit the Centers for Disease Control and Prevention website: https://www.atsdr.cdc.gov/.