



## AMMONIA

<b>Agent information:</b>	Ammonia (NH <sub>3</sub> ) is used for fertilizers, refrigerants, chemical reactions, explosives, and chemical warfare agent. Ammonia solution, also known as ammonia anhydrous, dissolves readily in water to form ammonium hydroxide. Ammonia's pungent odor and irritating properties usually provide adequate warning of its presence. However, olfactory fatigue can occur. Inhalation can result in fatalities. Ammonia is toxicologically part of a group of compounds known as highly water-soluble irritant gases.
<b>Route of exposure:</b>	Inhalation, dermal, ocular, and ingestion are all possible routes of exposure. Inhalation of ammonia may cause nasopharyngeal and tracheal burns, bronchiolar and alveolar edema, and airway destruction resulting in respiratory distress or failure. Rapid eye and nose irritation from airborne concentrations (100 ppm); higher concentrations may cause severe eye injury. Gas or solution can cause serious burns; liquid can cause frostbite. Ingestion causes corrosive damage to the mouth, throat, and stomach.
<b>Signs and symptoms:</b>	Signs and symptoms vary depending on the route of exposure and level of the exposure. Highly irritating to eyes and respiratory tract; swelling and narrowing of throat and bronchi, coughing, and an accumulation of fluid in the lungs. Rapid onset of a burning sensation in the eyes, nose, and throat, accompanied by lacrimation, rhinorrhea, and coughing; upper airway swelling and pulmonary edema may lead to airway obstruction. Prolonged skin contact can cause corrosive injury.
<b>Protective measures:</b>	Utilize appropriate Level Personal Protective Equipment (PPE) as identified by the Environmental Protection Agency and Hazmat protocols. Persons exposed only to ammonia gas do not pose significant risk of secondary contamination to personnel outside the Hot Zone. Persons whose clothing or skin is contaminated with liquid ammonium hydroxide should have their clothing and jewelry removed immediately. Contaminated skin should be washed with a mild soap and large quantities of water for at least 15 minutes. Providers can be secondarily contaminated and should wear appropriate chemical protective clothing and gloves.
<b>Treatment:</b>	There is no antidote for ammonia poisoning. Treatment is supportive care and includes administering humidified oxygen and bronchodilators; managing the airway; treating skin and eyes with copious irrigation; and diluting ingested ammonia with milk or water.
<b>Reporting:</b>	Immediately report any suspect cases to the Division of Public Health: 1-888-295-5156 (24/7 coverage).
<b>Additional information:</b>	For additional information, visit the Centers for Disease Control and Prevention website: <a href="https://www.cdc.gov/">https://www.cdc.gov/</a> and <a href="https://www.atsdr.cdc.gov">https://www.atsdr.cdc.gov</a> .

**Emergency Medical Services and Preparedness Section**  
**24/7 Emergency Contact Number: 1-888-295-5156**  
**Contact Number: 302-223-2999**