

Great Western Painting

Ammonia Awareness

AMMONIA AWARENESS

NIOSH Pocket Guide to Chemical Hazards – Ammonia

Ammonia is found in chemical plants, pharmaceutical, and industrial plants as well as refineries. Some of its uses are as a refrigerant, fertilizer, a chemical for making nitrogen containing compounds, and scrubbing SO₂ from the burning of fossil fuels.

Ammonia is a colorless gas with a pungent, suffocating odor.

Ammonia can cause harm if inhaled and/or it comes into contact with the eyes or skin.

Health Effects:

Respiratory Effects: Acute lung damage/edema; Asthma, pulmonary fibrosis, bronchiolitis.

Irritation: Eye, Nose, Throat, Bronchi, Skin.

Temporary Blindness.

Affected organs:

Respiratory system, eyes, & skin.

Potential symptoms:

Eye, nose, throat irritation; corneal burns, increased intraocular pressure; coughing; laryngeal edema; dyspnea, bronchospasm; chest pain; pulmonary edema or pneumonitis; pink frothy sputum; & skin burns.

First Aid:

Eye: Irrigate immediately (solution/liquid)

Skin: Water flush immediately (solution/liquid)

Breathing: Respiratory support

Swallow: Medical attention immediately (solution)

Personal Protective Equipment:

Appropriate personal protective equipment that will adequately protect employees during routine operations and anticipated emergencies when there is a possibility of contact with liquid ammonia or vessels containing liquid ammonia would include, at a minimum, the following which should be easily accessible: gloves, protective slicker or protective pants and jacket (impervious to ammonia); goggles and/or face shield; and full-face respiratory protection with appropriate cartridges.

Install, inspect, and maintain easily accessible emergency shower and plumbed eyewash or at least 150 gal. of clean water in an open top container.

A Self-Contained Breathing Apparatus (SCBA) may be required if there is potential for entry into an atmosphere that contains ammonia concentrations in excess of the immediately dangerous to life or health (IDLH) value [300 ppm].

Respiratory Protection:

Per 29 CFR 1910.1000 Z-1 Table, the OSHA Permissible Exposure Limit (PEL) for Ammonia is: 50 ppm; 35 mg/m³ TWA

Up to 250 ppm:

(APF = 10) Any chemical cartridge respirator with **green** cartridges.

(APF = 10) Any supplied-air respirator*

Up to 300 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode.

(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern.

(APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern.

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern.

(APF = 50) Any self-contained breathing apparatus with a full facepiece.

(APF = 50) Any supplied-air respirator with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern.

Any appropriate escape-type, self-contained breathing apparatus.

The below is extracted from 29 CFR 1910.119, App A, List of Highly Hazardous Chemicals, Toxics and Reactives (Mandatory). This Appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

<u>Chemical Name</u>	<u>CAS</u>	<u>Threshold Quantity</u>
*Ammonia, Anhydrous	7664-41-7	10000 Pounds
Ammonia solutions (greater than 44% ammonia by weight)	7664-41-7	15000 Pounds
Ammonium Perchlorate	7790-98-9	7500 Pounds
Ammonium Permanganate	7790-98-9	7500 Pounds

*Anhydrous means without water.

Because of the above, the release of ammonia at the threshold quantities above would under both process safety management as well as Hazwoper response.

As part of process safety management of highly hazardous chemicals, prior to actual work in a facility where possible exposures to highly hazardous chemicals exist, our employees will be given training on negating the hazards relating to possible chemical exposures in the areas in which we are working by the facility operator.

The training on the facility operator's emergency/contingency plan would include identification of the various hazardous chemicals, their location, specific actions to take should there be an inadvertent spill, leak, or release of hazardous chemical gases. Also during this pre-work training, all facility safety rules would be explained.

Actions would include notification of personnel, evacuation of personnel in the area to a safe zone, training on the specific chemicals that may be released. The importance of wind direction, whether the gas is heavier or lighter than air, flammable or explosive, corrosive, means to detect the gas such as odor (and use of personal gas monitors), means to protect the employees through PPE, especially respiratory protection and the use of full face respirator (gas mask) with a organic vapor canister or self-contained breathing apparatus or airline respirator escape SCBA.

Per our Hazard Communication Plan, we will keep on site, and readily available, MSDS for each chemical to which we may be exposed. This information will be provided by the facility operator.

If a monitor alarm sounds, the employee will follow the emergency procedures in place by the host contractor which would include donning an appropriate respirator, see below, vacating the area, and notifying others. If there is a potential for an uncontrolled release of ammonia, this situation could represent an emergency. Such an emergency release would be covered under 29 CFR 1910.120, the Hazardous Waste and Emergency

Response (HAZWOPER) standard [and the employee will follow the host's established procedure for emergency evacuation and response], unless it were an incidental release, as defined in the standard, 29 CFR 1910.120(a)(3), where there is no potential safety or health hazard. Paragraph (q) of 29 CFR 1910.120 covers emergency responses regardless of location.

Employees must be aware of the owner's site specific contingency/emergency plans.