

AMMONIA POLICY



SUMMARY

Accidental releases of ammonia from refrigeration facilities pose significant health hazards to employees, causing injuries and deaths.

- **Health Hazards of Ammonia:** Ammonia is corrosive to the skin, eyes, and lungs, and exposure to 300 ppm is immediately dangerous to life and health. It is also flammable and can explode under certain conditions.
- **Industrial Use and Exposure:** Anhydrous ammonia is widely used as a refrigerant in various industrial facilities, such as meat processing plants, dairies, wineries, and petrochemical facilities. Employees may be exposed when working near refrigeration machinery, petroleum refineries, or agricultural fertilizers.
- **Protection and Safety Measures:** Employees are provided with protective clothing to prevent skin contact with ammonia. They should also be aware of contingency plans and additional plant safety rules where ammonia is used.

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Worker Protection

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Accidental releases of ammonia from refrigeration facilities have resulted in both injuries and deaths to employees of these facilities. These injuries and deaths are caused from contact with both liquid and vapor forms of ammonia. Because refrigeration systems operate at elevated pressures, additional care will be taken to maintain and operate these systems to prevent releases with potentially catastrophic consequences.

Ammonia is considered a high health hazard because it is corrosive to the skin, eyes, and lungs. Exposure to 300 parts per million (ppm) is immediately dangerous to life and health. Ammonia is also flammable at concentrations of approximately 15% to 28% by volume in air. When mixed with lubricating oils, its flammable concentration range is increased. It can explode if released in an enclosed space with a source of ignition present, or if a vessel containing anhydrous ammonia is exposed to fire. Fortunately, ammonia has a low odor threshold (20 ppm), so most people will seek relief at much lower concentrations.

Exposure of the eyes to ammonia may cause burning, tearing, temporary blindness and severe eye damage. Exposure of the skin to ammonia may cause severe burns and blistering. Exposure of the respiratory tract (mouth, nose and throat) to ammonia may cause runny nose, coughing, chest pain, severe breathing difficulties, severe burns and death.

Anhydrous ammonia is widely used as a refrigerant in many industrial facilities, including:

- Meat, poultry, and fish processing facilities
- Dairy and ice cream plants
- Wineries and breweries
- Fruit juice, vegetable juice, and soft drink processing facilities
- Cold storage warehouses
- Other food processing facilities
- Seafood processing facilities aboard ships, and
- Petrochemical facilities

The Company employees may be exposed to Anhydrous Ammonia when:

- Working on/near industrial refrigeration machinery rooms, equipment and/or piping;
- Working in petroleum refineries; or
- Working with/near agricultural fertilizer.

Hazard Recognition

Ammonia spills and releases pose a significant threat to employees from skin contact, inhalation, and fire and explosion. The key provision of process safety management is process hazard analysis (PHA) - a careful review of what could go wrong and what safeguards will be implemented to prevent releases of hazardous chemicals.

Ammonia is a colorless gas under normal conditions. It can be a liquid under pressure. It has a pungent, suffocating odor. Anhydrous Ammonia is attracted to water and at ambient temperature is mainly a gas.

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High concentrations of ammonia gas, liquid ammonia and solutions of ammonia can cause harm if inhaled or if they come into contact with eyes or skin.

The Company employees are provided with and required to use impervious clothing, gloves, face shields and other appropriate protective clothing necessary to prevent any possibility of skin contact with liquid anhydrous ammonia or aqueous solutions of ammonia containing more than 10% by weight of ammonia. Similar precautions should be taken to prevent the skin from becoming frozen from contact with vessels containing liquid anhydrous ammonia.

The Company employees should be aware of clients' contingency plans and provisions. Employees will be informed where ammonia is used in the host facility and aware of additional plant safety rules.

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DISCLAIMERS

Even OSHA's own website has a disclaimer:

- These regulations and related materials are ... continually under development. The user should be aware that, while we try to keep the information on our Web site timely and accurate, there will often be a delay between official publication of the materials and their appearance or modification on these pages. The Company will make every effort to correct errors brought to our attention.

Company Disclaimer:

- The following has been developed to reduce hazards likely to cause injuries to our employees.
- Some of the following policies may not be applicable to our operations. This manual serves as a guideline and is subject to change or modification as particular circumstances warrant.
- Employees should contact their immediate supervisor or senior management with questions.
- **If there are conflicts with local, state or federal regulations or the Company's Employee Handbook or other Company documents, the local, state or federal regulations, the Company Employee Handbook or other Company documents will prevail.**

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Reference OSHA Standards:

- **Refer to the OSHA standards and updates issued by OSHA for the most accurate information.**
- **This document is based on OSHA's [Training Requirements in OSHA Standards](#) document.**
- **When there is a conflict between the contents in this document and, as applicable, [OSHA 29 CFR Part 1926 Safety and Health Regulations for Construction](#) or [OSHA 29 CFR Part 1910 Safety and Health Regulations for General Industry](#), the OSHA standards and other regulatory updates will prevail.**