



Worksite: _____ Instructor: _____ Date/Time: _____

Topic C439: Anhydrous Ammonia

Introduction: Employers engaged in the bulk storage and handling of anhydrous ammonia must ensure all equipment and systems are in compliance with the American National Standards Institute (ANSI), or Fertilizer Institute Standards (FIS) Code. With the exception of ammonia manufacturing plants and refrigeration plants where ammonia is used solely as a refrigerant operations involving anhydrous ammonia must be done in compliance with OSHA regulation §1910.111. Following are guidelines for safety when involved in work operations with anhydrous ammonia:

- Make sure you have been properly trained in the safe techniques and procedures for handling ammonia.
- If you handle ammonia, you must be equipped with the appropriate personal protective equipment (PPE). PPE may include respiratory protection, full face shield, insulated chemical resistant gloves, or a full anti-contamination suit.

Transfer of liquids

- Anhydrous ammonia must always be transferred at a temperature suitable to the construction and design of the receiving container.
- An attendant must be in the vicinity when ammonia is being transferred.
- Containers may be charged or used only upon authorization of the owner. Containers must be gauged and charged only in the open atmosphere or in buildings or areas provided for that purpose.
- Loading and unloading systems must be protected by suitable devices, such as backflow check valves or excess flow valves, to prevent emptying of the storage container in the event of a hose breaking. In the event that such valves are not practical, remotely operated shutoff valves may be installed.
- Provisions for unloading tank cars must conform to the applicable recommendations contained in the DOT regulations.

Exposure to ammonia can damage the eyes and respiratory tract. Breathing high concentrations can result in death. Appropriate PPE must be used.

Storage and protection of portable tanks

- Cylinders must be stored in an area free of ignitable debris and in such manner as to prevent external corrosion. Storage may be indoors or outdoors, but in a manner protected from moving vehicles or external damage.
- Cylinders must be protected from flames or radiant heat sources. Never apply heat directly to cylinders to raise the pressure.
- Cylinders designed for a valve protection cap must have the cap in place when not in service. Keep container tightly closed.

Potential health effects of exposure to ammonia

- Causes skin and eye burns; eye damage may be permanent, including blindness. Causes nose, throat, and lung irritation. Contact with liquid may cause frostbite. High level overexposure may be fatal.
- Ammonia is Immediately Dangerous to Life and Health (IDLH) at a concentration of 300 ppm in air. Vapor forms an explosive mixture with air.

First Aid: Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Keep away from heat, sparks and flames. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.

- If inhaled, immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming the affected area.
- In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
- If swallowed, do not induce vomiting. Give large quantity of water. Call a physician immediately. Never give anything orally to an unconscious person.

Emergency release response: Evacuate personnel to a safe area. Wear self-contained breathing apparatus. Wear full protective equipment. Shut off source of fuel, if possible without risk. Remove sources of heat, sparks, flame, impact, friction or electricity. Allow to evaporate. Dissipate vapor with water spray. Prevent material from entering sewers, waterways, or low areas. For spill cleanup, neutralize with dilute acids.

Employee Attendance: (Names or signatures of personnel who are attending this meeting)

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These guidelines do not supersede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.