UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

ANHYDROUS AMMONIA FERTILIZER DISTRIBUTION
LIST OF KEY SAFETY MEASURES

EPA developed the following key safety measures for inspection of ammonia fertilizer distribution facilities. These are measures that EPA has determined should be in place, regardless of a facility's age or size. This is not intended to be a complete list of important safety measures but rather a subset of easily verifiable items that could help facilities prevent ammonia releases and prepare for any releases that do occur. This also does not replace the obligation to comply with EPA's Risk Management Program, found at 40 C.F.R. Part 68, or the Clean Air Act General Duty Clause. For more information, please visit https://www.epa.gov/rmp.

Maintenance/Mechanical Integrity:

- Hazard Addressed: Leaks/releases from maintenance neglect
  - Hoses shall be permanently removed from service that have been installed and used over a period of time which exceeds the service life recommended by the manufacturer of the hose or, if not specified by the manufacturer, after 10 years from the date of manufacture.[1]
  - No container pressure relief device shall be used after the replacement date as specified by the manufacturer of the device. If no date is specified, a pressure relief valve shall be replaced no later than 5 years following the date of its manufacture or last repair unless it has first been disassembled, inspected, repaired, and tested by the manufacturer, or by a qualified repair organization so that the valve's condition and performance is certified as being equivalent to the standards for the original valve.[2]
  - A pressure relief device shall be subject to systematic, periodic, visual external inspection at least annually to determine that it:
    - meets the applicable requirements specified in ANSI/CGA G-2.1-2014 Standard Section 5.8;
    - is free of evidence of tampering, damage, corrosion, or foreign matter that could prevent proper operation;
    - is free of leakage when subject to pressures below the minimum allowable start-to-discharge setting;
    - has a properly installed rain cap or other device to avoid entry of moisture or other matter into the relief valve outlet; and
    - has an open weep hole to permit moisture to escape.[3]

Ammonia Storage and System Design:

- Hazard Addressed: Inadequately protecting and supporting equipment in preventing releases
  - All stationary storage installations with (capacity greater than 4,000 gal) shall have approved emergency shutoff valve(s) or backflow check valves installed in the liquid and vapor fixed piping of the transfer system within 5 lineal ft. or within reasonable distance of where the hose or swivel piping is attached to the fixed piping. These emergency shutoff valve(s) or backpressure check valves shall be protected from

[1] ANSI/CGA G-2.1-2014 Standard Section 5.7.8.8
[2] ANSI/CGA G-2.1-2014 Standard Section 5.8.16
[3] ANSI/CGA G-2.1-2014 Standard Section 5.8.14

any possible pull-away-while-connected incident between the mobile container and the transfer station.[4]

- Protection from pull-away-while connected incidents may be accomplished by:
  - Reinforced concrete or reinforced-concrete and structural steel bulkheads or equivalent anchorage strong enough not to break and massive enough not to be uprooted by the motor vehicle;
  - Use of approved breakaway devices, specifically designed for this purpose; or
  - Use of shear fittings designed to conform to good engineering practices.[5]
- Approved emergency shutoff valve(s) shall incorporate a reliable actuation system that will close all of the emergency shutoff valve(s) of the piping system on the first attempt from a remote location in the event of emergency or testing.[6]
- Containers and appurtenances shall be located or protected by suitable barriers to avoid damage by trucks or other vehicles.[7]
- Shutoff valves on storage tank openings shall be kept closed and protected by suitable means against tampering or theft of product when the installation is unattended. [8]
- All piping shall be supported in accordance with good piping practices, and provisions shall be made as necessary for expansion, contraction, impact, vibration, and settling.[9]
- Adequate provisions shall be made to protect all exposed piping from physical damage, which could result from impact by moving machinery, automobiles or trucks, or any other equipment at the facility.[10]
- Easily accessible emergency shower and plumbed eyewash unit or at least 150 gal. (570 L) of clean water in an open top container. Distance from the point of greatest exposure to ammonia to the emergency water supply should not exceed ten seconds travel time or 100 ft.[11]
- Openings (except pressure relief valves, pressure indicating devises, thermometer wells, or liquid level indicators) shall be marked, stenciled, tagged or decaled to indicate whether the opening is in contact with the liquid or vapor phase when the container is filled to the maximum allowable filling density (labeling or color coding the vessel piping).[12]
- Containers installed aboveground shall be provided with substantial reinforced concrete footings and foundations or structural steel supports mounted on reinforced concrete foundations. The reinforced concrete foundations or footings shall extend below the established frost line and shall be of sufficient width and thickness to support the total weight of the containers and contents adequately. The foundation shall maintain the lowest point of the tank not less than 18 in. above the ground. Floating type foundations shall also be acceptable providing the foundations are designed to adequately support the tank, contents, and piping.[13]

[4] ANSI/CGA G-2.1-2014 Standard Section 5.10.8.1
[5] ANSI/CGA G-2.1-2014 Standard Section 5.10.8.1
[6] ANSI/CGA G-2.1-2014 Standard Section 5.10.8.1
[7] ANSI/CGA G-2.1-2014 Standard Section 6.7.1
[8] ANSI/CGA G-2.1-2014 Standard Section 6.7.1
[9] ANSI/CGA G-2.1-2014 Standard Section 5.6.3
[10] ANSI/CGA G-2.1-2014 Standard Section 5.6.6
[11] ANSI/CGA G-2.1-2014 Standard Section 3.4.5
[12] ANSI/CGA G-2.1-2014 Standard Section 5.4.2
[13] ANSI/CGA G-2.1-2014 Standard Section 6.4.1