

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- 1) Heading of the Part: Anhydrous Ammonia, Low Pressure Nitrogen Solutions, Equipment, Containers, and Storage Facilities
- 2) Code Citation: 8 Ill. Adm. Code 215
- 3) 

<u>Section Numbers:</u>	<u>Adopted Actions:</u>
215.15	Amendment
215.16	Amendment
215.20	Amendment
215.110	Amendment
215.115	Amendment
215.120	Amendment
- 4) Statutory Authority: Illinois Fertilizer Act of 1961 [505 ILCS 80]
- 5) Effective Date of Rules: October 29, 2020
- 6) Does this rulemaking contain an automatic repeal date? No
- 7) Does the rulemaking contain incorporations by reference? No
- 8) A copy of the adopted rules, including any material incorporated by reference, is on file in the Agency's principal office and is available for public inspection.
- 9) Notice of Proposal published in the *Illinois Register*: 44 Ill. Reg. 10292; June 19, 2020
- 10) Has JCAR issued a Statement of Objection to this rulemaking? No
- 11) Differences between Proposal and Final Version: As a result of comments received by interested groups, the Department made changes that met the needs of those regulated communities. The "90-day" training was changed to a "temporary" training, so that it could last an entire growing period. Additional changes were made to demonstrate that the Department would be the sole provider of grower training. The Department also added an effective date of April 1, 2022 for the grower training portion of the rules.
- 12) Have all the changes agreed upon by the Agency and JCAR been made as indicated in the agreements issued by JCAR? Yes
- 13) Will this rulemaking replace an emergency rule currently in effect? No

ILLINOIS DEPARTMENT OF AGRICULTURE

NOTICE OF ADOPTED AMENDMENTS

- 14) Are there any rulemakings pending on this Part? No
- 15) Summary and Purpose of Rulemaking: Because of the dangerous nature of handling anhydrous ammonia, it is necessary to ensure that handlers/growers are properly trained to ensure public safety.
- 16) Information and questions regarding these adopted rules shall be directed to:

Pamela Harmon  
Illinois Department of Agriculture  
P.O. Box 19281, State Fairgrounds  
Springfield IL 62794-9281

217/524-6905  
fax: 217/785-4505

The full text of the Adopted Amendments begins on the next page:

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

TITLE 8: AGRICULTURE AND ANIMALS  
CHAPTER I: DEPARTMENT OF AGRICULTURE  
SUBCHAPTER e: FERTILIZERS

## PART 215

ANHYDROUS AMMONIA, LOW PRESSURE NITROGEN SOLUTIONS,  
EQUIPMENT, CONTAINERS, AND STORAGE FACILITIESSUBPART A: ANHYDROUS AMMONIA, EQUIPMENT,  
CONTAINERS, AND STORAGE FACILITIES

Section	Scope
215.10	Scope
215.15	Definitions
215.16	Incorporated and Referenced Materials
215.20	Safety
215.25	Basic Rules
215.30	Location of Storage Tanks
215.35	Markings of Non-Refrigerated Containers and Systems other than DOT Containers
215.40	Tank Appurtenances
215.45	Piping, Tubing and Fittings
215.50	Hose Specifications
215.55	Safety Relief Devices
215.60	Filling Densities
215.65	Transfer of Liquids
215.70	Liquid Level Gauging Devices
215.75	Painting of Containers
215.80	Electrical Equipment and Wiring
215.85	Systems Utilizing Stationary, Pier-Mounted or Skid-Mounted Aboveground Non-Refrigerated Storage
215.90	Refrigerated Storage
215.95	Tank Car Operations
215.100	Systems Utilizing Stationary, Pier-Mounted or Skid-Mounted Aboveground or Underground Non-Refrigerated Storage (Repealed)
215.105	Systems Mounted on Farm Wagons (Implements of Husbandry) for the Transportation of Anhydrous Ammonia (Repealed)
215.110	Systems Mounted on Implements of Husbandry (Nurse Tanks) for the Transportation of Anhydrous Ammonia

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- 215.115 Systems Mounted on Equipment for the Application of Anhydrous Ammonia
- 215.120 Equipment for the Application of Anhydrous Ammonia
- 215.125 Administrative Hearings

## SUBPART B: NITROGEN FERTILIZER SOLUTIONS

## Section

- 215.200 General
  - 215.205 Definitions
  - 215.210 Application of Rules
  - 215.215 Requirement of Construction and Original Test of Containers
  - 215.220 Capacity of Containers
  - 215.225 Container Valves and Accessories
  - 215.230 Piping, Tubing and Fittings
  - 215.235 Hose Specifications
  - 215.240 Safety Devices
  - 215.245 Transfer of Liquids
  - 215.250 Tank Car Loading and Unloading Points and Operations
  - 215.255 Liquid Level Gauging Devices
  - 215.260 Indicating Devices
  - 215.265 Storage Installations for Nitrogen Fertilizer Solutions
  - 215.270 Systems Mounted on Trucks, Semi-trailers and Trailers for Transportation of Nitrogen Fertilizer Solutions
  - 215.275 Systems Mounted on Vehicles and Implements of Husbandry for the Transportation of Nitrogen Fertilizer Solutions
  - 215.280 Systems Mounted on Vehicles and Implements of Husbandry for the Application of Nitrogen Fertilizer Solutions
  - 215.285 Administrative Hearings
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- 215.TABLE A Rate of Discharge
  - 215.TABLE B Guide for Selection of Materials for Refrigerated Ammonia Storage Tanks
  - 215.TABLE C Minimum Material Requirements for Shells and Bottoms of Refrigerated Storage Tanks for Various Temperatures and Thicknesses
  - 215.TABLE D Repair Welding
  - 215.TABLE E Safety Pressure Relief Valves

AUTHORITY: Implementing and authorized by Section 14 of the Illinois Fertilizer Act of 1961 [505 ILCS 80].

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

SOURCE: Rules and Regulations Relating to Anhydrous Ammonia, Low Pressure, Nitrogen Solutions, Equipment, Containers and Storage Facilities, filed May 15, 1967, effective May 15, 1967; Rules and Regulations Relating to the Handling of Nitrogen Fertilizer Solutions; filed September 7, 1967, effective September 7, 1967; amended March 31, 1975, effective April 10, 1975; amended March 2, 1976, effective March, 2, 1976; amended December 21, 1977, effective January 1, 1978; codified at 5 Ill. Reg. 10513, effective October 1, 1981; part repealed, new part adopted at 6 Ill. Reg. 2990, effective March 5, 1982; amended at 27 Ill. Reg. 9922, effective July 1, 2003; emergency amendment at 27 Ill. Reg. 10423, effective July 1, 2003, for a maximum of 150 days; amended at 27 Ill. Reg. 18536, effective November 25, 2003; amended at 40 Ill. Reg. 8704, effective July 1, 2016; amended at 44 Ill. Reg. 18281, effective October 29, 2020.

SUBPART A: ANHYDROUS AMMONIA, EQUIPMENT,  
CONTAINERS, AND STORAGE FACILITIES**Section 215.15 Definitions**

"Actuation device" means a mechanical device that is manually activated to cause the closing of emergency shutoff valves or internal valves stopping the flow of the product in the system.

"Alteration" means a change in any item described in the original manufacturer's data report that affects the pressure-containing capability of the container. Rerating a container by increasing maximum allowable working pressure or by increasing or decreasing allowable working temperature shall be considered an alteration.

"Ammonia or anhydrous ammonia" means the compound formed by the chemical combination of the elements nitrogen and hydrogen in the molar proportion of one part nitrogen to three parts hydrogen. This relationship is shown by the chemical formula,  $\text{NH}_3$ . On a weight basis, the ratio is 14 parts nitrogen to three parts hydrogen or approximately 82% nitrogen to 18% hydrogen. Ammonia may exist in either gaseous, liquid or solid state. It is not to be confused with aqua ammonia (ammonium hydroxide), which is a solution of ammonia in water.

"Approved" means listed by a recognized testing laboratory, ~~or~~ recommended by the manufacturer as suitable for use with anhydrous ammonia and so marked or documented, ~~or~~ or accepted by the authority having jurisdiction.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Appurtenance" refers to all devices such as pressure relief devices, liquid level gauging devices, valves, pressure gauges, pressure regulators, fittings, metering or devices designed to be attached to an ammonia container.

"Back check" means a device that allows liquid or vapor in the vessel, equipment or systems to flow in only one direction.

"Capacity" means the total volume of the container measured in standard U.S. gallons unless otherwise specified.

"Cargo tank" is a bulk packaging that is:

a tank intended primarily for the carriage of liquids or gases and includes appurtenances, reinforcements, fittings and closures;

permanently attached to or forms a part of a motor vehicle, or is not permanently attached to a motor vehicle but ~~which~~, by reason of its size, construction or attachment to a motor vehicle, is loaded or unloaded without being removed from the motor vehicle; and

not fabricated under a specification for cylinders, portable tanks, tank cars or multi-unit tank car tanks.

"Cargo tank motor vehicle" means a motor vehicle with one or more cargo tanks permanently attached to or forming an integral part of the motor vehicle.

"Certified competent attendant" means a competent attendant~~person~~ who has ~~full knowledge of the characteristics of anhydrous ammonia, its safe handling, and safety rules for transfer and application, and has~~ successfully completed Certified Competent Attendant Training~~an anhydrous ammonia training program conducted by the Department or an equivalent training program approved by the Department. Refresher training shall be at least every three years and documentation of completed training shall be maintained.~~

"Certified grower" means a grower or grower farm operator who has successfully completed Certified Grower Training.

"Certified welder" means any welder ~~who~~that is employed by a company that holds an R stamp certificate of authentication.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Chemical splash goggles" or "goggles" means flexible fitting chemical-protective goggles with a hooded indirect ventilation system to provide primary protection of the eyes and eye sockets from the splash of hazardous liquids. Direct vented goggles do not comply with this definition.

"Commercial" means buying and selling anhydrous ammonia and/or selling the associated services for compensation.

"Competent attendant" means an individual at a commercial or noncommercial site required to handle, transfer or transport anhydrous ammonia, or otherwise maintain anhydrous ammonia equipment. The term includes an individual at a commercial or noncommercial site who makes or breaks connections on anhydrous ammonia equipment while loading or unloading anhydrous ammonia. The term also includes custom applicators.

"Container" means all tanks, except cylinders, as defined in Section 215.15, used for the transportation or storage of anhydrous ammonia.

"Custom Applicator" means an individual who applies anhydrous ammonia as an employee of a company supplying the product or operators for hire.

"Cylinder" means a pressure vessel designed for pressures higher than 40 psig and having a circular cross-section. It does not include a portable tank, multi-unit tank car tank, cargo tank or tank car.

"Decommission" means to stop using a pressurized vessel and remove it from service.

"Department" means the Illinois Department of Agriculture, State Fairgrounds, P.O. Box 19281, Springfield IL 62794.

"Design pressure" is identical to the term "Maximum Allowable Working Pressure" used in the ASME Code.

"Emergency shower" means a shower unit permanently connected to a source of clean water that enables the user to have water cascading over the entire body.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Emergency shutoff valve" or "ESV" means a shutoff valve incorporating a manual means of closure. All approved ESVs shall incorporate a reliable actuation system that will close all of the emergency shutoff valves and/or internal valves of the piping system on the first attempt in the event of an emergency or of testing from a remote location. An emergency shutoff valve shall remain closed except during periods of operation.

"Excess flow valve" means a valve that is designed to close automatically at the rated flow of vapor or liquid as specified by the manufacturer. The piping, including valves, fittings and hose, being protected by an excess flow valve shall have a greater capacity than the rated flow of the protected valve, so the valve will likely close in case of failure of the delivery system at any point in the line or fittings.

"Eye wash unit" means a device used to irrigate and flush the eyes with clean water. Depending upon the requirements set forth in this standard, the device may be a plumbed unit permanently connected to a source of clean water, or it may be a self-contained unit not permanently installed that must be refilled or replaced after use.

"Filling density" means the percent ratio of the weight of the ammonia permitted in a container to the weight of water at 60°F (15.6°C) that the container will hold when full. One pound of water = 27.74 cubic inches (455 ml) at 60°F (15.6°C). For determining the water capacity of the tank in pounds, the weight of one gallon (231 cubic inches) (3.785 L) of water at 60°F (15.6°C) in air shall be 8.328 lb (3.778 kg).

"Grower" means any individual who produces an agricultural commodity on property he or she owns or controls. ~~Grower training is voluntary.~~

"Grower farm operator" means an individual employed by or otherwise authorized by a grower to transport or apply anhydrous ammonia, or to otherwise maintain anhydrous ammonia equipment. These individuals include grower family members, full- and part-time hired help, and others providing anhydrous ammonia services at no fee.

"Hitching point" means the point where a mechanical connection is made between the nurse tank and the tool bar, towing vehicle or another nurse tank.



## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Hydrostatic relief valve" means a pressure relief device for liquid service designed to prevent excessive pressure due to thermal expansion when a pipe or hose is filled with liquid such as between block valves or blinds.

"Immediately Dangerous to Life or Health" or "IDLH" means the maximum concentration from which unprotected persons are able to escape within 30 minutes without escape-impairing symptoms or irreversible health effects. The IDLH for ammonia is 300 ppm by volume in accordance with the NIOSH Pocket Guide to Chemical Hazards.

"Implement of husbandry", for the purpose of this Part, means a system that includes a nurse tank with a capacity of 3000 gallons or less or an application device used for transporting and/or applying anhydrous ammonia exclusively for agricultural purposes.

"Institutional occupancy" means a location where people may be unable to vacate voluntarily and shall be deemed to include nursing homes, hospitals, jails and schools.

"Internal valve" means a storage container primary shutoff valve that can be closed remotely and incorporates an internal excess flow valve with the seat and seat disc located within the container in a manner to remain in place in the event of external damage to the valve and/or associated piping. An internal valve shall incorporate a reliable actuation system that will close all of the emergency shutoff valves and/or internal valves of the piping system on the first attempt in the event of an emergency or of testing from a remote location. An emergency valve shall remain closed except during periods of operation.

"Load" or "loading" means the transfer of anhydrous ammonia, at a commercial facility or noncommercial facility, from facility storage to transportation equipment, application equipment or field nursing transportation equipment.

"Material suitable for use" includes iron, steel and certain non-ferrous alloys that are compatible for use in anhydrous ammonia service. Copper, brass, zinc and certain alloys, especially those containing copper, are not suitable for anhydrous ammonia service.

"Mechanical secure point" means a connection point affixed to the nurse tank or running gear for the attachment of the nurse tank hoses. The mechanically secure

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

point provides resistance allowing the breakaway coupler to operate in the event of detachment of the nurse tank from the towing implement.

"New facility" means an approved location or a facility that has not been previously approved for the storage and handling of anhydrous ammonia.

"Temporary Certified Competent Attendant" means a person who has successfully completed a Department approved online training course and received a certificate of completion. The certificate will expire on July 15 or December 31 as indicated on the certificate and cannot be repeated or renewed.

"Noncommercial facility" means a site, including the land and structures, and the equipment fixed on the land and structures, designed and used for the storage and handling of anhydrous ammonia used in the associated not-for-hire operations.

"Nonmobile" means not readily capable of moving or being moved from place to place.

"Permanent storage installation" means a system employing a stationary (fixed) container used exclusively for storage or supply.

"Personal protective equipment" means adequate clothing and equipment used to ensure personal safety in the workplace.

"Positive pressure self-contaminated breathing apparatus" or "SCBA" means a full face piece respirator approved by NIOSH/MSHA for respiratory protection for both entry into or escape from oxygen-deficient atmospheres or a concentration of gases or vapors that are immediately dangerous to life or health in which where the supply of air is carried by the wearer. The air pressure inside the face piece is positive in relation to the air pressure of the outside atmosphere during exhalation and inhalation.

"Pressure relief valve" is a device designed to open to prevent an increase in internal vapor pressure in the container in excess of a specified value due to an emergency or abnormal condition and to close and prevent further flow after normal conditions have been restored.

"Private assembly" means a location where people gather together but is not generally open to the public.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Protective gloves, boots and suits" are items made of rubber or other material impervious to ammonia. Gloves refer to gauntlet-style of sufficient length to allow for cuffing and that provide thermal protection suitable for ammonia exposure.

"psia" means pounds per square inch absolute.

"psig" means pounds per square inch gauge.

"Public assembly" is a location that includes, but is not limited to, churches, manufacturing companies, cemeteries currently in operation, land managed for recreational or conservation purposes, museums, camps, parks, retail and wholesale facilities, and shopping centers. Examples of public assembly include places that operate less than 52 weeks per year, such as businesses or other places that experience seasonal shutdowns and parks, camps and recreational areas that experience seasonal shutdowns or reduced attendance during a portion of the calendar year, provided that these places are frequented by at least 50 persons at least once per week during the portions of the year when seasonal shutdowns or reductions in attendance do not occur. "Reinstallation" means the removal of a storage vessel from the originally approved site to a different site.

"Repair" means the work necessary to restore a container, cylinder or system to a safe and satisfactory operating condition provided there is, in all cases, no deviation from the original design. Repairs include the addition or replacement of pressure or nonpressure parts that, which do not change the design temperature or pressure of the container, cylinder or system.

"Reportable quantity" or "RQ" means the federal RQ (Reportable Quantity) for an anhydrous ammonia release, which is 100 lb. (45 kg) or 18 gallons (68 litres).

"Respirator" means an air-purifying device with full face piece and either chin-style or front- or back-mounted canisters with associated connections approved by NIOSH for use in ammonia contaminated atmosphere in compliance with 29 CFR 1910.134 and selected in accordance with ANSI Z88.2. A respirator of the air-purifying type must be used only in an atmosphere containing 19.5% to 22.0% oxygen by volume.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

"Responsible party" means the individual, partnership, corporation or association in control of the anhydrous ammonia at the time of an accident or incident involving an RQ release.

"System" means an assembly of equipment consisting essentially of the containers, hoses, appurtenances, pumps, compressors and interconnecting piping.

"Tank" means a vessel designed and constructed for the storage and handling of anhydrous ammonia.

"Tool bar" means an implement of husbandry for the field application of ammonia that is used in conjunction with nurse tanks. For purposes of this definition, chisel plows, field cultivators or other conventional tillage equipment that has been manufactured or retrofitted with any ammonia valves, gauges, hoses, application knives, metering devices, safety devices or tool bar refrigeration units for the purpose of ammonia application are considered to be tool bars.

"Tool bar breakaway device" means a self-closing device designed to disconnect anhydrous ammonia hoses upon detachment from the nurse tanks.

"Tool bar refrigeration unit" means a unitized system of ammonia pipe, valves and gauges, with ammonia monitoring, handling, metering and manifold-dispensing devices that are used to process pressurized ammonia into refrigerated ammonia for more accurate metering and distribution during field application.

"Unload" or "unloading" means the transfer of anhydrous ammonia at commercial or noncommercial facilities from the transport vehicle into facility storage.

"UN 1005" means the placard number assigned to anhydrous ammonia by the United Nations Committee of Experts on the Transportation of Dangerous Goods.

"Wet hose" is an anhydrous hose with shutoff valves at each end that is capable of containing liquid product at all times.

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)

**Section 215.16 Incorporated and Referenced Materials**

- a) The following regulations and standards are incorporated in this Part:

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- 1) Private and Professional Association Standards:
  - A) The American National Standards Institute (ANSI), 25 West 43<sup>rd</sup> Street, 4<sup>th</sup> Floor, New York NY 10036  
  
ANSI Z88.2 Practices for Respiratory Protection (2015)
  - B) The American Petroleum Institute (API or API-ASME), 15 Inverness Way East, Englewood CO 80112
    - i) Code for Unfired Pressure Vessels for Petroleum Liquids and Gases of the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME) (sometimes known as the API-ASME Code) (The API-ASME Code, as a joint publication and interpretation service, was discontinued after 1956, and construction of containers to the API-ASME Code has not been authorized since 1961.)
    - ii) API 510 – Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair and Alteration (2014) (After discontinuance of the API-ASME Code (see subsection (a)(1)(B)(i)), a need was seen to assure uniform maintenance and inspection practices continued, which led to the issuance of API 510 beginning in 1958 (available as stated in subsection (a)(1)(B)(i)).)
    - iii) The Unfired Pressure Vessel Code of the American Society of Mechanical Engineers (Sec. VIII of the ASME Boiler Construction Code), including editions through 1981, or the Joint Code of the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME Code), including editions through 1981
    - iv) API 12-C – Specification for Welded Oil Storage Tanks (1958)

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- v) API Standard 620 (2013) (including addendum 1, 2014), Design and Construction of Large, Welded, Low-Pressure Storage Tanks (including Tables 2.02, R.2.2, R.2.3 or R.2.4 and Appendix R)
- C) The American Society of Agricultural and Biological Engineers (ASABE/ASAE), 2950 Niles Road, St. Joseph MI 49085
- i) ASABE/ASAE S276.5 (2003)
  - ii) ASABE/ASAE S338.2 (2006) Field Equipment for Agriculture-Safety Chain for Towed Equipment
- D) The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York NY 10016-5990
- i) ASME B31.3 Process Piping (2014)
  - ii) ASME B31.5 Refrigeration Piping and Heat Transfer Components (2013)
  - iii) U-68 and U-69 ASME Code Containers refer to the ASME Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (1949), Section VIII, paragraphs U-68 and U-69
  - iv) UG-125 through UG-136 refer to the ASME Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (1949), Section VIII, Division 1, paragraphs UG-125 through UG-136
  - v) U-200 or U-201 refers to the ASME Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (1949), Section VIII, paragraphs U-200 or U-201
  - vi) UW-12 is a table in Section VIII, Division 1, of ASME BPVC – viii-1 (2015)

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- E) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, PO Box C700, West Conshohocken PA 19428-2959
- i) ASTM A47 – Standard Specification for Ferritic Malleable Iron Castings (2014)
  - ii) ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless (2012)
  - iii) ASTM A395 – Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures (2014)
  - iv) Section IX, Welding Qualifications refers to the ASME Boiler and Pressure Vessel Code, IX, Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators, Welding and Brazing Qualifications (2010)
- F) The Association for Rubber Product Manufacturers (ARPM), 7321 Shadeland Station Way, Suite 285, Indianapolis IN 46256
- ARPM IP-14, Specifications for Anhydrous Ammonia Hose (2003, reaffirmed 2009)
- G) The Compressed Gas Association (CGA), 14501 George Carter Way, Suite 103, Chantilly VA 20151
- i) CGA G-2 – Anhydrous Ammonia (1995)
  - ii) CGA G-2.1 – Safety Requirements for the Storage and Handling of Anhydrous Ammonia (2014)
  - iii) CGA P-7 – Standard for Requalification of Cargo Tank Hose Used in the Transfer of Carbon Dioxide Refrigerated Liquid (2007)

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- H) The National Board of Boiler and Pressure Vessel Inspectors (NBBI), 1055 Crupper Avenue, Columbus OH 43229-1183
- National Board Inspection Code (2015)
- I) The National Fire Protection Association (NFPA), 25 West 43<sup>rd</sup> Street, 4<sup>th</sup> Floor, New York NY 10036
- NFPA 70: National Electrical Code (2014)
- J) The Underwriters Laboratory (UL), 47173 Benicia Street, Fremont CA 94538
- UL-132, Standard on Safety Relief Valves for Anhydrous Ammonia and LP Gas (2015)
- 2) Federal Regulations
- A) 29 CFR 1910.134 (2016)
- B) 49 CFR 105-180 (2015)
- i) subchapter A, sections 105-110, Hazardous Materials and Oil Transportation
- ii) subchapter B, section 130, Oil Transportation
- iii) subchapter C, sections 171-180, Hazardous Materials Regulations
- 49 CFR 173.315(m)(1)(v) (2015) Compressed gases in cargo tanks and portable tanks
  - 49 CFR 177.834(a) through (j) (2016), Loading and unloading
  - 49 CFR 177. 840 (2015), Class 2 (gasses) materials
- 3) Federal Government Publications



## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

The National Institute for Occupational Safety and Health (NIOSH), NIOSH Pocket Guide to Chemical Hazards, GPO stock number 017-033-00500-1, available from the Government Printing Office, Washington DC 20402-9325

[Enforcement Response Policy For Sections 302, 304, 311 and 312 of the Emergency Planning and Community Right-to-Know Act and Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act, available from the Office of Regulatory Enforcement, Office of Enforcement and Compliance Assurance, United States Environmental Protection Agency, September 30, 1999](#)

- b) All incorporations by reference of federal regulations and guidelines and the standards of nationally recognized organizations refer to the regulations, guidelines and standards on the dates specified and do not include any amendments or editions subsequent to the date specified.
- c) The following State statutes and administrative rules are referenced in this Part:
  - 1) State of Illinois Statutes
    - Weights and Measures Act [225 ILCS 470]
    - [Illinois Emergency Management Agency Act \[20 ILCS 3305/5\(c\)\]](#)
  - 2) Illinois Department of Agriculture Rules
    - A) 8 Ill. Adm. Code 1, Administrative Rules (Formal Administrative Proceedings; Contested Cases; Petitions; Public Disclosure)
    - B) 8 Ill. Adm. Code 600, Weights and Measures Act
    - C) 8 Ill. Adm. Code 255, Agrichemical Containment

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)

**Section 215.20 Safety**

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- a) All competent attendants shall be certified to understand the properties of ammonia, to become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency. Certified competent attendant training programs shall be approved by the Department every 3 years. Any person at a commercial or noncommercial site who makes or breaks a connection on anhydrous ammonia equipment pertaining to the loading and unloading, as defined in this Subpart, or who maintains or repairs anhydrous ammonia vessels or associated equipment shall be a certified competent attendant.
- 1) Certified competent attendants shall complete an attendance-based or temporary online certified competent attendant training approved by the Department or an equivalent training program approved by the Department.
  - 2) Certification shall be for a period of 3 years and refresher training shall be at least every 3 years. Documentation of completed training shall be maintained by the certified competent attendants or their employer.
  - 3) Any person who conducts anhydrous ammonia safety training to certify individuals as certified competent attendants shall:
    - A) Be a certified competent attendant by attending a Department-sponsored certified competent attendant training program annually;
    - B) Train with a Department-approved training program and associated materials; and
    - C) Submit to the Department a roster of individuals trained, including their name, company name, home address, company address and date of training.
  - 4) Any person or entity who conducts online temporary certified competent attendant training shall submit a roster of individuals trained, with their name, company name, company address and date of the training. The online temporary training program shall be approved by the Department and reapproved every 3 years.
- b) Persons involved with the loading or unloading of anhydrous ammonia as defined

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

in this Subpart, into permanent storage vessels from cargo tanks shall satisfy the safety requirements of this Section if they meet USDOT transportation regulations and are not subject to the requirements of a certified competent attendant.

- c) Persons at commercial facilities that hold a current USDOT Special Permit issued by the Pipeline and Hazardous Material Safety Administration pertaining to loading and unloading operations are not subject to the requirements of a certified competent attendant.
- d) ~~Any individual who conducts anhydrous ammonia safety training to certify individuals as certified competent attendants shall:~~
- ~~1) Train with a Department approved equivalent training program and associated materials;~~
  - ~~2) Submit a roster of the attendees with the name, company name, company address and date of the training; and~~
  - ~~3) Attend a Department sponsored training program annually.~~
- e) All growers or grower farm operators who transport or apply anhydrous ammonia, or otherwise maintain anhydrous ammonia equipment, shall be certified to understand the properties of ammonia, to become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency. Initial certification shall be achieved no later than April 1, 2022. Grower Training — Grower training shall be offered through programs approved by the Department. All participation in grower training shall be on a voluntary basis. Grower training programs shall be approved every three years.
- 1) Certified grower training shall be offered at no cost to the grower or grower farm operator via the attendance-based or online training program available on the Department's website.
  - 2) Certification shall be for a period of 3 years and refresher training shall be at least every 3 years. Documentation of completed training shall be maintained by the grower or grower farm operator.
  - 3) The attendance-based and on-line certified grower training program shall be reviewed and approved by the Department every 3 years.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- 4) Any person who conducts certified grower training shall:
    - A) Qualify as a certified competent attendant by attending a Department-sponsored certified competent attendant training program annually;
    - B) Train using the Department-approved training program and associated materials; and
    - C) Submit to the Department a roster of individuals trained, including their name, home address and date of training.
  - 5) The Department will record the names, home addresses, and date of training of individuals who completed certified grower training.
- ef) All permanent storage installations shall have on hand, at minimum, the following equipment for safety and emergency purposes:
- 1) One full-faced respirator with one spare ammonia canister that has not exceeded its expiration date in a readily accessible location. A self-contained breathing apparatus (SCBA) can meet this requirement only when the facility is trained in accordance with OSHA for rescue or emergency response to a release as defined by OSHA.
  - 2) One pair of protective gloves impervious to anhydrous ammonia.
  - 3) One pair of protective boots impervious to anhydrous ammonia.
  - 4) One protective slicker and/or protective pants and jacket, all impervious to anhydrous ammonia.
  - 5) Chemical splash goggles.
  - 6) An easily accessible emergency shower and a plumbed eyewash unit or at least 150 gallons of clean potable or potable quality water in a single open top container that is readily accessible.
- fg) Each cargo tank transferring agricultural anhydrous ammonia, except an

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

implement of husbandry, shall carry:

- 1) At least 5 gallons of clean water in a container designed to provide ready access to the water for flushing any area of the body contacted by ammonia.
- 2) One pair of protective gloves impervious to ammonia.
- 3) One full-faced respirator with one spare ammonia canister, in a readily accessible location, that has not exceeded its expiration.
- 4) Chemical splash goggles.

g) Releases over the RQ amount, unless otherwise permitted by law, require the responsible party to make certain immediate notifications, which include the local emergency response system (911), National Response Center (NRC), State Emergency Response Commission (SERC), and the Local Emergency Planning Committee (LEPC).

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)

**Section 215.110 Systems Mounted on Implements of Husbandry for the Transportation of Anhydrous Ammonia**

All of Section 215.25 shall apply to this Section unless otherwise stated.

- a) This Section applies to containers of 3000 gallons water capacity or less and related equipment mounted on nurse tanks that are used for the transportation of ammonia.
  - 1) Any nurse tank that does not have a legible data plate and has not been recertified in conformance with Transportation Regulations (see Section 215.16) shall be removed from service.
  - 2) Any container or combination of containers on a single running gear, greater than 3000 gallons, that are used for the transportation of anhydrous ammonia and to supply the application device shall be prohibited. This shall exclude cargo tanks used for transportation only.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- b) Containers shall be constructed in accordance with Section 215.25. The shell or head thickness of any container shall not be less than  $\frac{3}{16}$  of an inch. All containers over 500 gallons capacity should be equipped with semi-rigid baffle plates.
- c) A suitable "stop" or "stops" shall be mounted on the farm wagon or on the container in such a way that the container shall not be dislodged from its mounting due to the farm wagon coming to a sudden stop. Back slippage shall also be prevented by proper methods.
- d) A suitable "hold-down" device shall be provided that will anchor the container to the farm wagon at one or more places on each side of the container.
- e) When multiple containers are mounted on a running gear, the weight shall be distributed appropriately over the axles. Multiple containers mounted on the same running gear must be of the same capacity. All manual shutoff valves shall be located behind the steel bulkhead or permanently affixed in a secure point to provide equivalent protection of the piping from that point to the front of the tank.
- f) When the cradle and the container are not welded together, suitable material shall be used between them to reduce abrasion.
- g) All containers shall be equipped with a fixed maximum liquid level gauge.
- h) All containers shall be equipped with a pressure gauge having a dial graduated from 0 psi to 400 psi.
- i) The filling connection of each container shall comply with the requirements of Section 215.40(j).
- j) All containers shall be equipped with an approved vapor-equalizing valve unless equipped for spray loading.
- k) All vapor and liquid connections, except pressure relief valves and those specifically exempt in Section 215.40(e) and (f) shall be equipped with approved excess flow valves or may be fitted with quick-closing internal valves that shall remain closed except during operating periods. Every tank withdrawal valve shall be protected by an excess flow valve matched to the designed flow rate. Flow capacity of the excess flow valve shall not exceed 45 GPM for 1¼" [tank](#)

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

connections and 60 GPM for 1½" tank connections. When using an open yoke type excess flow withdrawal valve in a tank opening, the opening shall not be reduced with bushings to accommodate the withdrawal valve. Each valve shall be tested through the Nurse Tank Inspection Program (NTIP) or be removed and inspected at an interval not to exceed 5 years. Records of the maintenance and inspections shall be kept at the facility for review. All valves shall be in compliance no later than December 31, 2020. Nurse tanks not meeting compliance shall be removed from service.

- l) Fittings shall be protected from physical damage by means of a rigid guard designed to withstand static loading in any direction equal to twice the weight of the container and lading using a safety factor of 4 based upon the ultimate strength of the material used. If the guard encloses the pressure relief valve, the valve shall be properly vented through the guard.
- m) If a liquid withdrawal line is installed in the bottom of a container, the connections to that line, including hose, shall not be lower than the lowest horizontal edge of the farm wagon axle. The hose shall be drained and depressurized prior to the container being moved or towed on a public road.
- n) Provision shall be made to secure both ends of the hose in transit.
- o) All containers shall be painted white or a light reflecting color.
- p) All containers shall be marked as follows:
  - 1) Placard: Four diamond type, nonflammable gas, UN 1005, USDOT placards shall be displayed (one on each side and one on each end).
  - 2) Marking: The words ANHYDROUS AMMONIA shall appear on each side and each end in letters no less than 2two inches high.
  - 3) Each container shall be marked with the words INHALATION HAZARD in 2two inch letters on 2two opposing sides.
  - 4) The words LIQUID or VAPOR shall be placed on or within 12 inches of the appropriate valve by means of stencil, tag, decal or color coding with a legible legend ORANGE LIQUID and YELLOW VAPOR on the tank.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- 5) The container need not be marked or placarded on one end if that end contains valves, fittings, regulators or gauges when those appurtenances prevent the markings and placard from being properly placed and visible.
- q) Nurse tanks operating on public roads shall be ~~marked~~provided with a slow-moving vehicle (SMV) emblem consisting of a fluorescent orange triangle with a red reflective border. ~~The~~On and after September 1, 2004, the specifications of the SMV shall be the type recommended by ASAE S276.5. Nurse tanks operating on public roads are to travel at speeds less than 25 mph.
- r) All nurse tanks shall be securely attached to the vehicle drawing them by means of drawbars supplemented by suitable hitch pins with clips and safety chains permanently attached to the farm wagon.
- s) A nurse tank shall be constructed so that it will follow substantially in the path of the towing vehicle and will prevent the towed farm wagon from whipping or swerving dangerously from side to side.
- 1) Nurse tanks require two safety chains with a combined breaking strength of at least the weight of the laden nurse tank.
- 2) All nurse tanks shall be securely attached to the vehicle drawing them by means of drawbars supplemented by suitable hitch pins and safety chains that meet the requirements of ASAE S338.2, Safety Chain for Towed Equipment. Reliable keepers for the hitch pin shall be used to prevent its loss. The hitch pin and keeper shall be permanently attached to the nurse tank towbar.
- t) A nurse tank shall not be towed or parked in public places such as school yards, malls or hospital grounds.
- u) Each person operating, repairing appurtenances to, or inspecting a nurse tank shall wear protective gloves impervious to ammonia and chemical splash goggles. A full face shield may be worn over the goggles; however, a face shield shall not be worn as a substitute for a primary eye protection device (goggles). must comply with the following requirements:
- 1) ~~Any person required to handle, transfer, transport or otherwise work with ammonia shall be a certified competent attendant to understand the~~



## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

~~properties of ammonia, to become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency; and~~

- ~~2) Any person making, breaking or testing any ammonia connection, transferring ammonia, or performing maintenance or repair on an ammonia system under pressure shall wear protective gloves impervious to ammonia and chemical splash goggles. A full face shield may be worn over the goggles; however, a face shield shall not be worn as a substitute for a primary eye protection device ; and~~
- ~~3) Training for growers shall be voluntary as described in Section 215.20(e).~~
- v) For first aid purposes each nurse tank shall be equipped with at least 5 gallons of clean water in a container mounted on top or side of the tank designed to provide ready access to the water for flushing any area of the body contacted by ammonia.
- w) Prior to the addition of a chemical additive, its compatibility with system components shall be verified by the manufacturer of the additive.
- x) Storage of Containers: When a nurse tank containing 10% or more of anhydrous ammonia is at an unattended approved storage site, the manually controlled valves shall be plugged or capped or locked or the nurse tank shall be stored inside a locked, fenced enclosure. Nurse tanks shall be stored no less than 50 feet from the edge of the adjacent road, 200 feet from place of private or public assembly and 750 feet from place of institutional occupancy. All pressure and liquid gauges must be in working order.
- y) A back check valve shall be installed on each inlet of each fitting (including, but not limited to, tees and crosses) to prevent the back feed of anhydrous ammonia from an undamaged line to a damaged/severed line. All multiple tank configurations shall have equally rated liquid withdrawal valves on each tank. An excess flow valve with the same rated flow as the aforementioned valves shall be installed at the junction where the lines meet downstream. A shutoff valve shall be installed downstream of the excess flow valve.

AGENCY NOTE: If tanks are not plumbed together, they shall be treated as single tanks. Tanks with equally rated internal valves with remote actuators are exempt from this requirement. Compliance with these requirements shall be achieved through repairs and modifications on or before December 31, 2025.

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

- z) Excess flow valves shall be designed to close automatically at the rated flows of vapor or liquid as specified by the manufacturer. Excess flow valves shall be selected based on the piping, including valves, fittings and hoses being protected by an excess flow valve, and shall have a greater capacity than the rated flow of the excess flow valve, so the valve will likely close in case of delivery system failure at any point in the line or fittings. Any installation of a device that may cause a reduction in pressure to impede the operation of the excess flow valve is prohibited.
- aa) All liquid and vapor service valves shall be protected by a threaded cap that must be affixed to the valve housing.

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)

**Section 215.115 Systems Mounted on Equipment for the Application of Anhydrous Ammonia**

- a) This Section applies to systems mounted on farm equipment and used for the field application of ammonia. Section 215.25 applies to this Section unless otherwise noted.
- b) The shell or head thickness of any container shall not be less than  $\frac{3}{16}$  of an inch.
- c) All containers shall be securely mounted. Applicators must be secured with hold-down devices the same way as systems mounted on farm wagons transporting anhydrous ammonia.
- d) Fixed maximum liquid level gauges shall be used that are designed to indicate when the container has been filled to 85% of its water capacity. The dip tube of this gauge shall be installed in such a manner that it cannot be readily removed.
- e) The filling connection of each container shall comply with the requirements of Section 215.40(k).
- f) An excess-flow valve is not required in the vapor connection, provided the controlling orifice is not in excess of  $\frac{5}{16}$  inch in diameter and the valve is a hand-operated (attached hand wheel or equivalent) shutoff valve. To assist in filling

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

applicator tanks, it is permissible to bleed vapors to the open air, provided the preceding requirements are met.

- g) Applicators shall be filled at least 100 yards from any occupied building not on an approved site.
- h) Metering devices may be connected directly to the tank withdrawal valve. A union-type connection is permissible between the tank valve and the metering device. Remote mounting of metering devices is permissible using hoses that meet specifications.
- i) When the applicator or nurse tank is trailed and the metering device is remotely mounted, such as on the tractor tool bar, an automatic break-away, self-closing coupling device shall be used. The coupling device shall be made from or coated with a corrosion resistant material. The coupling device shall be mounted in a manner that will permit the device to swivel freely. A coupling device shall be maintained. An angle valve shall not be used as a hose end valve connecting to the coupling device.
- j) No excess-flow valve is required in the liquid withdrawal line provided the controlling orifice between the contents of the container and the outlet of the shutoff valve (see Section 215.40(c)) does not exceed  $5/16$  in diameter.
- k) Any control valve installed between the regulator and the break-away coupling device shall indicate whether the valve is open or closed.
- l) Where a ball valve is used to control flow to the metering device, the ball shall be drilled with an opening smaller than No. 54 (0.055 inches) drill size on the downstream side to prevent trapping ammonia in the ball when in the closed position.
- m) Each person operating, repairing ~~appurtenances~~, or inspecting an applicator ~~tank~~ shall wear protective gloves impervious to ammonia and chemical splash goggles. A full face shield may be worn over the goggles; however, a face shield shall not be worn as a substitute for a primary eye protection device (goggles).~~comply with the following requirements:~~
  - 1) ~~Any person required to handle, transfer, transport, or otherwise work with ammonia shall be trained to understand the properties of ammonia, to~~

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

~~become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency; and~~

- 2) ~~Any person making, breaking, or testing any ammonia connection, transferring ammonia, or performing maintenance or repair on an ammonia system under pressure shall wear protective gloves impervious to ammonia and chemical splash goggles. A full face shield may be worn over the goggles; however, a face shield shall not be worn as a substitute for a primary eye protection device (goggles).~~
- n) Each applicator tank shall be equipped with the following safety equipment and features: for first aid purposes, at least 5 gallons of clean water in a container designed to provide ready access to the water for flushing any area of the body contacted by ammonia and a legible decal depicting step-by-step ammonia transfer instructions.
- o) Instructions for connecting and disconnecting the coupling device shall be displayed in a manner as to be readily visible near the break-away coupling device.

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)

**Section 215.120 Equipment for the Application of Anhydrous Ammonia**

- a) ~~All nurse tank valves shall be closed, the liquid transfer hose shall be bled, and no~~ liquid transfer hose shall be joined between any nurse tank unit and any tool bar during transport upon a public right-of-way.
- b) The following requirements apply when liquid transfer hoses are permanently attached to nurse tank units or tool bars:
- 1) Only the end of the liquid transfer hose, that is attached to a male acme-threaded fitting of the tool bar breakaway device shall be equipped with a straight-type hose end valve with a bleeder valve on its coupling side.
  - 2) The hose end valve specified in subsection (b)(1) shall not be attached to a container fill valve of the same nurse tank unit.
  - 3) A dummy acme adapter or parking plug shall be provided on the nurse

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

tank or tool bar. The dummy acme adapter or parking plug shall be affixed into a position that prevents either end of the hose from being kinked or stowed under undue strain. The hose end valve of the liquid transfer hose shall be connected to the dummy acme adapter or parking plug at all times, except when the transfer hose is used for field application or other active transfer of ammonia through the hose end valve.

- c) When nurse tanks are utilized to supply an application device, some means of break-away protection shall be provided, including, but not limited to, the following:
- 1) The nurse tank hose that crosses the hitching point and attaches to the application device requires installation of the appropriate equipment to protect against an accidental unhitching event. Deployment of the equipment designed to achieve this protection shall be installed and maintained in accordance with the manufacturer's instructions.
  - 2) Multiple breakaway coupling devices mounted on a tool bar shall not interfere with one another in a turn or an unhitching event.
  - 3) When nurse tanks are pulled in tandem, a breakaway coupling device or other means of protection shall be installed at each point where the hose crosses a hitching point. Deployment of the equipment designed to achieve this protection shall be installed and maintained in accordance with the manufacturer's instructions. Compliance with this subsection (c)(3) shall be achieved on or before December 31, 2020.
- d) The manufacturer of a tool bar refrigeration unit shall provide with each unit documentation of recommended operation and maintenance procedures for any refrigeration unit manufactured after July 1, 2016.
- 1) The tool bar refrigeration unit shall be installed, maintained and operated in accordance with the manufacturer's specifications and limitations of use.
  - 2) A manual shutoff valve shall be installed directly upon the inlet of the heat exchanger so that the operator may close the shutoff valve to prevent any backflow of refrigerated ammonia through the delivery line from the heat

## ILLINOIS DEPARTMENT OF AGRICULTURE

## NOTICE OF ADOPTED AMENDMENTS

exchanger unit while connecting, disconnecting or otherwise servicing the tool bar breakaway device.

- e) Hose and hose connections located on the low-pressure side of flow control, or pressure-reducing valves on devices discharging to atmospheric pressure, shall be designed for the maximum low-side working pressure. EVA hoses for tool bars shall be inspected for leaks and documented prior to each application season. The hoses shall not exceed the service life specified by the tubing manufacturer and shall comply with the properly rated operating pressure specified by the equipment manufacturer.
- f) Any application device designed to tow two nurse tanks with a total static capacity greater than 4000 gallons shall employ the following:
  - 1) The device shall include two separate distribution systems on the tool bar, one for each nurse tank.
  - 2) The device and/or nurse tanks shall have enhanced protection systems that include the capability for emergency shutoff with immediate response. In addition, other systems may be deployed pending approval by the Department.
- g) The hose length from the towed implement mechanically secure point to the break-away coupler on the towing implement shall have sufficient length to allow break-away couplers to articulate freely but prevent the hose from contact with the nurse tank tongue. This shall be achieved without securing the hose mechanically through the use of chains, elastomeric straps, wire ties or other means, by December 31, 2020. [New technologies and methods that allow for mechanical hose securement that do not affect the coupler functionality will be accepted, but may later be denied for observed "non-performance".](#)

(Source: Amended at 44 Ill. Reg. 18281, effective October 29, 2020)