

Anhydrous Ammonia Storage Facility Permitting Application Information and Worksheet

When is an anhydrous ammonia (NH₃) permit required from the Minnesota Department of Agriculture (MDA)?

1. New installation of anhydrous ammonia storage facility.
 - a. New installation of an NH₃ storage facility.
 - b. Change in ownership/entity. For example, a buyout, corporate change, merger, etc.).
 - c. Use of portable tanks (i.e. NH₃ cargo and railcar tanks) for the fertilizer manufacturing (i.e. 10-34-0 liquid fertilizer).
2. Substantial alteration/alterations of an existing NH₃ storage facility.

What constitutes a substantial alteration?

1. Safeguards Alterations:
 - A.** Changing the capacity of a safeguard. For example, change in the rating of safeguards, such as excess flow valves;
 - B.** Adding storage containers in excess of the capacity of a safeguard as required by rule; and
 - C.** Increasing the size of the largest storage container in a safeguard as approved or permitted by the MDA
2. Storage Container Alterations:
 - A.** Adding storage containers to an existing NH₃ storage facility.
 - B.** Relocating storage containers on existing NH₃ facility site.
3. Adding or changes in safeguards of loading or unloading stations/risers.

Does not include routine maintenance of safeguards, storage containers, appurtenances (i.e. components), and piping.

Contact Ed Kaiser at (651) 201-6275 or Ed.Kaiser@state.mn.us to determine if work on an existing anhydrous ammonia facility may constitute a substantial alteration.

What should be expected when applying for an NH3 permit? The NH3 Permit Process:

1. Applicant and their contractor(s) submits the permit application with all specified information.
2. Permit approval with conditions/stipulations is issued by the MDA to the applicant and/or contractors when the permit application is found complete and in compliance with applicable NH3 regulations. Permit approval conditions/stipulations generally consist of, but not limited to:

A. PRE-Installation Conditions/Stipulations (prior to installation/relocation of NH3 storage tank/tanks):

1. At least 50 feet from: (1) line of adjoining property; (2) near side of a public roadway or (3) near side of a mainline of railroad; (4) from a well or other source of drinking (potable) water.
2. At least 400 (if at/less than 100,000 gallons storage) to 1000 feet (if over 100,000 gallons storage) from nearest: (1) occupied dwelling/dwelling intended to be occupied; (2) place of public assembly; and (3) confided resident institution.
3. At least 10 feet from dry grass and weeds other combustible materials, and other materials (including vehicles, structures, tanks, etc.) not required for the operation of the NH3 storage facility.

B. During Installation Conditions/Stipulations:

1. Install storage tank/system per Minnesota Statutes, Chapter 18C and Minnesota Rules, Chapter 1513. This includes the installation of NH3 rated components, fittings, and piping as stated in the permit application.
2. Install traffic protection per the guidelines/specifications noted in the enclosed MDA traffic protection fact sheet or per this permit approval, in accordance with Minnesota Rules, Part 1513.0160, Subpart 6 and Part 1513.0370.
3. Nurse tank riser and transport transfer area components (i.e. bulkheads, nurse tank riser area piping/valves, stands, hose-end valve lockout boxes, traffic protection, other components/objects, etc.) must be designed, constructed, and installed to allow the pull-away protection at nurse tank riser and transport transfer areas to operate in both directions without any impedance in accordance with Minnesota Rules, Part 1513.0200, Subpart 8.
4. Immediately contact the Minnesota Duty Officer at 1-800-422-0798 or (651) 649-5451 to report agricultural chemical contamination discovered/suspected during installation or substantial alteration.
5. Any deviations from the approved permit application documents or NH3 regulations must be immediately reported to the MDA for review.

C. Post-Installation Conditions/Stipulations – Complete/submit the following IMMEDIATELY following installation/substantial alteration, but BEFORE NH3 IS PLACED INTO THE STORAGE FACILITY:

1. Certificate of Completion – which will entail performing a self-inspection of the storage facility/system.
2. In-Process Examination Spreadsheet of Threaded/Welded Joints:
Whoever is installing the new facility or substantial alteration is required to complete/submit an *In-Process Exam Spreadsheet* to the MDA, accompanied by a diagram that identifies and documents the location of **each threaded and welded joint installed** in the storage system. The identification of each threaded and welded joint in the *In-Process Exam Spreadsheet* must correspond with the joints identified in the diagram or other illustration.
3. Submit the pressure testing procedure utilized and the pressure(s) from the pressure test performed after assembly of the system piping, and providing proof that the system components and piping are free of leaks at a pressure not less than the normal operating pressure of the system in accordance to Minnesota Rules 1513.0160, Subpart 8.
4. Self-Inspection: Immediately following placement of NH3 into the storage tank/system the facility and their contractor(s) must perform a COMPLETE/FULL self-inspection of the storage tank/system, compiling the findings of the inspection on the enclosed *Anhydrous Ammonia Storage Facility Inspection Checklist* (Storage Facility Inspection Checklist).
5. Promptly submit completed self-inspection documentation, certifying that any non-compliance has been corrected with supporting documentation/photos.
6. MDA will perform a permit inspection to verify compliance of new installation or substantial alteration, which may include an inspection of the NH3 equipment. The MDA has authority under Minnesota Statutes Chapter 18D to conduct inspections, cite violations, take administrative or enforcement actions for cited violation documented during an inspection or investigation.

Anhydrous Ammonia (NH3) Permit Application Instructions

In order for the department to determine if your facility meets the requirements, it is necessary that the permit application contain certain essential information. Submit the following items with an NH3 permit application:

Page 1 of 2: Application Form

- **NEW or CHANGE IN OWNERSHIP permit application** - check one of the following boxes at top of the application form:

- New facility installation, or
- Change in ownership
- Fertilizer license number

- **For SUBSTANTIAL ALTERATION permit application** – At the upper part of the permit application form list the

- Existing permit number
- Fertilizer license number

- **Both NEW/CHANGE IN OWNERSHIP and SUBSTANTIAL ALTERATION permit application:**

Does your company maintain within the state an office or place of distribution or sales person or other employees that solicits, sells, or delivers goods or services in the state?

- Yes, or No -If yes, enter the MN Tax ID number in the space provided in the permit application form.

- Legal name that may include a “do business as” (DBA) on box below
- MN Tax ID or Social Security Number
- Mailing address (PO Box, etc.), city, state, and zip code
- Company telephone
- Contact person
- Physical (911) address for site for new installation or substantial alteration, city, state, zip code
- County

- **For NEW/CHANGE IN OWNERSHIP permit application:**

- For Change in Ownership: List the former legal company name(s) and location(s) involved in the change in ownership

- **Legal Description: both NEW/CHANGE IN OWNERSHIP and SUBSTANTIAL ALTERATION permit application.**

- Township Name
- Township Designation
- Range Designation
- Section
- ¼ of ¼ Section

- **Local Permit Construction, and Contractor Information: For NEW and SUBSTANTIAL ALTERATION permit application:**

- Is a local permit required?
- Yes – provide a copy of the local permit approval document, or No
- Has construction already begun? Yes or No
- Describe proposed substantial alteration: Only in the substantial alteration permit application.
- List contractor information.
- List welding contractor information.

- **Permit Fees:**

- \$100.00 FOR: NEW facility and CHANGE IN OWNERSHIP permit application.
- \$50.00 FOR: Substantial alteration permit application.
- \$250 penalty required for beginning of new installation or substantially alterations prior to permit approval.

The MDA may take further administrative actions if new installation or substantial alterations are made prior to permit approval.

Page 2 of NH3 Permit Application:

A list of items to be submitted as part of the permit application.

Use Permit Application Worksheet on the next 11 pages to assist in complying the items on page 2 of the permit application. The worksheet also serves to assist in understanding important compliance information (i.e. Review and Understand).

ANHYDROUS AMMONIA STORAGE PERMIT APPLICATION

It is a violation of MN Statute 18C for a person to install new safeguards or substantially alter an existing permitted safeguard at an anhydrous ammonia storage facility without permit approval. If permit approval is not obtained the Minnesota Department of Agriculture (MDA) may issue ORDERS to Cease & Desist construction activity and/or operation until permit approval has been granted, stipulations met, inspection(s) performed and possible enforcement action. Permit approval will not be issued unless sufficient information is provided by the applicant and approved by the MDA.

SUBMIT THE INFORMATION NOTED IN 1-9. Use the Permit Application Worksheet to assist in compiling the information.

✓ Addressed	✓ ADDRESSED = Check EACH line item (i.e. 1-10) when addressed/compiled by both applicant and contractor(s). State "N/A" to line item(s) that are not applicable to the permit application.
	1. Storage tank information.
	2. Local written permit
	3. Facility identification sign
	4. Fertilizer license
	5. Aerial image showing storage tank location, setback distances and location of other structures, etc.
	6. Detailed drawings/diagrams illustrating details of: A. Painting, Marking, and Placarding Requirements B. Liquid and Vapor Phase identification of NH3 Storage Tank and Transfer Area Openings C. Footings, piers, and saddle supports for each added or relocated storage tank. D. Components installed in openings of each added or relocated storage tank E. Facility piping components F. Transfer System Components G. Transport transfer area H. Rail transfer area I. Nurse tank riser transfer area J. Traffic protection K. Fencing securing facility – if censing is used for facility security rather than locking out main tank shut-off valves on storage tanks and nurse tank riser transfer hose-end valves.
	7. NH3 safety training records
	8. NH3 safety equipment for storage facility A. Each storage facility installation B. Transport Cargo Tank
	9. Incident Response Plan
	10. Reviewed and understand the compliance item stated in the permit application worksheet (i.e. REVIEW & UNDERSTAND).

Anhydrous Ammonia Permit Application Worksheet

- This worksheet is to assist in complying a complete permit application.
 - Permit approval will not be issued unless sufficient information is provided in the permit application and approved by the MDA.
 - Check or document in **EACH** box in the left hand column indicating the noted has been addressed and keep for your record:
- ✓ **Addressed** = Suggest checking off **EACH** box/line item when addressed by both applicant and contactor(s) as specified on page 2 of the NH3 permit application. State "N/A" for items in worksheet that are not applicable to the permit application.
- and
- ✓ **REVIEW & UNDERSTAND:** = Suggest checking off **EACH** box or line when both applicant and contractor(s) has thoroughly reviewed and understands each specified compliance line item.

1. Storage Tank Information: For each added, or relocated storage tank, submit -

- A. A clear/legible photo(s) of the nameplate – All data on nameplate must be clearly visible.
- B. A U1A data report if available at facility or through National Board. If the tank nameplate list a National Board number (NB #), a U1A data can be obtained from either the tank manufacturer or the National Board of Boiler & Pressure Vessel Inspectors (National Board) at (614) 888-8320. A fee for the U1A data report may apply.
- C. Verification that each storage tank is suitable for NH3 service (i.e. 250 psig MAWP, etc.).
- D. Photo(s) of each storage tank – both ends and sides.
- E. Where added storage tank(s) was obtained from?
- F. Photos of questionable or suspected welding (i.e. non-code welding) found on each storage tank.
- G. Photos of defects on each added/relocated storage tank (dents, gouges, budes, etc.)
- H. Square foot area OR the overall length and outside diameter listed on the nameplate.

2. Submit local permit document(s)

3. Submit drawing/photo of facility identification sign – MN Rules, Part 1513.0380.

- A. Readily visible to emergency response personnel – preferably located at entrance of NH3 storage facility site.
- B. The facility identification sign must legibly display:
 1. Facility Name
 2. Address of facility – **911/physical address preferred**
 3. Telephone number of nearest representative, agent, or owner of the facility

4. Submit current fertilizer license certificate. License required only if distributing NH3.

- A. Is a current fertilizer license certificate prominently displayed at the facility?

5. Submit aerial image of NH3 facility showing items A-G. A legal survey may be requested/required.

- A. Current and/or proposed location of added/relocated NH3 storage facility/tank(s).
- B. Current and/or proposed location of NH3 transport transfer area(s).
- C. NH3 nurse tank transfer (riser) area(s):
 1. Distance(s) between riser area(s) and closest current and/or added/relocated storage tank(s).
 2. List distance, in feet between current and proposed riser area(s).
- D. Distance between current and/or proposed NH3 storage tank(s). There must at least 5 feet distance between the outer edges (outer curved edges) of NH3 storage tanks.
- E. Document setback distance from NH3 storage tank(s) on an aerial map:
 1. Mark out a 400 foot circle if the storage tank(s) have a nominal capacity of 100,000 gallons or less;
OR
Mark out a 1000 foot circle if the storage tank(s) have a nominal capacity of more than 100,000 gallons.
 2. Identify and the footage of the NH3 storage tank(s) and the following non-facility items within the 400/1000 foot circle:
 - A. Dug or drilled well(s).
 - B. Adjoining property lines.
 - C. The near side of public roadway(s).
 - D. The near side of mainline railroad track(s).
 - E. Occupied dwelling(s) or dwelling(s) intended to be occupied: Residences, apartments, etc.
 - F. Place(s) of public assembly: Place(s) of business, education, employment, manufacturing, medical care, park/recreational area(s), storage, worship, other place(s) open to the public.
 - G. Confined resident institution(s): Assisting living/nursing homes, etc.
 - H. Non-facility structure(s): Identify the use of each structure.
 - I. Structure(s), tank(s), or other item(s) within 10 foot area of the storage tank(s).
 - J. Location of storm water and tile drain inlet(s), body or bodies of water, rivers, and streams.
- F. Location of storm water and tile drain inlet(s) anywhere else at the NH3 storage facility site.
- G. Distance(s) between current and/or proposed NH3 storage tank(s) to a propane (LPG) storage tank(s) at the facility.

- REVIEW & UNDERSTAND: Other Related Access/Distance Requirements:**
- Storage tank areas must be accessible to emergency vehicles and personnel. Do not block access to storage tank area(s) by parking/placing equipment, vehicles, etc. or other items around the storage tank/system piping.
 - Area within 10 feet of each storage tank must be free of dry grass, weeds, other combustible materials, and materials (including structures, equipment, vehicles, etc.) not required for the operation of the NH3 storage facility system.

6. Detailed Drawing(s) of NH3 Storage Facility Showing/Stating (A to L):

- **List in the drawing(s)/diagrams:**
 - **That all components in the storage facility is NH3 rated.”**
 - **The identity and specification of components in the NH3 storage facility/system.**
 - **The other following items:**

A. Painting, Marking, and Placarding Requirements

Refer to the MDA fact sheet, **Tank Marking & Placarding Requirements and MN Rules, Parts 1513.0220 and 1513.0360**
 Markings and placards must fully intact/visible, not missing any part or faded.

1. Reflective paint finish free of corrosion or area where white/reflective paint finish is missing
2. “Anhydrous Ammonia” in 4 inch lettering on both sides or outer sides of a group of tanks
3. “Inhalation Hazard” in 4 inch lettering on both sides or outer sides of a group of tanks
4. “1005” Placard on both sides or outer sides of a group of tanks
5. Guaranteed Grade Analysis (i.e. NH3 – 82-0-0) clearly visible on each storage tank, particularly visible from the transport transfer area.

B. Liquid and Vapor Phase identification of NH3 Storage Tank and Transfer Area Openings

1. Phase identification can be provided by stenciling, tagging, decaling, or if painted liquid is orange and vapor yellow within three (3) feet of the storage system openings.
2. Phase identification is not required for the following openings: pressure relief valves, pressure indicating devices, thermometer wells, or liquid level indicators.

C. Footings, Piers, and Saddle Supports for each added or relocated storage tank(s).

1. Dimensions of the footings, piers, and saddle supports
2. Rebar size and spacing in the structure of the footings, piers, saddle supports
3. List the concrete strength in psi
4. Depth that the footings and piers will be positioned below ground level.
5. List the following soil and moisture conditions where footings, piers will be placed into.
 - a. Soil texture – sand, silt loam, clay, etc.;
 - b. Estimated soil bearing strength based on soil texture;
 - c. Other soil conditions;
 - d. Water table/moisture conditions, etc.
6. Weight bearing rating of footings, piers, and saddle supports.
7. Each saddle support must cover at least 1/3 the circumference of the storage tank
8. Foundation must maintain the lowest point of each storage tank not less than 18 inches above ground level.
9. Corrosion protection between saddle supports/foundation and storage tank is required.

D. Components Installed in Openings of Each Added or Relocated Storage Tank

1. Manifolds & Pressure Relief Valves:
 - a. Manifold(s) where pressure relief valves will be installed – list quantity, brand, and model
 - b. Pressure relief valves with rain caps: 250 psig/NH3 rated, list quantity, brand, and model
 - c. List the pressure relief provided by manifolds/pressure relief valves in CFM air.

NOTE: Pressure relief required by manifold(s)/pressure relief valves (flow rate in cubic feet per minute air - CFM Air). Refer to **Table 1** on the next page.

NOTE: Square foot area listed on tank nameplate. If square foot area is not on tank nameplate, calculate the square foot area = Overall length X Circumference ÷ 3.1416.

NOTE: For 12,000 gallon storage tanks up to 1010 sq. ft. outside diameter tank surface area: One Squibb Taylor A1416 manifold equipped with two A-417-AB Continental NH3 pressure relief valves will be accepted for sufficient pressure relief requirement.
2. Pressure gauge: 0-400 psi/NH3 rated with shut-off
3. 85% fixed liquid level gauge
4. Percentage liquid level gauge
5. Temperature gauge installed in thermos-well.
6. Excess flow valves with diameter size and gallon per minute rating
7. Back check flow valve(s)
8. Tank shut-off valves – Installed: (1) As close to tank opening as practical; and (2) With valve seat (not stem) directly against NH3 pressure in tank. . Quick opening (1/4 turn) valves not allowed in liquid and vapor transfer lines.
9. Each tank shut-off valve is equipped with a lock out device **or** facility is adequately secured by fencing.

Per MN Rules, Part 1513.0370 - When the NH3 storage facility (installation) is unattended:

 - Each tank shut-off valve must be closed and locked, and not be able to be operated locked out.

OR

 - Tank shut-off valves must be closed and facility is fully secured by fencing with gates securely locked when facility is unattended.
10. 350 to 400 psi/NH3 rated hydrostatic relief valve equipped with a rain cap installed in each tank shut-off valve.

REVIEW & UNDERSTAND: Manifolds and Pressure Relief Valve Requirements

Also refer to the MDA fact sheet, **Manifold & Pressure Relief Valve Requirements and MN Rules**

	<p>Manifolds: MN Rules, Parts 1513.0330, Subpart 1.A, Pressure relief valves must be installed in a manifold so that the pressure relief valves can be replaced while the container remains pressurized.</p>
	<p>Pressure Relief Valves: MN Rules, Part 1513.0180, Subpart. 3 and 9, and 12 states, Subpart 3: The discharge from pressure relief valves must be vented away from the container, upward and unobstructed to the atmosphere. Pressure relief valves shall not be PAINTED or contain other foreign substances. All pressure relief valve discharge openings shall have rain caps that will allow free discharge of the vapor and prevent the entrance of water. Provision must be made for draining condensate which may accumulate. The rate of the discharge must be in accordance with MN Rules, Part <u>1513.1100</u> – i.e. based on the size (square foot area) of the NH3 tank noted in Table 1 on the next page. Subpart 9: The flow capacity of the pressure relief valve must not be restricted by any connection to it on either the upstream or downstream side. Subpart 12: Discharge opening from any pressure relief valve may not terminate inside any building or below the highest roof line of a building.</p>
	<p>ALL Pressure Relief Device (BOTH Hydrostatic and Pressure Relief Valves) Inspection Requirements MN Rules, 1513.0180, Subpart 13, states that a pressure relief device must be subject to a periodic visual external inspection by the facility operator to determine that it:</p> <ol style="list-style-type: none"> 1. Is free of evidence of tampering, damage, corrosion, or foreign matter that might prevent proper operation; 2. Is free of leakage when subject to pressures below the minimum allowable start to discharge setting; 3. Has a properly secured rain cap or other device to avoid entry of moisture or other matter into the relief valve outlet; and 4. Has an open weep hole to permit moisture to escape – (only pressure relief valves)
	<p>RECORDS REQUIRED & MAINTAINED: Pressure Relief Valve Installation Record & Replacement Requirement: MN Rules, Part 1513.0180, Subpart 14, states, No nonrefrigerated container pressure relief valve may be used over five years after the date of installation of the pressure relief device. Records must be maintained which identify each container and indicate the date of installation for each container pressure relief device.</p>

Table 1: MN Rules, Part 1513.1100: Pressure relief valves for excessive heat or fire protection used on containers covered by parts 1513.0300 to 1513.0380 and 1513.1000 to 1513.1070 must be constructed to discharge at not less than the rates required in this part before the pressure is in excess of 121 percent of the maximum allowable working pressure of the container. Relief protection for any other reason, except refrigerated storage, must use ASME UG-125 through UG-136.

Minimum Required Flow Rate of Pressure Relief Valves and Manifolds					
Surface Area in Sq. Ft.	Flow Rate in CFM Air	Surface Area in Sq. Ft.	Flow Rate in CFM Air	Surface Area in Sq. Ft.	Flow Rate in CFM Air
20	258	185	1,600	900	5,850
25	310	190	1,640	950	6,120
30	360	195	1,670	1,000	6,380
35	408	200	1,710	1,050	6,640
40	455	210	1,780	1,100	6,900
45	501	220	1,850	1,150	7,160
50	547	230	1,920	1,200	7,410
55	591	240	1,980	1,250	7,660
60	635	250	2,050	1,300	7,910
65	678	260	2,120	1,350	8,160
70	720	270	2,180	1,400	8,410
75	762	280	2,250	1,450	8,650
80	804	290	2,320	1,500	8,900
85	845	300	2,380	1,550	9,140
90	885	310	2,450	1,600	9,380
95	925	320	2,510	1,650	9,620
100	965	330	2,570	1,700	9,860
105	1,010	340	2,640	1,750	10,090
110	1,050	350	2,700	1,800	10,330
115	1,090	360	2,760	1,850	10,560
120	1,120	370	2,830	1,900	10,800
125	1,160	380	2,890	1,950	11,030
130	1,200	390	2,950	2,000	11,260
135	1,240	400	3,010	2,050	11,490
140	1,280	450	3,320	2,100	11,720
145	1,310	500	3,620	2,150	11,950
150	1,350	550	3,910	2,200	12,180
155	1,390	600	4,200	2,250	12,400
160	1,420	650	4,480	2,300	12,630
165	1,460	700	4,760	2,350	12,850
170	1,500	750	5,040	2,400	13,080
175	1,530	800	5,300	2,450	13,300
180	1,570	850	5,590	2,500	13,520

For containers with total outside surface area greater than 2,500 square feet, the required flow rate can be calculated using the formula, Flow Rate CFM Air = 22.11 A^{0.82} where A = outside surface of the container in square feet.

6. Detailed Drawing(s) of NH3 Storage Facility Showing/Stating (A to L):

- **List in the drawing(s)/diagrams:**
 - **That all components in the storage facility is NH3 rated.”**
 - **The identity and specification of components in the NH3 storage facility/system.**
 - **The other following items:**

E. Facility Piping Components: Refer to:

- MDA fact sheets, **System Piping Requirements, Piping Welding, and MN Rules, Part 1513.0160**

1. Piping will be Welded Threaded Flanged (check all that apply)

2. Pipe Specifications:

- a. SA-53, Grade B or SA-106, Grade B or Other/List (specification/grade): _____
- b. Electric Resistant Welded (ERW) or Seamless
- c. Pipe wall thickness:
 - Schedule 40 (welded joints only)
 - Schedule 80 (threaded or welded joints)
 - Threaded nipples must be schedule 80 wall thickness and seamless

3. Provision for expansion, contraction, vibration, and settling:

- a. NH3 Rated flex connector specifications:
 - 1. Note constructed of stainless steel inner tube and outer double braid netting
 - 2. List operating pressure rating: Must have an operating pressure of at least 250 psi.
 - 3. List bursting pressure rating or safety factor. Must have a safety factor of at least 4
- b. Piping supports are required. Recommended spacing of piping supports are:
 - Every 7 ft. for 1 ¼ inch, 10 ft. for 2 inch, and 12 ft. for 3 inch piping.

4. Shut-off Valves in piping. Quick opening (1/4 turn) valves are not allowed in liquid and vapor transfer lines.

5. Between each pair of shut-off valves in liquid and vapor piping install a 350 to 400 psi/NH3 rated hydrostatic relief valve equipped with a rain cap.

6. Fitting, Bushing, Union, and Plug Specifications

- a. SA-105 black forged steel 2000#’s or greater fittings (threaded or welded)
- b. SA-105 black forged steel 2000# or greater socket weld fittings (welded only)
- c. SA-234, Grade WPB, schedule 40 or 80 black butt weld fittings – (welded only)
- d. Class 300 black malleable iron fittings (threaded only)
- e. Unions: SA-105 black forged steel, 2000 #’s or greater (steel to steel seated)
- f. Bushings, couplings, plugs: SA-105, 2000#’s or greater black forged steel

7. Flange, Flange Stud Bolt, Flange Hex Nut Specifications

- a. SA-105 forged steel, Class 300 or greater
- b. SA-193, Grade B7 flange stud bolts
- c. SA-194, Grade 2H, flange hex nuts

8. Specify the corrosion protection provided for underground piping (i.e. cathodic protection, coated pipe, coating/wrapping of pipe and pipe joints, etc.)

9. State the brand/name of NH3 compatible thread pipe joint compound.

10. Pipe welding must be by a welder certified (qualified) in accordance with the ASME code, Section 9, Welding Qualifications. Submit:

- a. Welding Procedure Specification document on QW-482 for each procedure.
- b. Welding Procedure Qualification Record documented on QW-483 for each procedure.
- c. Welder Performance Qualification documented on QW-484 for each welder & procedure.

11. Submit piping testing procedure for proving that the assembled facility piping (new and existing/above and below ground) is free from leaks at a pressure not less than the normal operating pressure of the system.

Comments/Notes:

6. Detailed Drawing(s) of NH3 Storage Facility Showing/Stating (A to L):

- **List in the drawing(s)/diagrams:**
 - **That all components in the storage facility is NH3 rated.”**
 - **The identity and specification of components in the NH3 storage facility/system.**
 - **The other following items:**

H. Rail Transfer Area Diagram/Drawing

1. Shut-off valve for each liquid and vapor line opening. Quick opening (1/4 turn) valves not allowed in liquid and vapor transfer lines
2. Bleed off ports for both liquid and vapor transfer lines/hosing.
3. Liquid transfer line flow protection – install at each liquid line connection point
 - a. Required: Back check flow valve for transferring NH3 into storage tank(s) – Loading
 - b. Required: Excess flow valve for transferring NH3 out from storage tank(s) – Unloading
 - c. Optional: Remote controlled emergency shut-off
4. Vapor transfer line flow protection – install at each vapor line connection point
 - a. Required: Excess flow valve for loading and unloading transfer areas.
 - b. Optional: Remote controlled emergency shut-off
5. 350 psig/NH3 rated transfer hoses without defects for each liquid and vapor transfer connection. Hose assemblies when made up must be capable of withstanding a test pressure of 500 psig.
6. 350-400 psig/NH3 rated hydrostatic relief valve equipped with rain cap to protect liquid and vapor transfer hoses.
7. Wheel chocks to block wheels in both directions on all tank cars being loaded or unloaded.
8. Caution signs to place on track or tank car to give warning to persons approaching the tank car(s) from the open end or ends of the siding. Sign must:
 - a. Be of metal at least 12 inches high by 15 inches wide in size
 - b. Bearing the words “STOP – TANK CAR CONNECTED” or “STOP – MEN AT WORK”
 - c. “STOP” must be in letters at least four (4) inches high
 - d. Other words must be in letters at least two (2) inches high
 - e. Letters must be white on blue background

REVIEW & UNDERSTAND: Have clean safety water easily accessible at the facility rail NH3 transfer area(s).

I. Nurse Tank Riser Transfer Area Diagram/Drawing – For Each Riser Transfer Area

1. Required: Shut-off/excess flow valve for each liquid and vapor connection. Quick opening (1/4 turn) valves not allowed in liquid and vapor transfer lines.
2. List brand, model, size, and gallon per minute rating of excess flow valve in riser shut-off valves.
NOTE: The intake (excess flow portion) of all riser shut-off valves must be installed in at least a 2 inch pipe cavity for both liquid and vapor risers.
3. Required: Pull-away protection for each liquid and vapor connection installed between discharge side of excess flow valve and the transfer hose. **NOTE:** No items, including fencing, traffic protection, etc. must not impede the full movement of transfer hosing and to operation of pull-away protection in **BOTH** directions.
4. List brand, model, size, gallon per minute rating (i.e. tripods, etc.) of pull-away protection device.
5. 350 psig/NN3 rated transfer hoses without defects for each liquid and vapor connection. Hose assemblies when made up must be capable of withstanding a test pressure of 500 psig.
6. Required: 350-400 psi/NH3 rating hydrostatic relief valve equipped with a rain cap in each liquid and vapor connection for protection of each riser area transfer hose.
7. Lock outs for each hose-end valves **or** facility is adequately secured by fencing.
Per MN Rules, Part 1513.0370 - When the NH3 storage facility (installation) is unattended:
 - Each riser hose-end valve must be closed and locked, and unable to be removed from or operated in the lockout assembly. **OR**
 - Each riser hose-end valve must be closed and facility is fully secured by fencing with gates securely locked when facility is unattended.

REVIEW & UNDERSTAND: Have clean safety water easily accessible at the facility nurse tank NH3 transfer (riser) area(s).

REVIEW & UNDERSTAND: Preventing Impedance of Nurse Tank Riser Transfer Area Pull-Away Protection

Refer to MDA fact sheet, **Truck/Nurse Tank Riser Pull-Away Protection** - No items, including fencing, traffic protection, etc. must not impede the full movement of transfer hosing and operation of pull-away protection in **BOTH** directions.

6. Detailed Drawing(s) of NH3 Storage Facility Showing/Stating (A to L):

- **List in the drawing(s)/diagrams:**
 - *That all components in the storage facility is NH3 rated.”*
 - *The identity and specification of components in the NH3 storage facility/system.*
 - *The other following items listed below:*

J. Traffic Protection - MN Rules, Parts 1513.0160, Subpart 6 and 1513.0370.

Also refer to MDA fact sheet **Storage Facility Traffic Protection Guidelines**

Traffic protection must be provided in the following area at the NH3 storage facility:

1. Around storage tank(s);
2. Around storage facility piping that includes the nurse tank, rail, and transport transfer areas
3. Position traffic protection not to impede the full movement of transfer hosing and operation of pull-away protection in **BOTH** directions for transport and nurse tank transfer areas.
4. Position traffic protection not to impede easy access to safety water.

K. Fencing to secure facility - MN Rules, Part 1513.0370 – Instead of locking out storage tank main shut-off valves and nurse tank riser transfer area hose-end valves.

1. Fencing must be sufficient to protect against tampering and unauthorized entry.
2. When fencing is used for securing the facility, entrances must be secured via lock outs.
3. Fencing must not impede the full movement of transfer hosing and operation of pull-away protection in **BOTH** directions for transport and nurse tank transfer areas.

7. NH3 Safety Training Requirements – Records of Date and Persons Receiving Training

Submit most current training date with list of facility staff provided training.

REVIEW & UNDERSTAND: NH3 Safety Training - MN Rules, Part 1513.0040, Subpart 1

Each person required to store, handle, transport, or otherwise work with ammonia must be trained in accordance with Code of Federal Regulations, Title 29, Part 1900-1910 (Hazardous Communications Regulations) to:

1. Understand the properties of ammonia;
2. Become competent in safe operating practices
3. Take appropriate actions in the event of a leak or an emergency

REVIEW & UNDERSTAND: MN OSHA Training Records Requirements

Training records are required by other federal and state agencies Refer to the Minnesota OSHA article, *An Employer’s Guide to Developing a Hazard Communication or Employee Right-to-Know Program* at http://www.dli.mn.gov/sites/default/files/pdf/hazcom_ertk_development.pdf

8. NH3 Safety Equipment & Items – MN Rules, Part 1513.0040, Subpart 3

Submit list of safety equipment, canister expiration date(s) and safety water with the permit application.

A. Permanent storage installation must have on hand, as a minimum the following safety items (1–7):

- **Required:** Safety equipment-items must be located at each permanent NH3 storage facility site – specific parcel/site where NH3 storage tanks are located.
- **Recommended:** that safety equipment-items 1 through 6 be maintained/stored together in a water tight, secured cabinet or container for easy and predictable access.

1. Two (2) NH3 rated full face gas masks.
2. Four (4) currently dated, NH3 rated canisters (**NOT** cartridges). Keep canisters in sealed bag/container.
3. One (1) of protective gauntlet-style gloves of sufficient length to allow for cuffing and impervious to ammonia.
4. One (1) pair of chemical splash goggles (indirect venting or non-venting)
5. One (1) pair protective boots impervious to ammonia
6. One protective slicker or jacket/pants impervious to ammonia.
7. Safety Water: List the location(s) where easily accessible safety water emergency shower/plumbed eyewash station(s) or open top container(s) with at least 150 gallons of clean water will be placed at the facility.

NOTE: For emergency shower with plumbed eye wash units refer to Emergency Eyewash & Shower Specifications – Minnesota OSHA (PDF) at http://www.dli.mn.gov/sites/default/files/pdf/wsc_emerg_eyewash_showers_0611.pdf

B. Cargo tank (i.e. transport) transporting NH3 must carry the following safety equipment (1-5):

1. Five gallons of clean water in a container designed to provide ready access to the water to flush any area of the body contacted by ammonia.
2. One (1) pair protective gauntlet style gloves impervious to ammonia
3. One (1) pair chemical splash goggles (indirect venting or non-venting)
 - a. A full face shield may be worn over the goggles, but NOT as a substitute for goggles
4. One (1) NH3 rated full face gas mask
5. Two (2) currently dated, NH3 rated canisters

9. Incident Response Plan – MN Statutes, Section 18C.235

Submit the **FIRST PAGE** of the IRP template that is posted on the next page with the permit application.

- Refer to the MDA fact sheet, **Developing and Maintaining Your Incident Response Plan**
<http://www.mda.state.mn.us/chemicals/spills/~media/Files/chemicals/incidents/responseplan.pdf>
- Refer to the **Incident Response Plan template** available on the MDA web site at:
<http://www.mda.state.mn.us/chemicals/spills/~media/Files/chemicals/incidents/aq03327responseplanx.pdf>

REVIEW & UNDERSTAND: Incident Response Plan Requirements

Minnesota Statute, 18C.235 states, *A person required to be licensed under section 18C.415, or a person who stores fertilizers, soil amendment, or plant amendment products in bulk, must develop and maintain an incident response plan that describes the actions that will be taken to prevent and respond to agricultural chemical incidents. The plan must include information the commissioner deems necessary to respond to an agricultural chemical emergency incident. The commissioner shall make sample incident response plan forms available. The plan must be kept at a principal business site or location within this state and must be submitted to the commissioner upon request. The plan must be:* (3 required items listed below)

1. *Updated every three years or whenever information on the form becomes out of date, whichever is earlier (and documented accordingly);*
2. *Reviewed (i.e. training) with employees (facility staff) at least once per calendar year and include documentation of training events; and*
3. *Made available to local first responders and documented accordingly.*

NOTE: Have updated Incident Response Plan available during MDA inspections.

REVIEW & UNDERSTAND: Incident Reporting Requirements - MN Statutes, Section 18D.103

Refer to the MDA web page article, **Guidance for Reporting Agricultural Chemical Incidents**, located at:
<http://www.mda.state.mn.us/chemicals/spills/incidentresponse/guidelist/gd01.aspx>

A person who at the time of the incident has 1) custody of, 2) control of, 3) or responsibility for the anhydrous ammonia or its container (owner of real property) is to **immediately** report the incident to the Minnesota Duty Officer (MDO) at 1-800-422-0798 or (651) 649-5451.

- An Incident is defined as a flood, fire, tornado, transportation accident, storage container rupture, portable container rupture, leak, spill, emission, discharge, escape, disposal, or other event that releases or immediately threatens to release an agricultural chemical accidentally or otherwise into the environment, and may cause unreasonable adverse effects on the environment. Incident does not include a release resulting from the normal use of a product or practice in accordance with law.
- Persons who store or transport agricultural chemicals are construed as being "*in control of*" or having a "*responsibility for*" that substance, and therefore are required to report incidents, regardless of ownership (i.e. responsible party or RP).
- Owners of property where an agricultural chemical has been spilled, leaked, or disposed of in the past are required to report to MDA contamination on their property upon discovery. Sometimes a fire or police department responding to an incident will report the event to MDA. A report from a fire or police department, or anyone else, **does not** relieve the RP of their obligation to immediately report the incident to MDA.

REVIEW & UNDERSTAND: Minimum Protective Gear to Wear.

Minnesota Rules 1513.0040, Subpart 2 states that a person making, breaking, or testing an ammonia connection, transferring ammonia, performing maintenance/repairs on an ammonia system under pressure must wear:

1. NH3 gauntlet style gloves
2. Chemical splash goggles (indirect venting or non-venting)
 - a. A full face shield may be worn over the goggles, but NOT as a substitute for goggles.

REVIEW & UNDERSTAND: Monitoring and Authorization of NH3 Transfers.

Minnesota Rules, Part 1513.0200, Subpart 2 states that at least one qualified operator experienced in transfer procedures and trained in accordance with Code of Federal Regulations, title 29, parts 1900-1910, must monitor the transfer of ammonia from the time the transfer connections are first made until they are finally disconnected. The monitoring may be performed by a person on site, from a remote location, or by electronic means. Capability must be provided to halt the transfer in the event of an emergency.

Minnesota Rules, Part 1513.0200, Subpart 4 states that NH3 tanks must be filled or used only upon the owner's authorization.

REVIEW & UNDERSTAND: Cargo & Railcar Tanks Unloading at Permitting NH3 Facility.

Minnesota Rules, Part 1513.0200, Subpart 3 states that cargo tanks and tank cars must not be unloaded with gas pressure other than from an ammonia source and must not be unloaded from any location other than a permanent storage location permitted according to Minnesota Statutes, section **18C.305**.

Pest and Fertilizer Management Division -Phone: 651-201-6061

Incident Response Plan for Agricultural Chemicals

Facility Name:

Manager Name:

Mailing Address:

Site Address:

Phone:

Fax:

Email:

Author:

Date:

Date Reviewed*	Initials	Date Facility Staff Trained**	Initials	Date Offered to First Responders***	Initials
1.					
2.					
3.					
4.					
5.					
6.					
7.					

INCIDENT RESPONSE PLAN (IRP) REMINDERS:

- Review IRP every 3 years or whenever information becomes outdated (whatever is sooner) and documented accordingly.
- Employee/facility staff training (review of IRP) is required at least once per calendar year and documented accordingly.
- New and revised (updated) IRP must be offered to local first responders and documented accordingly.

REVIEW & UNDERSTAND**General Conditions for Fertilizer Storage Site Approval/Permits**

1. This approval/permit shall not release the permittee from any liability or obligation imposed by Minnesota or federal statutes or local ordinances and shall remain in force subject to all conditions and limitations now or hereafter imposed by law. The approval/permit shall be permissive only and shall not be construed as estopping or limiting any claims against the permittee for damage or injury to persons or property, or any waters of the state resulting from any acts, operations, or omission of the permittee, its agent, contractors or assigners, nor as estopping or limiting any legal claim of the state against the permittee, its agent, contractors or assigners for damage to state property, or for any violations of the terms or conditions of this permit.
2. No transfer of ownership and no major alterations or additions to the storage site shall be made without the written approval of the Department.
3. The use of the site shall be limited to the storage of the materials or substances described in the approval/permit application and associated material filed with the Department.
4. The Department's review of plans which provide the basis for this approval/permit is solely for the limited purpose of determining whether there is reasonable assurance that the facilities constructed thereby will comply with the rules and criteria of the Department.
5. The permittee is responsible for the integrity of structures, physical features, or the reliability, durability and efficiency of specific items or proprietary equipment or material. All applicable federal, state, and local laws, regulations or ordinances must be followed in the design, location, and construction of proposed containment areas.
6. The approval/permit is based upon the assumption that the information provided by the applicant is correct, and that all other necessary legal requirements have been or will be satisfied.
7. Certification of completion of the project shall be made immediately after construction is finished and reports on operational practices shall be submitted as may be required by the Department.
8. This approval/permit authorizes the holder to perform the activities described herein under the conditions set forth. In issuing this approval/permit, the State/Department assumes no responsibility for any damage to persons, property or the environment caused by the activities of the holder in the conduct of its actions, including these activities authorized, directed or undertaken pursuant to this approval/permit. To the extent the State/Department may have any liability for the activities of its employees that liability is explicitly limited to that provided in the Torts Claim Act, Minnesota Statute 3.736.

Links for MDA Fact Sheets and Documents Referenced in the Anhydrous Ammonia Permit Application Worksheet

- Tank Marking and Placarding Requirements – 2 pages
<http://www.mda.state.mn.us/sites/default/files/inline-files/NH3%20Tank%20Marking%20and%20Placarding%20Requirements%20-%20nh3tankmarking.pdf>
- Manifold & Pressure Relief Valve (PRV) Requirements – 2 pages
http://www.mda.state.mn.us/sites/default/files/inline-files/Manifold%20%26%20Pressure%20Relief%20Valve%20%28PRV%29%20Requirements_0.pdf
- 250 PSI/NH3 Rated Pressure Relief Valve (PRV) Installation/Replacement Record Form – 1 page
<http://www.mda.state.mn.us/sites/default/files/inline-files/Pressure%20Relief%20Valve%20Installation%20and%20Replacement%20Record%20Form%20-%20ag03300nh3prv.pdf>
- Anhydrous Ammonia System Piping Requirements – 2 pages
http://www.mda.state.mn.us/sites/default/files/inline-files/Anhydrous%20Ammonia%20System%20Piping%20Requirements_0.pdf
- Storage Facility Transfer System Guidelines and Requirements – 4 pages
<http://www.mda.state.mn.us/sites/default/files/inline-files/Storage%20Facility%20Transfer%20System%20Guidelines%20and%20Requirements.pdf>
- Procedure for Testing a Pressure Actuated Bypass System – 1 page
<http://www.mda.state.mn.us/sites/default/files/inline-files/Procedure%20for%20Testing%20a%20Pressure%20Actuated%20Bypass%20System.pdf>
- Anhydrous Ammonia Cargo Tank & Nurse Tank Riser Area Pull-Away Protection – 2 pages
 <http://www.mda.state.mn.us/sites/default/files/inline-files/Transport%20Transfer%20and%20Nurse%20Tank%20Loading%20Riser%20Area%20Pull-Away%20Protection.pdf>
- Storage Facility Traffic Protection Guidelines – 3 pages
<http://www.mda.state.mn.us/chemicals/fertilizers/~media/Files/chemicals/nh3/nh3protection.ashx>
- Anhydrous Ammonia Pipe Welding Procedures & Qualifications – 1 page
<http://www.mda.state.mn.us/sites/default/files/inline-files/Pipe%20Welding.pdf>
- Developing and Maintaining Your **Incident Response Plan** – 2 pages
<http://www.mda.state.mn.us/pesticide-fertilizer/preparing-spill>
- Template: Incident Response Plan for Agricultural Chemicals (Fertilizers and Pesticides) – 16 pages
<http://www.mda.state.mn.us/sites/default/files/2018-06/Incident%20Response%20Plan%20Template.pdf>
- Anhydrous Ammonia Incident Reporting Requirements
<http://www.mda.state.mn.us/pesticide-fertilizer/responding-spill>
- An Employer's Guide to Developing a Hazard Communication or Employee Right-to-Know Program – 32 pages
http://www.dli.mn.gov/sites/default/files/pdf/hazcom_ertk_development.pdf
- Fertilizer License Application Form:
<http://www.mda.state.mn.us/sites/default/files/2018-07/ag00128fert.pdf> - 1 page