

2017 Tips from the Field

MDA's Anhydrous Ammonia Inspection and Permitting Program

In 2016 the Minnesota Department of Agriculture (MDA):

- Completed 108 anhydrous ammonia (NH₃) facility inspections
- Investigated 42 NH₃ incidents, some which resulted in exposures, injuries, and evacuations (i.e. endangerment)

The list below ranks the most serious and common violations documented in 2016. The MDA strongly recommends that self-inspections be conducted, and correction be made of all non-compliance items.

Violations		Remedies
1	<ul style="list-style-type: none"> • Too long withdrawal (WD) hosing causing damage to hosing, fittings, loosening hose-end valve while in transit, or endangerment; and • Hose-end valve(s) comes loose while in transit. • Out of condition hosing - i.e. defects exposing cords/ reinforcement. 	<ul style="list-style-type: none"> • Install proper length of WD hose for specific application assembly, positioned above the nurse tank hitch with no chance of damaging hosing, fittings, or loosening hose-end valve during field application/transport. • Adequately secure hose-end valves while in transit. • Immediately replace hosing that is out of condition.
2	Incorrectly installed break-away coupling devices (BACD) on toolbar – i.e. not installed per manufacturer's instructions.	<ul style="list-style-type: none"> • Review and follow BACD manufacturer's instructions for installation, maintenance, and operation. • BACD must not be impeded in any manner by hardware, hosing (i.e. jumper hose is too short). • Install bleed valves as close as possible at or in both the male and female sections of BACD.
3	NH ₃ rated gloves and goggles not available and worn for NH ₃ handling or maintenance.	<ul style="list-style-type: none"> • Make NH₃ rated gloves and goggles available. • Wear NH₃ rated gloves and goggles for NH₃ handling and maintenance.
4	Failure to bleed off NH ₃ prior to connecting/disconnecting hoses/piping, resulting in exposure or injury.	<ul style="list-style-type: none"> • Always assume that hoses/lines contain NH₃. • Bleeding off NH₃ from hoses/lines before connecting/disconnecting.
5	Safety water of sufficient quantity and accessibility not provided during NH ₃ handling or maintenance.	<ul style="list-style-type: none"> • An easily accessible emergency shower and a plumbed eye wash unit or in lieu of these, at least 150 gallons of clean water in an open top container at the NH₃ facility. • At least 5 gallons of accessible, clean water on each nurse tank.
6	All main tank and riser hose end valves not closed and locked when the facility is unattended.	<ul style="list-style-type: none"> • Close and lock all main tank and riser hose end valves when facility is unattended. • In place of valve locks, lock gates at facility secured by fencing when facility is unattended.
7	Not having required safety items at the permitted storage facility site.	<p>At a minimum, the following safety items must be at the permitted NH₃ storage facility site:</p> <ul style="list-style-type: none"> • Two (2) full-face gas masks • Four (4) currently dated/NH₃ rated canisters (NOT cartridges) • One (1) pair gauntlet-style gloves of sufficient length for cuffing, impervious to NH₃ • Chemical splash goggles or chemical splash goggles with full face shield worn over the goggles • One (1) pair boots impervious to NH₃ • One (1) slicker or pants/jacket, impervious to NH₃ • An easily accessible emergency shower and a plumbed eye wash unit or in lieu of these, at least 150 gallons of clean water in an open top container

Violations		Remedies
8	Incorrect, illegible, or missing BACD connection/disconnection instructions displayed in a manner that is not readily visible (fully visible) near the BACD.	<ul style="list-style-type: none"> • Make sure that connection/disconnection instructions match the brand/model of BACD installed, fully legible near the BACD. • Pioneer BACD: Both aluminum ring and decal instructions are required.
9	Five (5) gallon safety water tank/hosing: <ul style="list-style-type: none"> • Not on each nurse tank. • Damaged (i.e. cracked/broken tank and hosing). • Installed in an inaccessible location. 	Each nurse tank must be equipped with at least five gallons of clean water in a container that is designed to provide ready access to the water for flushing any area of the body contacted by ammonia.
10	<ul style="list-style-type: none"> • Illegible or missing nurse tank (tank) nameplate. • Non-compliant V, T, P test, date (month/year), and unique tank identification markings – i.e. missing, damaged, illegible, incomplete, or expired. 	<ul style="list-style-type: none"> • Nurse tank (tank) nameplate must be present and legible. Remove all paint, tape, etc. from tank nameplate. • If unable to make tank nameplate legible or the tank nameplate is missing, immediately empty and pressure relieve the tank and follow the requirements in federal regulation 49 CFR, Part 173.315(m)(2) for inspection, testing, marking (i.e. V,T,P, Date, tank ID), and documentation, coinciding with MN NH3 Rules, Part 1513.1030, Subpart 11.
11	Nurse tanks are not properly anchored.	Each bolt/washer/nut assembly must be tight (does not move), securely anchoring nurse tank to running gear. Maintain the running gear frame free of defects.
12	Inoperable or illegible nurse tank 0-400 psi/NH3 pressure gauge.	Replace/install an operable/legible 0-400 psi/NH3 rated pressure gauge.
13	Dual nurse tank assemblies: Additional flow protection (i.e. excess flow valve-EFV or back check flow valve-BCFV) not installed in merged liquid withdrawal, liquid fill, and vapor fill connections.	<p>For merged connections, install an additional EFV:</p> <ul style="list-style-type: none"> • Withdrawal/fill: Immediately following merged lines. • Liquid/vapor fill between nurse tanks: <ul style="list-style-type: none"> ✦ Recommend EFV rated at or less than 37 gpm. ✦ EFV in each tank opening (tank EFV). ✦ When a tank EFV is rated more than 37 gpm, add to the top of the fill valve: <ul style="list-style-type: none"> ★ BCFV (use only for liquid fill) or ★ EFV (can use for either liquid and vapor fill)
14	Pressure relief valve (PRV) installation records not maintained – i.e. accurate and current.	<ul style="list-style-type: none"> • PRV installation records must be accurate and current. • Have PRV installation records available for inspection.
15	Hydrostatic Relief Valves (HRVs): <ul style="list-style-type: none"> • Incorrect psi rated HRVs installed (i.e. less than 350 or greater than 400 psi rated). • Missing on dual nurse tank crossover hosing for liquid and vapor fill connections. • Missing between positive shut-off valves. • Missing rain cap. 	<p>Install 350-400 psi NH3 rated HRVs equipped with a rain cap:</p> <ul style="list-style-type: none"> • Between each pair of positive shut-off valves in storage and equipment. <ul style="list-style-type: none"> ✦ This includes dual nurse tank fill and withdrawal connections/ lines that are merged together.

NOTE: The Pioneer break-away coupler has a replacement date stamp and decal. The manufacturer states “Discard and replace the coupler and/ or nipple 3 years after installation or after the date shown on the product, whatever is earlier.” The MDA will inspect Pioneer break-away couplers for replacement dates. Orders directing replacement will be issued when Pioneer break-away couplers are found at or beyond the stamped/decided replacement date.

Contact the following MDA staff if you have further inquiries or questions.

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Refer to the MDA's NH3 program website for additional safety and compliance information at www.mda.state.mn.us/nh3.