

## Anhydrous Ammonia

*This section contains a number of frequently asked questions about the storage and handling of Anhydrous Ammonia. This section will be modified whenever there is new discussion or regulations affecting the handling of Anhydrous Ammonia.*

### Storage Questions

#### **Q) How do I begin if I want to construct or add Anhydrous Ammonia Storage?**

A) Contact the Feed and Fertilizer Bureau at 515-242-6338 or 515-249-2938. A copy of “Requirements for Nh3 Installations” is available on the IDALS website.

#### **Q) Can I move and use an existing tank now being used for Nh3, if the tank has no data plate?**

A) No, only if you have a build sheet or U-1-A form that you can prove is for that tank and the tank meets the proper qualifications. If you can locate the National Board Registration Number, you might be able to get a new data plate or build sheet. The new CGA standards do provide for “recertification” of a storage tank.

#### **Q) What type of storage tanks can be used?**

A) For previously used tanks, (reinstalled), preference is that the tank has been totally heat-treated; there is an exemption in the ANSI Standard that allows a tank with the only portion of the tank being stress relieved is the heads. The data plate or build sheet provides this information. The tank must have a data plate and be approved for Nh3 storage with a minimum working pressure of 250 psig. All storage tanks must be built according to ASME Code and have a National Board Code Inspector stamp, or in lieu of the NBIC number, an ASME manufacturer’s data report direct from the manufacturer. Or, the storage tank may be subject to testing meeting the requirements of 5.1.1.5 of the new standard. Any new tank brought into Iowa must be completely stress relieved.

#### **Q) Can I unload rail cars of Anhydrous Ammonia directly into truck transports?**

A) No, In Iowa we require that a storage tank be plumbed into the system where rail cars can unload. There are also more requirements for unloading rail cars in ANSI/CGA G-2.1.

#### **Q) Can I use an old rail car for storage?**

A) No, we no longer allow rail cars to be installed as permanent storage. If you have an existing storage location where a rail car is being used for storage, it must be taken out of service. All railcars being used for storage should be taken out of service prior to Spring of 2017 unless other arrangements have been

made with IDALS. Storage tanks must be built per ASME Code and be inspected by a National Boiler Code Inspector and rail cars do not meet this requirement.

**Q) My neighbors and I want to construct an Nh3 storage site and use it for ourselves, is that possible?**

A) Yes, but as a group you will have to obtain a Commercial Fertilizer License and pay license fees. You would also be required to create, submit, and maintain a Risk Management Program under regulation of the Clean Air Act, 40 CFR 68. If the farmer owned tank is just for that farmers use only the previous requirements are lifted. Any farm storage system is required to follow the same protocol and regulations for constructing and operating an Nh3 site as any dealer would.

## Plumbing Questions

**Q) Where is the Emergency Shut-off Valve (ESV) supposed to be located in my Nh3 system?**

A) For several years, IDALS has advised that the ESV be placed in the piping as close as possible to the opening or discharge appurtenance of the tank feeding the system. Since we have adopted the new standard in the new administrative rules, the requirement is to place the ESV as close as possible to the shut off valve for the appurtenance of the storage tank. It is recommended that the original placement of the ESV will be maintained and possibly two ESVs be used. The ESV in front of the pump should shut off first. With the placement of the ESV ahead of the pump a shut off or “dead man switch” may want to be considered to shut off the pump when the emergency shut off valve is closed in an emergency situation. The intent would be to protect the pump from running dry.

**Q) Everyone tells me I need a bulkhead where the transport hooks up to my storage system, is that true?**

A) Yes the bulkhead requirements have been in the Iowa Rules since 1990. Unfortunately, the content of the rule is confusing and was not actively enforced until the last few years. A bulkhead to assure a clean break in a pull away is required for where transports connect. The bulkhead should be constructed in a way to protect the required shut off valves as well.

**Q) Do I have to test my underground piping?**

A) Yes, all piping must be pressure tested after installation. It also must be tested regularly according to ASME B31.3 standards. One way of looking at it would be that you have to inspect all of your piping. Aboveground you are doing a visual check and you check for leaks with normal operation. You have no way of visually inspecting the underground piping. Therefore, to assure the underground pipe’s integrity you must perform a leak test. The procedure for the inspection and testing must be documented as well as the results.

**Q) I have heard that a number of metal flex connections in piping have failed. Is there any changes I should know about?**

A) Yes, metal flex connections have been failing. The new CGA G2.1 will call for the flex connection to have a minimum operating pressure of 350 psig. Another requirement would be that they be double

braided. Manufacturers should now have the pressure rating and manufactured date on the ends of the flex hose; if not labeled with such, it must have the following information attached to the outer hose ends: Anhydrous Ammonia; XXX psig (Maximum Working Pressure); Manufacturer's Name or Trademark; Year of Manufacture. Normal inspections would determine if the connection has been compromised or if the connection has become misshaped. The flex connections are officially a "hose" but do not have to be disassembled and pressure checked as could be implied from the new ANSI/CGA standards. That is because your piping is under your documented visual inspection program. They are considered part of the "piping". If there is any question of the integrity of the flex connection, it must be replaced immediately.

## Nurse Tanks

### **Q) Are the Voluntary Guidelines for plumbing Double Nh3 Nurse Tanks new regulation?**

A) No, The guidelines are voluntary. However you must have excess flow valves that work. An example would be Figure 3 from the document, where the excess flow valve in front of the Tee is required by Iowa code. The back check valves on the back of the Tee are not required but strongly suggested. The back check valve could be eventually become a requirement. Our new rules allow for the use of mechanical emergency shut off valves to be used in the plumbing as well. Please note the advised flow rates for the valves exiting the nurse tanks. If valves with flow rates much larger than what is suggested are used it is hard for a compromised hose with a slow leak to activate the excess flow valve. This could possibly result in the loss of all of the contents in the tank(s).

### **Q) Are two 5 gal. emergency water tanks required for double tanks?**

A) Yes, the code requires one 5 gallon water container for each cargo tank or container.

### **Q) The straps for my water containers keep slipping; can I weld bolts on the tank to hold them in place?**

A) NO!

### **Q) Are placards required on the inside side of double nurse tanks?**

A) Yes, according to DOT regulation, placards must be on all four sides of each cargo tank.

### **Q) I can read all but one corner or number on the data plate on my nurse tank, will that be good enough?**

A) No, the data plate must be completely legible; all the numbers must be able to be read.

### **Q) Do I need protection all the way around my storage tank?**

A) Yes, the new standard states that containers and appurtenances shall be located or protected by suitable barriers to avoid damage by trucks or other vehicles. It also states that all exposed piping shall be protected.

### **Q) Do I need to update the canisters for my face mask?**

A) IDALS Inspectors will no longer be inspecting the face mask as it won't be in the Fertilizer Rules. If you still have the face mask they are required to have 2 canisters each and the dates would have to be up to date. The new CGA G 2.1 standard does not call for the face mask at the storage sites but a transport driver will have to have one or escape type respirators. The OSHA statute 1910.111 does however still call for 2 face mask to be onsite with the spare canisters. You need to know your emergency plans and what type of training you have before using a face mask.

**Q) I have multiple storage tanks plumbed together, are there any extra precautions that should be taken?**

A) You of course will have excess flow valves in each tank appurtenance. Having all the valves open could overload your pump, (you should refer to the pump manufacturers recommendations). You may also want to use extra emergency shut offs between the tanks as a small leak probably would not be enough flow to engage the excess flow valve in the tank. This scenario can be compared to the concerns of the piping of double nurse tanks.

**Q) Can I use a shut off valve prior to the hydrostatic valves on my system?**

A) No.

**Q) If I redo the plumbing of my Anhydrous Ammonia storage site, do I need to submit a new application?**

A) No. However we keep records of the original applications and would consider it important to have the most current plumbing diagram for the site in the file. If we were to assist in an emergency, we could be of more benefit with accurate information. If you are adding another or replacing a storage tank, you would have to submit an application.