


# MESSENGER-INQUIRER

 Cooperative  
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## Farm Update

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AGRICULTURE & NATURAL RESOURCES  
EDUCATION

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### **Anhydrous Ammonia Caution and Information**

Anhydrous ammonia application is underway and will continue through the corn planting season. Before I go further, remember safety when transporting it. Over the next 6 weeks, there will be a couple of thousand slow-moving trips to and from Owensboro suppliers pulling the white tank wagons on the by-pass and state highways. There are accidents associated with the transport of anhydrous ammonia each year but please take time to use caution and drive slowly. More than once I've heard someone after a trailer accident claim that when the trailer they were towing came unhitched the safety chains remaining connected caused violent swerving, making it more difficult to control the vehicle. They claimed if the safety chains had not been attached, it would have let the wagon separate, making it easier for them to regain control and prevent vehicle damage. Separation from the towing vehicle cannot happen, no matter how scary the ride is! If it completely detaches, the towed wagon then becomes an out-of-control driverless vehicle on a collision course with whatever it may be approaching. Another way to keep the wagon connected to the towing vehicle is to use a correctly sized pin and safety clip. If the wagon has a 7/8" pinhole, use a 7/8" hitch pin and a safety clip sized to that pin size. Keep a handful of extra clips in the truck, they do manage to disappear. A pin sized smaller than the

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hitch results in jerking. That motion is hard on the towing vehicle, hard on the wagon, and could result in weakening the hitch pin.

Always wear gloves and unvented goggles when changing tanks. Ammonia equipment manufacturers clearly stamp expiration dates on hoses and connection components because wear-out failure is not an option. Take time to replace expired parts and don't sacrifice safety to save money. Always have clean water on hand and keep a respirator designed to filter ammonia gas on the tractor in case of an emergency.

What makes anhydrous ammonia so different from other products we use in agriculture is it literally boils at negative 28 degrees F. That is hard to imagine, and why it must be kept under continuous pressure, from the time it is manufactured until it passes through the applicator, which forces it to remain in a liquid state. Nurse tanks should never be filled greater than 85 percent because there must be room for gas expansion with the increase in pressure as the tanks warm and the liquid expands. One cubic foot of liquid ammonia expands to 850 cubic feet of vapor. Anhydrous ammonia application equipment is built to withstand 250psi, because this product in a 60-degree F° environment has 93psi vapor pressure. Product in a 100-degree F° environment has a vapor pressure of 197psi. All tanks are white to reflect sunlight and keep them as cool as possible.

The word anhydrous means 'without water.' We basically apply an ammonia concentrate, which is  $\text{NH}_3$ . Within an hour of anhydrous ammonia application to the soil, the conversion to ammonium,  $\text{NH}_4$ , begins. Anhydrous ammonia's affinity for hydrogen is so strong, that in the application zone it will actually split water molecules to gain the additional hydrogen ion. This chemical reaction raises the pH in the application zone, and is the reason, in

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addition to a flash freeze effect, that anhydrous ammonia can cause serious damage when it contacts moisture in the eyes, skin, or lungs.

Nitrogen in the ammonium form is tightly held by soil particles and cannot be lost. Three weeks after application, only 20 percent of anhydrous ammonia is in the nitrate form and just 10 percent if N-Serve nitrification inhibitor was used. At six weeks, 65 percent will be in the nitrate form and 50 percent if N-Serve was used. If your nitrogen source is urea, a nitrification inhibitor called Instinct, is known to slow the conversion to nitrate. It can be used with urease inhibitors like Agrotain, which block volatilization for up to two weeks when applied on the soil surface.

## **Upcoming Event:**

The Caldwell County Extension Office will hold an Italian Ryegrass Control Field Tour on March 28, starting at 8:30 a.m.

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