

SAFETY GUIDE



ANHYDROUS AMMONIA

Bringle Jennings
Extension Specialist - Farm Safety

Anhydrous ammonia is being used extensively by farmers as a nitrogen fertilizer. It has the highest available nitrogen content of any fertilizer, is the lowest in cost per pound of nitrogen, and has proven extremely effective in raising yields. Unfortunately, the fertilizer is potentially dangerous to use. It must be stored and handled properly. An accident can result in serious injury, blindness, or even death.

UNDERSTAND THE DANGERS OF ANHYDROUS AMMONIA

Anhydrous means "without water." Anhydrous ammonia is dry or pure undiluted ammonia. At ordinary temperatures, it is a colorless gas; but under pressure, it changes into a liquid. Agricultural ammonia is transported, stored, and handled in pressurized tanks.

Anhydrous ammonia is a strong alkali that can cause painful skin burns. Because of its low boiling point, anhydrous ammonia can burn by freezing as well as by caustic action. Skin burns can be serious, but eye exposure can be even more critical. Severe exposure, if not quickly and properly treated, can result in blindness. Even mild exposure can cause irritation to tissue of the eyes, nose, and lungs. Exposure to high concentrations of the vapor will cause convulsive coughing, respiratory spasms, strangulation, and asphyxiation.

SAFE HANDLING OF ANHYDROUS AMMONIA

Anhydrous ammonia fertilizer can be used as safely as any other gas or liquid that is handled under pressure every day. But you must take every precaution to prevent accidents. The three most important points to remember in handling anhydrous ammonia safely are (1) *use proper equipment*, (2) *take good care of equipment*, and (3) *follow safe work practices*.

About 80 percent of anhydrous ammonia accidents are the result of improper procedures, lack of training in equipment operation, or failure to follow prescribed practices. Operators should be trained and should follow work practices recommended by manufacturers.

Proper Equipment

- Use equipment that is specifically designed for handling anhydrous ammonia. Be sure there are no copper, brass, or galvanized parts since ammonia will erode them.
- Keep tanks coated with white paint. White paint reflects sunlight and keeps tank temperature down.
- Park equipment in shade when not in use.

Care of Equipment

- Inspect regularly to keep hoses and valves in good shape and all connections tight.
- Take no chances with weak parts or old hoses; replace those that are not working properly or those that may fail.

Safe Work Practices

- Wear rubber gloves and chemical splash goggles when working with anhydrous ammonia.
- Park the nurse tank and applicator on level ground and block the wheels to prevent rolling. Park so that vapor will blow away from homes and crops. Work upwind when possible.
- Keep head and body out of line with any valve or fitting openings, particularly the openings of safety relief valves. Operate hand valves by hand; use of a wrench could cause breaking of the valve stem or damaging of the valve seat, causing a release of ammonia.
- Purge all air from containers and their connections before filling with anhydrous ammonia. (Otherwise the pressure of air will raise the total pressure within containers and cause relief valves to open at lower temperatures.)
- Next, pressurize containers with ammonia vapor to check for leaks. Double-check hoses and connections each time before use.
- Fill applicator tanks only to the safe operating level set by tank manufacturer (usually 85 percent of full capacity). If accidentally overfilled, bleed off excess immediately to prevent excessive pressure buildup and provide allowance for expansion.
- Vent the pressure from hose connections before disconnecting.
- Never leave equipment unattended during transfer operation.
- Check that towing connections on trailers are in good condition, correctly adjusted, and firmly secured to the towing vehicle.
- Carry a plastic squeeze bottle of fresh water for flushing eyes, in case of accident. Change this water daily.
- Federal law requires that at least five gallons of water be carried on vehicles transporting anhydrous ammonia. The containers shall have a label on it which reads, "WATER - DO NOT DRINK - FOR WASHING ONLY."

WHAT TO DO IN CASE OF ACCIDENT

- Work fast! Immediate action is important when anhydrous ammonia is involved in an accident. Water is the best and only emergency first aid treatment for ammonia burns.
- Flush or irrigate the injured area with lots of clean water for at least 15 minutes before going for professional medical help.
- Eyes doused with ammonia will close involuntarily. They must be forced open so water can flush the entire eye surface and inner lining of the eyelids. If contact lenses are worn, remove them immediately before beginning the flushing process.
- Remove clothing, if contaminated with ammonia, and thoroughly wash the skin. Clothing frozen to skin as the result of ammonia on the clothing and skin can be loosened with water.
- Immediately after first aid with water, get the burn victim to a physician. Do not apply salves, ointments, or oils to ammonia burns; they will cause deeper burns. Let a physician decide on what medical treatment to use.
- If a person is overcome by ammonia fumes and stops breathing, get him to fresh air and give artificial respiration.

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