

## HAZARD ALERT - AMMONIA SAFETY IN WINERIES

This hazard alert can help employers and employees prevent deaths and injuries involving the use of anhydrous ammonia in refrigeration systems. Ammonia refrigeration systems are commonly used in wineries.

### Why the Concern?

On September 2012, a worker was killed at a winery in an incident involving anhydrous ammonia. The incident is currently under investigation for root causes.

### Why is Ammonia Hazardous?

Anhydrous ammonia (pure ammonia - NH<sub>3</sub>), when used under pressure as a liquefied refrigerant, can be a significant health hazard if there is a release of the ammonia into the air. Ammonia is corrosive to the skin, eyes and lungs, even at low concentrations in the air. Symptoms of exposure to anhydrous ammonia can include skin and eye burns, severe throat pain, and coughing/wheezing. Exposure to 300 parts per million (ppm) of ammonia is Immediately Dangerous to Life and Health (IDLH). Most people can smell ammonia at about 3-5 ppm.

### Measures To Prevent Exposures and Injuries

- Develop and require refrigeration maintenance personnel to follow written standard procedures for maintaining the refrigeration system per manufacturer's instructions including such routine procedures as oil draining.
- Ensure that the ammonia refrigeration system is operated and maintained only by trained and competent personnel.
- All employees need to be trained on the hazards of ammonia, the signs, symptoms and detection of an ammonia release, and the proper procedures for escape in the event of an emergency.

### General Response To Ammonia Release

Report all releases of ammonia to your supervisor and follow your facility's Emergency Action Plan.

If you:

- Smell ammonia, immediately leave the area and notify your supervisor.
- Inhale ammonia, immediately move to fresh air and get medical attention.
- Have skin or eye contact, immediately flush affected area with water for fifteen minutes.
- See an ammonia cloud (white fog), immediately exit the building or area and move upwind to a designated location.

### Cal/OSHA Regulations and Resources

The key to preventing ammonia leaks is good maintenance and safe operating procedures. **Facilities that use 10,000 pounds or more of anhydrous ammonia must comply with the Process Safety Management (PSM) Standard**, Title 8 California Code of Regulations (T8CCR), Section [5189](#) and the other applicable Cal/OSHA standards referenced below. For ammonia refrigeration facilities that have less than 10,000 pounds of anhydrous ammonia, employers must comply with the following T8CCR Sections including, but not limited to; [3248](#), Mechanical Refrigeration, [5144](#), Respiratory Protection; [5192](#), Hazardous Waste Operations & Emergency Response; [5194](#), Hazard Communication; [3203](#), Injury and Illness Prevention Program; and [3220](#), Emergency Action Plan.

For more assistance on Ammonia Safety:

- Contact Cal/OSHA Consultation Service at 1-800-963-9424, or at <http://www.dir.ca.gov/dosh>
- Refer to Federal OSHA, Ammonia Refrigeration, <http://www.osha.gov/SLTC/ammoniarefrigeration/index.html>