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Weekly Safety Meeting

Anhydrous Ammonia

Anhydrous, or “without water” (from Greek) Ammonia is a colorless, liquified gas with a distinctive sharp, pungent smell. A flammable chemical compound that is considered hazardous by the OSHA HazCom Standard (29 CFR 1910.1200), Anhydrous Ammonia can form explosive mixtures in air. The Lower Explosive Limit (LEL) for ammonia in air is 15% and the Upper Explosive Limit (UEL) is 28%.

Industrial and Chemical Uses

Anhydrous ammonia is used in the manufacture of nitric acid, explosives, synthetic fibers and fertilizers. Liquified anhydrous ammonia is often used a refrigerant in the food manufacturing industry. Because it boils rapidly when released from a pressurized container, it becomes a gas that evaporates and creates a cooling effect. However, a poisonous vapor cloud is produced when ammonia encounters water.

Hazard Identification

Anhydrous ammonia is a lung damaging agent; it is classified as an irritant and corrosive agent. Because it is anhydrous, it absorbs moisture from any source, thus potentially causing severe burns, tissue damage, and damage to the lungs/respiratory tract. Ammonia can be absorbed into the body by inhalation, ingestion, eye contact, and skin contact.

It carries the following warnings on its label:

- Category 2 - Flammable Gas;
- Category 1 - Acute Aquatic Toxicity;
- Category 1 - Serious Eye Damage;
- Category 4 - Acute Toxicity, Inhalation;
- Category 1B - Skin Corrosion/Irritation; and
- Gasses Under pressure.

Hazards - Pressurization and Gas

The hazards inherent in anhydrous ammonia are doubled by the fact that compound must be stored under pressure to retain its liquid state. Because of its low boiling point of -28 F at regular atmospheric pressure the gas must remain under pressure to stay liquified. If it is exposed to air or leaks into the environment, it rapidly evaporates and boils and turns into a gas. Ammonia increases tremendously in volume when it changes from a liquid to gas form. In its gaseous state, it enters

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much more easily into the respiratory tract. This deadly duo – pressure and gas – poses an extreme hazard to workers who might need to stop a leak.

PPE

In worst-case scenarios where the chemical level is above the IDLH or AEGL-2, workers should don a Totally Encapsulating Chemical Protective (TECP) suit with chemical resistant gloves (inner & outer) and chemical resistant boots (Level A). Workers should wear a NIOSH-certified Chemical, Biological, Radiological, Nuclear (CBRN) Self-Contained Breathing Apparatus (SCBA) to provide clean air under their Level A suit. They must wear a Level A protective suit along with a and Level A protection should be used until monitoring results confirm the concentration of the contaminant. Workers should have extensive training by their company on this type of emergency before attempting to stop the leak/close the valve on the ammonia storage tank or the filling line.

Isolation Distances

If ammonia is spilled, the isolation distances range depending on the quantity and concentration. For spills of less than 50 gallons of Anhydrous Ammonia or less than 50% ammonia, 100 feet may be a safe, with downwind protective distances of 1/10 of a mile. For the chemicals, 300 ft. may be safe for larger spills, with much larger downwind protective distances up 1.5 miles. However, when a fire occurs involving anhydrous ammonia, the initial isolation and protective action distance is 1 mile. Everyone within a 1-mile radius should be evacuated. Please see the Emergency Response Guidebook (ERG) for details, and consider factors such as temperature, terrain, and wind. These may increase the minimum safe distances.

Anhydrous ammonia is a highly toxic pressurized liquid/gas that is extremely harmful to tissues upon contact and can be fatal. Do not take a chance if you must handle this chemical, and if you are responsible for handling or carrying it, take it seriously.

DON'T TAKE CHANCES…WITH ANHYDROUS AMMONIA!

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Safety Meeting Sign-In Sheet

Supervisor:	Subject:
Location:	Date:
Conducted By:	Trainer Signature:

Name (print clearly)	Signature	Comments / Safety Concerns / Training Requests

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