**11.0 AMMONIA AWARENESS TRAINING**

**11-1 WHAT IS AMMONIA**

Reference the attached MSDS for ammonia. Anhydrous ammonia is a naturally occurring compound comprised of two very common elements- nitrogen and hydrogen. The atmosphere is nearly 80% nitrogen, whereas hydrogen is a common element in many organic compounds.

Anhydrous ammonia exists as a colorless gas, colorless liquid, or a white solid, depending on its pressure and temperature. In nearly all commonly encountered situations, it exists as either a liquid or a gas. The gas is less dense than air and the liquid is less dense than water at standard conditions. Ammonia gas (vapor) diffuses readily in air and the liquid is highly soluble in water with an accompanying release of heat.

Ammonia is very important to animal and human life. It is found in water, soil, and air, and is a source of much-needed nitrogen for plants and animals. Most of the ammonia in the environment comes from natural breakdown of manure, dead plants and animals

Eighty percent of all man-made ammonia is used as fertilizer. A third of this is applied directly as pure ammonia. The rest is used to make other fertilizers that contain ammonium. Ammonia is also used to manufacture synthetic fibers, plastics, and explosives. Many cleaning products contain ammonia.

Ammonia does not last very long in the environment. Because it’s recycled naturally, natures have many ways of incorporating and transforming ammonia. In soil or water, plants and microorganisms rapidly take up ammonia. After fertilizer containing ammonia is applied to soil, the amount of ammonia in that soil decreases to low levels in a few days. In the air, ammonia will last about one week.

**11-2 HOW IT AFFECTS US**

***11.2.1 INHALATION***

The gas is extremely odorous and is readily detectable at levels well below those which cause lasting effects. It is extremely irritating to the mucous membranes and lung tissues. A sore throat, coughing, shortness of breath and labored breathing can develop. Repeated or prolonged exposure to concentrations higher than the IDLH of 300 ppm should be avoided without respiratory protection. Brief exposures of concentrations of 5000 ppm or above must be avoided as permanent injury or death can result.

***11.2.2 SKIN CONTACT***

Contact with vapor concentrations higher than the IDLH value can result in irritation to moist areas of the body. Concentrations of 5000 ppm or higher can result in burns of the skin. Contact with liquid ammonia causes frostbite and burns.

***11.2.3 EYE CONTACT***

Contact with gases at concentrations below the IDLH can result in eye irritation and tearing. Above the IDLH value there will be extreme eye irritation with involuntary closure of the eyes and visual impairment. Liquid ammonia will very rapidly cause serious burns to the eye, which result s in permanent blindness. Contact lenses must NOT be worn in areas where ammonia exposure is possible.

***11.2.4 INGESTION***

Swallowing liquid ammonia will result in immediate pain and burns to the mouth and esophagus.

**11-3 FIRST AID**

***11.3.1 INHALATION***

* Move person to fresh air.
* Administer CPR as required
* Dial 911 for medical assistance as required

***11.3.2 SKIN CONTACT***

* Move to fresh air.
* Flush with clean water for a full 15 minutes.
* If exposure requires the use of safety shower, do not remove clothes first. The ammonia may have frozen clothes to skin. Affected areas must be completely thawed before clothes are removed.
* Report to doctor for treatment as required. Do not use oils or ointments unless under medical supervision.

***11.3.3 EYE CONTACT***

* Move person to fresh air.
* Flush with clean water for a full 15 minutes. Force eyes open with fingers and flush eyeballs. Eyes will close tightly due to pain.
* Report to eye specialist for evaluation and treatment as required.

***11.3.4 INGESTION***

* Move person to fresh air.
* Administer CPR as required.
* Dial 911 for medical assistance as required.

**11-4 WHAT TO DO IF YOU SMELL AMMONIA**

If you smell ammonia you should contact a Supervisor.

**11-5 ABBREVIATIONS**

PEL: Permissible Exposure Limits

PPM: Parts Per Million

TWA: Time Weighted Average

IDLH: Immediately Dangerous to Life and Health