



Key Technology, Inc.

Ammonia Awareness Program

August, 2014

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Purpose:

To establish awareness for employees who may due to their job responsibilities come in contact with Ammonia.

Definition:

Ammonia (NH₃) is one of the most commonly produced industrial chemicals in the United States. It is used in industry and commerce, and also exists naturally in humans and in the environment. Ammonia is essential for many biological processes and serves as a precursor for amino acid and nucleotide synthesis. In the environment, ammonia is part of the nitrogen cycle and is produced in soil from bacterial processes. Ammonia is also produced naturally from decomposition of organic matter, including plants, animals and animal wastes.

Some chemical/physical properties of ammonia are:

- At room temperature, ammonia is a colorless, highly irritating gas with a pungent, suffocating odor.
- In pure form, it is known as anhydrous ammonia and is hygroscopic (readily absorbs moisture).
- Ammonia has alkaline properties and is corrosive.
- Ammonia gas dissolves easily in water to form ammonium hydroxide, a caustic solution and weak base.
- Ammonia gas is easily compressed and forms a clear liquid under pressure.
- Ammonia is usually shipped as a compressed liquid in steel containers.
- Ammonia is not highly flammable, but containers of ammonia may explode when exposed to high heat.

Ammonia is widely used as refrigerant in industrial facilities such as:

- meat, poultry, and fish processing facilities,
- dairy and ice cream plants,
- wineries and breweries,
- fruit juice, vegetable juice, and soft drink processing facilities,
- cold storage warehouses,
- other food processing facilities,
- seafood processing facilities aboard ships, and
- petrochemical facilities.

How can people be exposed to ammonia?

Most people are exposed to ammonia from breathing its gas or vapors. Since ammonia exists naturally and is also present in cleaning products, exposure may also occur from these sources.

Key Technology employees may specifically be exposed to ammonia while working on or near industrial refrigeration machinery rooms, equipment and piping.

How does ammonia act in the body?

When ammonia enters the body as a result of breathing, swallowing or skin and eye contact, it reacts with water to produce ammonium hydroxide. This chemical is very corrosive and damages cells in the body on contact.

What are the specific signs and symptoms of ammonia poisoning?

Ammonia is corrosive. The severity of health effects depends on the route of exposure, the dose and the duration of exposure. Exposure to high concentrations of ammonia in air causes immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage or death. Inhalation of lower concentrations can cause coughing, and nose and throat irritation

Swallowing ammonia can cause burns to the mouth, throat and stomach. Skin or eye contact with concentrated ammonia can also cause irritation and burns.

How are employees protected from ammonia exposure?

Employees should be provided with and required to use impervious clothing, gloves, face shields and other appropriate protective clothing necessary to prevent any possibility of skin contact with liquid anhydrous ammonia or aqueous solutions of ammonia containing more than 10% by weight of ammonia. Similar precautions should be taken to prevent the skin from becoming frozen from contact with vessels containing liquid anhydrous ammonia.

What can you do if you think you may have been exposed to a large release of ammonia?

If you have been exposed to a large release of ammonia such as from a tanker truck rollover or from a leaking tanker rail car, take the following steps:

- Quickly move away from the area where you think you were exposed. If the release was indoors, go outside. If you are near a release of ammonia, emergency coordinators may tell you to either evacuate the area or to "shelter in place." To "shelter in place" means to remain indoors to avoid being exposed to the chemical. While indoors, shut and lock all doors and windows; turn off air conditioners, fans and heaters; and close fireplace dampers.
- Quickly remove any clothing that may have ammonia on it. If possible, clothing that is normally removed over the head (like t-shirts and sweaters) should be cut off the body to prevent additional contact with the agent.
 - Place your clothing inside a plastic bag and seal the bag tightly.
 - Do not handle the plastic bag, and wait for instructions on proper disposal.

- Disposing of your clothing in a sealed bag helps protect you and other people from any additional exposure.
- Store the bagged clothing in a secure location away from people, especially children.
- Quickly wash any ammonia from your skin with large amounts of soap and water, and flush your eyes with large amounts of water.
 - Remove and dispose of contact lenses.
 - Wash eyeglasses with soap and water before wearing.
 - Do not use bleach to remove ammonia from your skin.
- If needed, seek medical attention right away.

How is ammonia poisoning treated?

To reduce the effects from exposure to ammonia, it is important to wash eyes and skin as quickly as possible with large amounts of water.

There is no antidote for ammonia poisoning, but ammonia's effects can be treated, and most victims recover. People who experience serious signs and symptoms (such as severe or constant coughing, or burns in the throat) may need hospital care.

What are if employee is visiting Customer site?

Employees should be aware of clients' contingency plans and provisions. Employees must be informed where ammonia is used in the host facility and aware of additional plant safety rules.