



Anhydrous Ammonia Safety Alert

CAGC SAFETY ALERT

First Published 12 - 2010

Canadian Association of Geophysical Contractors
1045, 1015 - 4th Street SW Phone: 403 265 0045
Calgary, Alberta Fax: 403 265 0025
T2R 1J4 E-mail: info@cagc.ca

Safety Alert

11-10

Incident

On November 10, 2010 at approximately 5:30pm, a landowner was spraying a section of land 200 metres west-southwest of the staging area with anhydrous ammonia. Due to weather conditions and wind direction workers at staging were exposed to the gas. The crew was told to get into vehicles and vacate the area as a result of the anhydrous ammonia release.

Nature of the Loss

5 workers were affected by the gas and taken to the Provost Medical Clinic for treatment. All workers were cleared to return to full duties after washing themselves and all clothing in water.

Root Causes of the Incident

- Weather during the event was cool with heavy moisture in the air.
- Wind direction was from south west to north east causing vapours to flow into staging.
- Landowner parked spraying equipment up wind of the staging area.
- Failure of supervisory staff to recognize the changing hazardous conditions and notify crew members of the potential danger of anhydrous ammonia vapours.

Recommendations and Preventative Measures

It was recommended that the work area be checked for remaining vapours the next morning to ensure the gas had dispersed overnight prior to crew members returning to the site. In addition, all land use activities should be documented on the hazard assessment and this safety alert, detailing the incident and information regarding anhydrous ammonia will be distributed to all crews to be discussed at safety meetings.

What is Anhydrous Ammonia?

Anhydrous Ammonia is a chemical compound made up of 82% Nitrogen and 18% hydrogen. It is a chemical commonly used as a nitrogen fertilizer by farmers in western Canada. It is a colourless gas with a pungent odour and is lighter than air, so therefore rises when it is released into the atmosphere.

How do you identify Anhydrous Ammonia?

Anhydrous Ammonia can usually be detected in gas form by scent. It is a colourless gas with an intense, pungent, suffocating odour. It can be smelled by most people at concentrations below 25 ppm. At higher concentrations such as 400ppm the pungent odour will sting and irritate the eyes, nose and throat. When it is released in high concentrations it looks like dense steam.

What are the hazards associated with Anhydrous Ammonia?

Exposure to the liquid can cause frostbite and severe burns. When in gas form, it quickly reacts with the water in skin, eyes and the respiratory airways. Inhaling large amounts can cause the lungs to fill with fluid, which may lead to death by suffocation- similar to H₂S.

What are the first aid procedures for Anhydrous Ammonia?

Water is the only effective first aid treatment. The water must be clean and fresh and easily accessible to workers. The table below details what first aid procedures should be used in different situations:

Type of Contact	First Aid Procedures
Eyes	Flush the area immediately with water. You should continue flushing for no less than 20 minutes and seek medical attention as quickly as possible.
Skin	Ammonia will only burn as long as it remains on the skin. To wash it off, use clean water and wash for at least 20 minutes. All clothing that comes in contact with the gas or liquid should also be washed to prevent recontamination of skin.
Inhalation	Move the casualty to an uncontaminated area. Keep the victim warm and treat for shock. Give the casualty as much water to drink as they can, but do not allow them to gulp the water. Ensure tiny sips are taken over a longer period of time. Strenuous activity after inhalation can worsen respiratory problems.

Whenever someone has come in contact with Anhydrous Ammonia, seek medical attention immediately and inform the medical staff of that you have come in contact with the gas.