Fire & Explosion at Texas Plant & the Hazards of Anhydrous Ammonia

On April 18, 2013, a fertilizer plant in West, Texas caught fire. While first responders were fighting the fire, the plant exploded, damaging up to 75 houses and a nursing home within a five-block radius, leveling an apartment complex and registering as a 2.1 magnitude earthquake. The explosion was caught on video.

The death toll currently stands at 14’including five firefighters and four EMS workers’but there are still several people missing. As many as 200 people were injured.

The West Chemical and Fertilizer Company, which had only nine employees, stored and sold fertilizer and agricultural chemicals, including two that can become explosive under proper conditions: anhydrous ammonia and ammonium nitrate.

Anhydrous ammonia is stored as a liquid in pressurized tanks. Ammonium nitrate is usually sold in granular form and was used in the Oklahoma City bombing. According to an EPA filing last year, the company stored 540,000 pounds of ammonium nitrate on the site and 110,000 pounds of anhydrous ammonia.

The incident is still under investigation by the Bureau of Alcohol, Tobacco, Firearms and Explosives, the US Chemical Safety Board and other federal agencies. But they’re focusing on a pair of reinforced steel tanks containing anhydrous

ammonia. And the origin, or 'seat,' of the explosion has been identified.

Regulation of Anhydrous Ammonia in Canada

The handling, storage, transportation and application of anhydrous ammonia in Canada are regulated under various federal, provincial and territorial laws, including CEPA and the WHMIS regulations. It's also classified as a 'dangerous good' under the *Transportation of Dangerous Goods Regulations*, specifically a Class 2.3, Toxic Gas, subsidiary Class 8, Corrosive.

And the substance is addressed in many jurisdictions' OHS regulations. For example, Sec. 28.13(2) of BC's *OHS Regulations* for agriculture says that if anhydrous ammonia is stored or used for the purpose of fertilization, the employer must ensure that:

- a) the equipment containing anhydrous ammonia is inspected before each use, to prevent accidental leakage or spillage;
- b) the hose end-valves are in the closed position when the equipment isn't operating; and
- c) the relief and vapour valves are positioned so that any discharge is directed upwards and away from the worker's operating position.

The Canadian Fertilizer Institute Fertilizer Safety and Security Council's has released many useful guides on anhydrous ammonia and ammonium nitrate, including:

- An Ammonia Code of Practice 2012 that's mandatory for the transportation, storage and handling and agricultural end-use of this substance.
- An Ammonia Nitrate Code of Practice