NC Hazmat Information

March, 2012

Gas Purging Led to 2009 ConAgra, Slim Jim Factory Explosion

On June 9, 2009, a major natural gas explosion heavily damaged the ConAgra Slim Jim meat processing factory in Garner, North Carolina, just south of Raleigh. Three workers were crushed to death when a large section of the building collapsed. The explosion critically burned four others and sent a total of 71 people to the hospital including three firefighters who were exposed to toxic anhydrous ammonia from the plant's refrigeration system. Approximately 18,000 pounds of ammonia were released to the environment and 100,000 square feet of the plant were damaged. Due to the severity of the structural collapse, there was the potential for numerous additional deaths or serious injuries.

The accident occurred during the installation of a new fuel gas-fired industrial water heater in an interior utility room of the plant. Five days prior to the accident, a new section of three-inch steel piping – which would provide natural gas to the heater – was tied into a six-inch natural gas supply line located on the roof. The new natural gas piping ran horizontally over 120 feet along the roof and then descended into the utility room.

On the day of the accident, a worker from Energy Systems Analysts (ESA), the water heater manufacturer, was attempting to purge the new gas line by using natural gas to directly displace the air. This was done by removing threaded fittings, creating one or more pipe openings near the heater. The worker then opened a quarter-turn valve to control the release of purged gases. ESA reported that it was the company's normal practice to purge fuel gas piping directly into the room or area when installing gas-fired equipment. Code officials and other parties told the CSB that they believe this practice to be common.

The purged fuel gas was vented indoors into the utility room, which was ventilated by an exhaust fan. However, no assessment was made of the adequacy of the ventilation in comparison to the rate of the gas release; whether a dangerous accumulation of flammable gas had occurred could have been most accurately verified by taking direct measurements inside the utility room using a combustible gas detector. Because of the difficulties in lighting the water heater, personnel perceived that the gas line was not effectively purged of air. Therefore, purging was conducted intermittently over a period of up to two-and-a-half hours. ESA and ConAgra employees were aware of the natural gas purging activities inside the utility room. However, no appropriate combustible gas detectors were used to warn of a potential accumulation of gas in the building. Instead personnel relied primarily on the sense of smell to determine when the piping had been effectively purged of air and whether or not an unsafe release of natural gas occurred.

Some ConAgra employees smelled gas in the packaging area; others did not. Personnel who were in and out of the utility room noticed the gas odor, but most were not seriously concerned and considered the purging activity to be a normal part of the start-up process. The ESA and ConAgra employees were not aware that as a result of the purging, a dangerous accumulation of natural gas had occurred into the building, exceeding the lower explosive limit.

ConAgra has established new procedures for gas purging.

U.S. Chemical Safety Board

Similar Incidents

Research conducted by the CSB during its investigation of the ConAgra explosion uncovered a number of similar incidents around the country that involved the purging of gas lines, including:

- An explosion at a 30-story hotel under construction in San Diego, California, on May 19, 2008, that injured 14 workers, including three who suffered severe burns;
- An explosion at a hotel in Cheyenne, Wyoming, on August 7, 2007, that severely burned two plumbers;
- An explosion that burned two plumbers at a school in Porterville, California, on November 16, 2005;
- An explosion on August 1, 1997, at a fitness center in Cary, North Carolina, a short distance from the ConAgra facility, which collapsed the roof, severely burned two people, and injured four others.

OSHA inspection records identify other related fuel gas purging incidents have occurred causing deaths and serious injuries.

NC Regional Response Teams Receive PEAC Software

The NC Hazmat Regional Response Teams have recently purchased and installed the AristaTek PEAC–WMD software.

The PEAC software provides integrated Hazmat and CBRNE information enabling Hazmat responders to make expedient, informed decisions. The software includes integrated mapping, GPS connectivity, over 100,000 chemical names, synonyms & trade names. The software includes a threat matrix to support events with multiple hazardous agents with a chemical reactivity analysis feature that will assess potential consequences of multiple hazards mixing.

Included tools are calculation of safe standoff distances, unconfined vapor clouds, radioactive isotope release & fallout exposure, that take into account real time weather conditions. This means that you put in the hazard, address and it will map out the evacuation, safe standoff area and display it on Google Earth allowing you to convey evacuation information quickly and precisely.

The software recommends responder protection information, LEL, UEL, flash point, auto ignition temperature, vapor pressure, vapor density and chemical properties.

It has ALS/BLS Protocols, Pool Fire Model, E-Mail, a Forms Manager, Acute Exposure Guidelines, ERG, NIOSH, CHRIS Manual and much more.

This software will allow the RRT's to respond and conduct hazard assessment quickly and efficiently.

AristaTek has a 30 day free trail offer easily downloaded.

Mar. Calibration Schedule

Hazmat RRT 7

Lee County
Mecklenburg County
New Hanover County

Ohio EM Agency
RIM&C Facility
1296 Kinnear Rd.
Columbus, OH 43212-1154

Certified Hazardous Materials Managers (CHMM) Review Course

The UNC Occupational Safety and Health Education and Research Center (NC OSHERC) will be holding the CHMM course Sept. 17-20, 2012.

Hazardous Materials Management is the application of scientific, engineering and managerial technology to identify, evaluate and eliminate or reduce risks involving conditions and practices related to hazmat.

This 3 1/2 day review course is designed to prepare one for the Institute of Hazardous Materials Management (IHMM) CHMM certification examination. The course is designed to provide a review of the major subject areas defined by IHMM.

The principle objectives of this course is to provide credentialed recognition to professionals engaged in the management and control of hazmat, professional development for hazmat managers, transfer knowledge from industry professionals and organizations and to provide government, industry and academia with a mechanism for identifying hazmat management professionals that have met the certification standard.

For additional information, email the NC OSHERC at osherc@unc.edu or by calling 919-962-2101.

Online registration and information may also be found at the link below:

http://osherc.sph.unc.edu/continuing-education/courses/chmm-review.html

Requests for a Regional Response Team may be initiated by the incident commander, local emergency management coordinator, or N.C. Emergency Management Division's area coordinator. The requester must provide some basic information, such as:

Substance/chemical name (if known)

- Incident location, size and severity
- Is substance liquid, solid or gas
- Danger present and area threatened
- Fire, health, or explosion hazards
- Evacuations in progress, or contemplated

Have good information or lessons learned?

Submit to:

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You are not forgotten.