Clean Air Act 112(r) Risk Management Program (RMP) SPCC/FRP EPCRA

CHEMICAL EMERGENCY PREVENTION & PLANNING Newsletter

March - April 2012 US EPA Region 10

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CHEMICAL EMERGENCY PREVENTION & PLANNING
Newsletter

US EPA Region 10,
ERU ECL-116
1200 6th Avenue, Suite 900
Seattle, Washington 98101

206.553.1255
Fax: 206.553.0124

R10 RMP Webpage

Newsletter Contacts:
*For **RMP**:* Javier Morales at morales.javier@epa.gov

*For **SPCC/FRP**: AK: Matt Carr at* carr.matthew@epa.gov

WA OR ID: Michael Sibley at sibley.michael@epa.gov

*For **EPCRA**:* Suzanne Powers at powers.suzanne@epa.gov

*For free **Subscription**:* allen.stephanie@epa.gov

REPORT
CHEMICAL or OIL SPILLS
to the NATIONAL RESPONSE CENTER
1-800-424-8802

PROGRAM ALERT

Oregon Ammonia Retailers

The state of Oregon OSHA has added agricultural ammonia retailers to the Process Safety Management program. Should you fall under the rule requirements for Process Safety Management (PSM) 1910.119 (see below), your Program Level in the Risk Management Program may change.

One criterion for Risk Management Program Level 3 status is regulation by PSM. If this applies to your facility, you need to access your RMP through CDX and correct your Program Level.

Details of Program Level 3 requirements are available online (RMP Guidance)

More information on PSM requirements are available online (Oregon OSHA PSM)

Oregon OSHA Letter to Agricultural Ammonia Retailers

Marilyn K. Schuster

Policy Manager Oregon OSHA

October 15, 2010

The purpose of this letter is to advise you that agricultural farm supply businesses having large quantities of anhydrous ammonia at their principal place of business(s) may fall under the rule requirements for Process Safety Management (PSM) 1910.119. The threshold quantity for this rule to apply is 10,000 pounds or 1,943 gallons of anhydrous ammonia.
(Read on …)

Aqua Ammonia Explosion Sends Four Workers to Hospital

(Gatekeeper Newsletter 11/1/11)

WNDU 16 South Bend (Indiana): An explosion at an Elkhart County, Indiana fertilizer business October 3, 2011 sent four workers to the hospital. A little after 11:30 a.m., a large tank filled with aqua ammonia exploded at T and T Fertilizer. The most serious injuries were suffered by a 24-year-old employee of Southwest Welding, a private contractor hired to perform tank repairs. He was removed from the scene by a medical helicopter.

The tank became airborne after the explosion and landed on the southwest corner of the property. Three other workers were sent to the hospital after being exposed to, or inhaling chemicals at the scene.

Editors note:

Ammonia becomes flammable at concentrations of approximately 15% to 28% by volume in air. When mixed with lubricating oils, its flammable concentration range is increased. It can explode if released in an enclosed space with a source of ignition present, or if a vessel containing anhydrous ammonia is exposed to fire.

Over-pressure Protection: Heat exchanger rupture and ammonia release

U.S. Chemical Safety and Hazard Investigation Board (CSB)

This case study examines a heat exchanger rupture and ammonia release at the Goodyear Tire and Rubber Company plant in Houston, Texas.

Goodyear uses pressurized anhydrous ammonia in the heat exchanger to cool the chemicals used to make synthetic rubber. Process chemicals pumped through tubes inside the heat exchanger are cooled by ammonia flowing around the tubes in a cylindrical steel shell.

Heat exchanger explosion caused by blocked relief valve
(Goodyear 2008)

On June 10, 2008, Goodyear operators closed an isolation valve between the heat exchanger shell (ammonia cooling side) and a relief valve to replace a burst rupture disk under the relief valve that provided over-pressure protection. Maintenance workers replaced the rupture disk on that day; however, the closed isolation valve was not reopened.

On the morning of June 11, an operator closed a block valve isolating the ammonia pressure control valve from the heat exchanger. The operator then connected a steam line to the process line to clean the piping. The steam flowed through the heat exchanger tubes, heated the liquid ammonia in the exchanger shell, and increased the pressure in the shell. The closed isolation and block valves prevented the increasing ammonia pressure from safely venting through either the ammonia pressure control valve or the rupture disk and relief valve. The pressure in the heat exchanger shell continued climbing until it violently ruptured at about 7:30 a.m.

The catastrophic rupture threw debris that struck and killed a Goodyear employee walking through the area. The rupture also released ammonia, exposing five nearby workers to the chemical. One additional worker was injured while exiting the area.

Maintenance Procedures

Training requirements for operators in the production area included standard operating procedures specifically applicable to the rupture disk maintenance performed on June 10:

- Use of the work order system including obtaining signature verification both before the work starts and after job was completed; and
- Use of lockout/tagout procedures for equipment that was undergoing maintenance.

The CSB found evidence of breakdowns in both the work order and lockout/tagout programs that contributed to the incident. Although the work order procedure required a signature before work commenced and after the work had been completed, operators reported that maintenance personnel did not always obtain production operators' signatures as required. Additionally, work order documentation was not kept at production control stations.

Operators used the lockout/tagout procedures to manage the work on the heat exchanger rupture disk, but did not clearly document the progress and status of the maintenance. Information that the isolation valve on the safety relief vent remained in the closed position and locked out was limited to a handwritten note.

Goodyear's work order system for maintenance requires the process operator to sign off when the repairs are completed. However, whether this occurred during the June 10 dayshift is unclear, and Goodyear was unable to produce a signed copy of the work order.

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Over-pressure Protection: Heat exchanger rupture and ammonia release

Pressure Vessel Over-pressure Protection

A rupture disk and a pressure relief valve in series protected the ammonia heat exchanger from over-pressure. An isolation valve installed between the rupture disk and the heat exchanger isolated the rupture disk and relief valve for maintenance. However, when the valve was in the closed position, the heat exchanger was still protected from an over-pressure condition by the automatic pressure control valve.

The next day, when operators began a separate task to steam clean the process piping they closed a block valve between the heat exchanger and the automatic pressure control valve. This isolated the ammonia side of the heat exchanger from all means of over-pressure protection. Steam flowing through the heat exchanger increased the ammonia temperature and the pressure in the isolated heat exchanger. Because the over-pressure protection remained isolated, the internal pressure increased until the heat exchanger suddenly and catastrophically ruptured.

Pressure Vessel Standards

The American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII (the ASME Code), provides rules for pressure vessel design, use, and maintenance, including over-pressure protection. Use of the ASME Code was required at Goodyear by OSHA's 29 CFR 1910.119 Process Safety Management Standard.

The ASME Code requires that when a pressure vessel relief device is temporarily blocked and there is a possibility of vessel pressurization above the design limit, a worker capable of releasing the pressure must continuously monitor the vessel. Goodyear's maintenance procedures did not address over-pressurization by the ammonia when the relief line was blocked, nor did it require maintenance and operations staff to post a worker at the vessel to open the isolation valve if the pressure increased above the operating limit.

Lessons Learned

Maintenance Completion

Although maintenance workers had replaced the rupture disk by about 4:30 p.m. on June 10, the primary over-pressure protection for the heat exchanger remained isolated until the heat exchanger ruptured at about 7:30 a.m. on June 11.

Communicating plant conditions between maintenance and operations personnel is critical to the safe operation of a process plant. Good practice includes formal written turnover documents that inform maintenance personnel when a process is ready for maintenance and operations personnel when maintenance is completed and the process can be safely restored to operation.

Isolating Pressure Vessels

Goodyear employees completely isolated an ammonia heat exchanger, including the over-pressure protection, while steaming a process line through the heat exchanger. Workers left the pressure relief line isolated for many hours following completion of the maintenance.

In accordance with the ASME Boiler and Pressure Vessel Code, over-pressure protection shall be continuously provided on pressure vessels installed in process systems whenever there is a possibility that the vessel can be over-pressurized by any pressure source, including external mechanical pressurization, external heating, chemical reaction, and liquid-to-vapor expansion. Workers should continuously monitor an isolated pressure relief system throughout the course of a repair and reopen blocked valves immediately after the work is completed.

To read the complete report: CSB Case Study

Common Mistakes Made in Pressure Relief Valve (PRV) Installation

One of the most commonly used safety related pieces of equipment used for controlling over pressurization in chemical plant operation is the PRV. PRVs protect process equipment by safely releasing process fluids/gases.

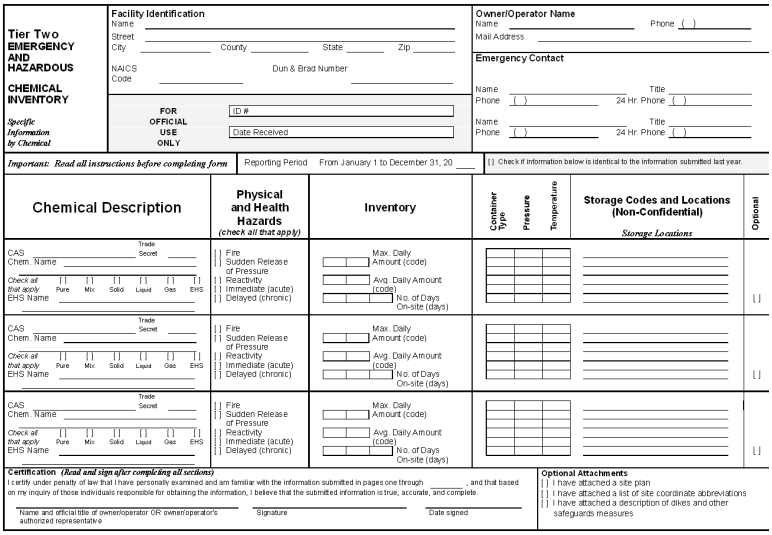
PRVs are installed on pressure vessels or high pressure piping. They serve as over-pressure protection devices. However, if installed improperly, PRVs will not protect equipment from over pressurization. Improper installation of PRVs could endanger plant equipment as well as compromise worker safety. Below, are common installation mistakes that compromise PRV operation:

- Safety valve is not mounted vertically
- Block valves are installed at the upstream and or downstream of safety valve
- The inlet pipe size is smaller than connection size of the safety valve
- A cap or plug is installed at the vent line
- The diameter of outlet pipe is smaller than the safety valve outlet

The discharge outlet is not located at safe distance* that could harm workers' safety and health. The vent discharge should also be considered to be far enough from ignition source if the discharging material is combustible or flammable.

*ANSI/IIAR 2-1999 Section 7.3 Pressure Relief Piping: Distance from window, ventilation intake or personnel exit shall be 20 ft or more (7.3.2). Distance shall be not less than 15 ft. above adjacent grade or roof level (7.3.3).

Is Your Emergency and Hazardous Chemical Inventory Report (Tier Two) Late?


Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Specific Information by Chemical

Facility Identification
Name
Street
City County State Zip
NAICS Code Dun & Brad Number

FOR OFFICIAL USE ONLY
ID #
Date Received

Owner/Operator Name
Name Phone ( )
Mail Address

Emergency Contact
Name Title
Phone ( ) 24 Hr. Phone ( )
Name Title
Phone ( ) 24 Hr. Phone ( )

Important: Read all instructions before completing form Reporting Period From January 1 to December 31, 20 ___ [ ] Check if information below is identical to the information submitted last year.

Chemical Description	Physical and Health Hazards (*check all that apply*)	Inventory	Container Type / Pressure / Temperature	Storage Codes and Locations (Non-Confidential) *Storage Locations*	Optional
CAS Trade Secret Chem. Name *Check all that apply* Pure Mix Solid Liquid Gas EHS EHS Name	[ ] Fire [ ] Sudden Release of Pressure [ ] Reactivity [ ] Immediate (acute) [ ] Delayed (chronic)	Max. Daily Amount (code) Avg. Daily Amount (code) No. of Days On-site (days)			[ ]
CAS Trade Secret Chem. Name *Check all that apply* Pure Mix Solid Liquid Gas EHS EHS Name	[ ] Fire [ ] Sudden Release of Pressure [ ] Reactivity [ ] Immediate (acute) [ ] Delayed (chronic)	Max. Daily Amount (code) Avg. Daily Amount (code) No. of Days On-site (days)			[ ]
CAS Trade Secret Chem. Name *Check all that apply* Pure Mix Solid Liquid Gas EHS EHS Name	[ ] Fire [ ] Sudden Release of Pressure [ ] Reactivity [ ] Immediate (acute) [ ] Delayed (chronic)	Max. Daily Amount (code) Avg. Daily Amount (code) No. of Days On-site (days)			[ ]

Certification *(Read and sign after completing all sections)*
I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.
Name and official title of owner/operator OR owner/operator's authorized representative Signature Date signed

Optional Attachments
[ ] I have attached a site plan
[ ] I have attached a list of site coordinate abbreviations
[ ] I have attached a description of dikes and other safeguards measures

Facilities covered by Emergency Planning and Community Right-to-Know Act (EPCRA) requirements must submit an Emergency and Hazardous Chemical Inventory Form to the Local Emergency Planning Committee (LEPC), the State Emergency Response Commission (SERC), and the local fire department annually on March 1. Facilities provide either a Tier I or Tier II form. Most States require the Tier II form. Some states have specific requirements in addition to the federal Tier II requirements. Many accept Tier2 Submit, an electronic reporting program.

State reporting requirements are available at Tier2 Submit.

The quantities of materials that trigger reporting are 500 pounds or the listed threshold planning quantity, whichever is less, for extremely hazardous substances like ammonia and 10,000 for most other substances like diesel fuel. The list of extremely hazardous substances and their threshold planning quantities can be found on the "List of Lists".

Penalties for failing to report under Section 312 of EPCRA can be up to $37,500 per day per violation. If you discover that you should have been reporting under this regulation, EPA's self audit policy can help you come into compliance.

On January 26, EPA released a press release on an EPCRA penalty by Oregon Potato for its Warden, Washington facility. The penalty included failure to report on Tier Two under Section 312 of EPCRA and failure to immediately report releases under Section 304 of EPCRA and Section 103 of CERCLA.

For more information on these requirements, contact Suzanne Powers, (360) 753-9475.

Packer agrees to pay EPA fine

Updated: January 12, 2012

WENATCHEE, Wash. -- Custom Apple Packers Inc. of Wenatchee has agreed to pay a $69,480 penalty to the federal Environmental Protection Agency for failing to submit a risk management plan for anhydrous ammonia.

The company had a plan for the chemical but failed to submit it to the EPA for the time period of Aug. 1, 2002 to April 1, 2009, said Javier Morales, EPA Northwest regional risk management plan coordinator for the Clean Air Act.

Submittal of the plan is important so that the public knows the company has a plan and so that local emergency responders know the quantity and type of chemical and facility capabilities and coordination in the event of a leak, Morales said.

Custom said it was unaware it needed to submit the plan to the EPA, Morales said.

Plan to attend the FREE EPA Risk Management Training Day in your area

RISK MANAGEMENT PROGRAM (RMP) Training

Quincy, Washington: April 24, 2012

Portland, Oregon: Fall, 2012

Find details on: EPA Region 10's RMP website – Quincy Training

Where Do I Go For More Information?

http://www.epa.gov/emergencies/rmp will be updated as new information becomes available.

EPA maintains numerous listservs to keep the public, state and local officials, and industry up to date, including several that pertain to emergency management. You can sign up for our list serve to receive periodic updates: https://lists.epa.gov/read/all_forums/subscribe?name=callcenter_oswer

EPA Region 10 RMP Coordinator: Javier Morales 206-553-1255

EPA Region 10 RMP Website: http://yosemite.epa.gov/R10/CLEANUP.NSF/sites/rmp

Superfund, TRI, EPCRA, RMP & Oil Information Center - The Information Center can also answer questions related to Clean Air Act section 112(r) and RMP reporting requirements. (800) 424-9346 or TDD (800) 553-7672 (703) 412-9810 or TDD (703) 412-3323 in the Washington, D.C. area
Normal Hours of Operation:
Monday - Thursday 10:00 a.m. - 3:00 p.m. Eastern Time
Extended Hours of Operation (May, June, and July):
Monday - Friday 9:00 a.m. - 5:00 p.m. Eastern Time
Closed Federal Holidays
http://www.epa.gov/superfund/contacts/infocenter/

Risk Management Program (RMP) Reporting Center - The Reporting Center can answer questions about software or installation problems. The RMP Reporting Center is available from 8:00 a.m. to 4:30 p.m., Monday through Friday, for questions on the Risk Management Plan program. (703) 227-7650 (phone)
RMPRC@epa.cdx.net (e-mail)

This newsletter provides information on the EPA Risk Management Program, EPCRA, SPCC/FRP and other issues relating to Accidental Release Prevention Requirements. The articles contained herein are provided for general purposes only. EPA does not accept responsibility for any errors or omissions or results of any actions based upon this information. Please consult the applicable regulations when determining compliance. Mention of trade names, products, or services does not convey, and should not be interpreted as conveying official EPA approval, endorsement, or recommendation. The information should be used as a reference tool, not as a definitive source of compliance information. Compliance regulations are published in 40 CFR Part 68 for CAA section 112(r) Risk Management Program, 40 CFR Part 355/370 for EPCRA, and 40 CFR Part 112.2 for SPCC/FRP.