

Millard Refrigerated Services Process Safety Management Emergency Response Program Training Outline - FEBRUARY

Meeting Objectives

To explain the purpose and application of process safety management, including training and other aspects of employee participation required by OSHA's regulation. This training exercise will also cover Millard's specific Emergency Response Program for an ammonia release

Suggested Materials to Have on Hand (Plant Engineer will have this information)

- PSM Manual
- Material safety data sheet for ammonia
- Appropriate personal protective equipment – SCBA gear or full-face respirator
- Copy of Process Hazard Analysis
- Copy of block flow and/or process flow diagrams
- Emergency response plan.

Introduction/Overview

The worst nightmare of any company that works with highly hazardous substances is an accident in which people die or are injured. We've all seen such disasters on TV and read about them in the newspaper—a fire, explosion, large release of toxic materials, or a combination of those catastrophes.

Needless to say, that's something everyone wants to prevent. Today we're going to talk about a major OSHA standard called Process Safety Management of Highly Hazardous Chemicals. It's a very long regulation that gives employers a framework within which they can safely manage the ways they process highly hazardous chemicals.

While the regulation covers a lot of ground, it is performance-oriented. In other words, OSHA recognizes that each company and process is different. But the agency wants all businesses to follow certain specific steps in order to identify points in each process that have the potential for catastrophe. Once they have that knowledge, the regulation requires them to take action to eliminate or substantially reduce the likelihood that a catastrophic release of highly hazardous substances will occur. Today, we'll review the basic elements of this regulation, including the many areas that call for employee involvement. This standard, in fact, makes a point of including employees in a number of areas, so it's important that you understand your role in our efforts to prevent a disaster from happening here.

General Hazards

As I've indicated, Process Safety Management, or PSM, is a framework for managing the serious risks associated with processes that involve highly hazardous chemicals. OSHA defines the standard's purpose as "...preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals...that may result in toxic, fire, or explosion hazards."

OSHA expects companies to manage any activity in which they use, manufacture, handle, store, or transport a highly hazardous chemical. As you know, we use ammonia in the refrigeration system. We have approximately _____ lbs. of ammonia on-site. (Get this information from the plant engineer.) We have talked about ammonia before in our Hazard Communication Program and in for our Emergency Action Plan, so you should be familiar with the hazards of ammonia.

OSHA Regulations

The Process Safety Management standard spells out quite a number of requirements that must be met by employers. These fall into several main categories:

- Written programs, plans, and procedures to implement the regulation and each of its parts, such as operating procedures, emergency planning and response, etc.
- Detailed information about the chemicals, technology, and equipment used in the process.
- An analysis of the hazards of each regulated process.
- Training, backed by written documentation, for employees and contractor employees who work on or around these processes.
- Procedures for pre-startup safety reviews, mechanical integrity, non-routine work authorizations, change management, incident investigation, and compliance audits.

Identifying Hazards

The first step in reducing or eliminating hazards is to identify them. The process safety management regulation is very specific about the way that should be done.

First, employers must assemble complete, accurate, written information on the hazards of a process's technology, equipment, and the chemicals it uses or produces. The goal is to have enough information on each aspect of a process to assess accurately the potential hazards.

The information you assemble on process equipment covers everything about the equipment. In addition, employers must determine and document that the equipment is designed, maintained, inspected, tested, and operated safely. The standard also requires assembling information on the chemicals used in the process. Most of that can be found on the MSDS.

Process Hazard Analysis

Utilizing this information, we have performed a process hazard analysis. (Display the PHA.) Sometimes referred to as PHA, process hazard analysis is an analysis of possible causes and consequences of fires, explosions, and major spills or releases of hazardous chemicals.

There are various ways to perform this analysis, but OSHA's bottom line is that the analysis "identify, evaluate and control the hazards involved in the process."

OSHA recommends that employers assemble a team to conduct each PHA. The team can use a number of different methods to identify and evaluate the hazards and their consequences. Millard used a "what if" method. This method involves brainstorming about what could possibly go wrong with the system and trying to identify the consequences of each "what-if" scenario. (Discuss a couple of "what-if" scenarios from the PHA. You should also go over some of the recommendations of the PHA and what we have done to comply with them, such as changing out pressure relief valves if they activate.)

Safety Procedures

As you can tell, the Process Safety Management regulation is determined to make sure that safety gets full attention in every aspect of a process, no matter how rarely a specific procedure is performed. Here's a brief overview of the procedures OSHA requires to ensure safety in every aspect of operations related to processes that involve highly hazardous chemicals.

- **Pre-startup safety review.** When a regulated process is going to be performed in new or substantially modified facilities, its design specifications have to meet process safety requirements. In addition, employees who will work on these processes have to receive the required training, and the employer has to develop safe operating and maintenance procedures and emergency planning for the facility.
- **Mechanical integrity.** Equipment that's used to process, store, or handle highly hazardous chemicals has to be designed, constructed, installed, and maintained to minimize the risk of accidental releases. This includes operating and maintaining the process as designed, and controlling any releases through venting or overflow tanks.
- **Change management.** Great care is needed when you have to make any change to process equipment, technology, or chemicals. So OSHA recommends using special forms to document the changes and their potential safety and health impact. And the regulation requires setting and monitoring time limits for temporary changes, with specific steps for returning equipment and procedures to their original conditions. Again, employees involved in the process have to be trained.
- **Incident investigation.** If there's a catastrophic accident or a near miss, employers must investigate the causes within 48 hours. The result should be a written report that describes and documents the incident, figures out why it happened, and recommends what to do to prevent it in the future. The employer must, of course, implement those recommendations.
- **Emergency Response Plan.** If, despite all the precautions, there is an unwanted release of highly hazardous chemicals, people have to know what to do—and do it fast. OSHA requires employers to have an emergency response plan that details procedures for small and large releases: who's in charge of what, when and where to evacuate, etc. We covered the important part of emergency response last month. In the event of a major ammonia leak, our policy is to evacuate the building and turn over the emergency to the professionals – our local Fire Department/HAZMAT team (or other response unit). They will take control of the incident and decide what actions to take. Our plant engineer does have 24 hour emergency response training and we coordinate our plan with the local units. Our intent is to have our engineer participate on the local team in order to enter the facility and shut down the ammonia equipment. (Show the SCBA gear and/or full face respirator and explain how they are used.)
- **Compliance audits.** To determine if process safety management is really working, OSHA requires employers to audit their procedures and practices at least every three years. A person who understands both audit procedures and the process in question is expected to review process safety documentation and other paperwork carefully, interview employees involved with the process, and inspect the facilities in which operations are conducted. If the audit identifies areas needing correction, employers must follow through and make those corrections.

(It is recommended that you show the video “Ammonia: A Tool to Respect”. This video may be called “Ammonia Leak Emergency Plan” in some locations.)