



**TEAMSTERS**

# **Safety & Health FACTS**

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## **PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS**

29 CFR Part 1910.119

### **Introduction**

The Occupational Safety and Health Administration's (OSHA) *Process Safety Management (PSM) of Highly Hazardous Chemicals (HHC's)* standard, 29 CFR 1910.119, contains requirements for the safe management of hazards associated with processes that use, store, manufacture, handle, or move highly hazardous chemicals onsite. The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous toxic, reactive, flammable or explosive chemicals especially into locations which could expose employees and the community to serious hazards.

### **Scope**

The PSM standard applies to all industries except retail facilities, oil or gas well drilling or servicing operations, and normally unoccupied remote facilities.

In each industry, PSM applies to any of more than 130 specific toxic and reactive chemicals in listed quantities on site in one location (see Appendix A of standard); it also includes flammable liquids and gases in quantities of 10,000 pounds (4,535.9 Kg) or more.

PSM clarifies the responsibilities of employers and contractors involved in work that affects or takes place near covered processes to ensure that the safety of both plant and contractor employees is considered. The standard also mandates written operating procedures; employee training; pre-startup safety reviews; evaluation of mechanical integrity of critical equipment; written procedures for managing change; incident investigation; emergency planning and response; and compliance audits.

## **Employee Participation**

OSHA requires that employers:

- ◆ Develop a written plan of action regarding employee participation;
- ◆ Consult with employees and their representatives on developing process hazard analyses and other elements of process safety management; and
- ◆ Provide to employees and their representatives access to process hazard analyses and to all other information required under the rule.

\*Employees include work site and contractor employees.

## **Process Safety Information**

Employers must compile written process safety information in order to identify and understand the hazards posed by those processes involving highly hazardous chemicals. Process safety information must include information on the hazards of the highly hazardous chemicals used or produced by the process, and information on the technology of the process, and information on the equipment in the process (for details, see 29 CFR 1910.119 (d))

The process safety information provides the basis for identifying and understanding the hazards of a process and is necessary in developing the process hazard analysis (PHA) and may be necessary for complying with other provisions of PSM such as management of change and incident investigations.

## **Process Hazard Analysis (PHA)**

The key provision of PSM is process hazard analysis (PHA), which is a thorough, orderly, systematic approach for identifying, evaluating, and controlling the hazards of processes involving highly hazardous chemicals.

OSHA believes that the PHA should be performed by a team with expertise in engineering and process operations, and that the team should include at least one employee who has experience with and knowledge of the process being evaluated. Hazard evaluation should rely on one or more methodologies specified by the standard.

PHA should include the following elements:

- ◆ The hazards of the process;
- ◆ Any previous potentially catastrophic incident(s);
- ◆ Engineering and administrative controls applicable to the hazards, such as detection methodologies to provide early warning of releases;

- ◆ Consequences of failure of engineering and administrative controls;
- ◆ Facility siting;
- ◆ Human factors; and
- ◆ A qualitative evaluation of the possible safety and health effects on employees in the workplace if there is a failure of controls.

The PHA must be updated and revalidated at least every five years after the completion of the initial process hazard analysis, to ensure that it is consistent with the current process.

Employers must keep on file and make available on request, process hazard analyses and updates or revalidation for each process covered by PSM, as well as the documented resolution of recommendations, for the life of the process.

## **Operating Procedures**

The employer must develop and implement written operating procedures that provide clear instructions for safely operating each covered process consistent with the process safety information. The procedures must address the following elements: steps for each operating phase; operating limits; safety and health considerations; and safety systems. Procedures must be readily accessible to affected employees, must be reviewed as often as necessary and certified annually by the employer to assure they are up-to-date, and must cover special circumstances such as lockout/tagout and confined space entry.

The employer must develop and implement safe work practices to provide for the control of hazards during work activities such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices must apply both to employees and to contractor employees.

## **Training**

Employees presently operating a covered process, and before being assigned to a new process must be trained in the overview of the process and in the operating procedures addressed in the previous section. This training must emphasize specific safety and health hazards, emergency operations and safe work practices. Refresher training is required at least every three years and more often if deemed necessary in consultation with employees that operate the process. The training record should contain the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

## **Contractors**

The PSM standard applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply, however, to contractors providing incidental services that do not influence process safety, such as janitorial, food and drink, laundry, delivery, or other supply services.

When selecting a contractor, the employer must obtain and evaluate information regarding the contract employer's safety performance and programs. The employer also must inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process; explain to contract employers the applicable provisions of the emergency action plan; develop and implement safe work practices to control the presence, entrance, and exit of contract employers and contract employees in covered process areas; evaluate periodically the performance of contract employers in fulfilling their obligations; and maintain a contract employee injury and illness log related to the contractor's work in the process areas.

Contract employers must train their employees to safely perform their jobs; ensure that they are instructed in the known potential fire, explosion, or toxic release hazards related to their work and the process and in relevant sections of the employer's emergency action plan; prepare a written record to document that employees have received and understood training; assure that contract employees know about potential process hazards and follow safety rules of the facility; and advise the employer of hazards presented or identified by the contract employers' work.

## **Pre-startup Safety Review**

Before introducing any highly hazardous chemical to a process, a safety review is required for new and modified facilities to confirm that the construction and equipment are in accordance with design specifications; to assure that adequate safety, operating, maintenance and emergency procedures are in place; and to assure process operator training has been completed. The review must also confirm that a PHA has been performed for new facilities and the recommendations have been resolved or implemented before startup.

## **Mechanical Integrity**

The employer must maintain the ongoing integrity of process equipment including pressure vessels and storage tanks; piping systems (including piping components such as valves); relief and vent systems and devices; emergency shutdown systems; controls (including monitoring devices and sensors, alarms, and interlocks); and pumps. This must be accomplished through written procedures; documented inspection and testing according to manufacturers' recommendations and good engineering practices; correction of equipment deficiencies before further use or in safe and timely manner; and ensuring that plants, equipment, materials, spare parts are suitable for the processes and are properly used and installed.

Employees involved in maintaining the ongoing integrity of process equipment must be trained in an overview of that process and its hazards and trained in the procedures applicable to the employees' job tasks.

## **Hot Work Permit**

Hot work permits must be issued for hot work operations conducted on or near a covered process and must document work details including compliance with OSHA's fire prevention and protection requirements. The permit must be kept on file until completion of the hot work.

## **Management of Change**

The employer must establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures and changes to facilities that affect a covered process. These procedures should include the technical basis for the proposed changes, the impact of the change on employee safety and health, modifications to operating procedures, the necessary time period for the changes, and authorization requirements for the proposed change.

Employees who operate a process and maintenance and contract employees whose job tasks will be affected by a change in the process must be informed of, and trained in, the change prior to startup of the process or startup of the affected part of the process. If a change covered by these procedures results in a change in the required process safety information or operating procedures or practices, such information must also be updated.

## **Incident Investigation**

Employers are required to investigate as soon as possible (but no later than 48 hours after) incidents which resulted in or could reasonably have resulted in catastrophic releases of covered chemicals. The standard calls for an investigation team that consists of at least one person knowledgeable in the process involved (a contract employee when the incident involved contract work) and others with knowledge and experience to investigate and analyze the incident. A written report on the incident must be prepared and retained for five years. A system must also be established to promptly implement and document corrective actions in the report. All affected personnel, including contract employees, must review the report.

## **Emergency Planning and Response**

The employer must establish and implement an emergency action plan for the entire plant in accordance with the provisions of OSHA's *Emergency Action Plans* standard, 29 CFR 1910.38(a) (see IBT Safety and Health Fact Sheet *Emergency Plans and Fire Prevention Plans*). In addition, the emergency action plan shall include procedures for handling small releases. Employers covered under this standard may also be subject to the hazardous waste and emergency response provisions contained in 29 CFR 1910.120 (a), (p) and (q) (see IBT Safety and Health Fact Sheet *Hazardous Waste Operations and Emergency Response*).

## **Compliance Audits**

Employers should certify at least every three years that they have evaluated the adequacy and compliance with the procedures and practices developed under the PSM standard. The audit must be performed by at least one person knowledgeable in the process and a report of the findings must be developed which documents that deficiencies have been corrected. Employers must retain the two most recent audit reports.

## **Trade Secrets**

Employers must make all information necessary to comply with the section available to those persons responsible for compiling the process safety information, the process hazard analysis the operating procedures, and those involved in incident investigations, emergency planning and response and compliance audits without regard to possible trade secret status of such information.

Employers may enter into confidentiality agreement with employees to whom the information is made available to prevent disclosure of trade secrets. Employees and their designated representatives shall have access to trade secret information contained within the process hazard analysis and other documents required to be developed by the PSM standard.

**For additional information, please contact the IBT Safety and Health Department, 25 Louisiana Avenue, NW, Washington, DC 20001. Email: [ibtsafety@teamster.org](mailto:ibtsafety@teamster.org); Phone: 202-624-6830; Fax: 202-624-8740.**