OREGON OCCUPATIONAL SAFETY AND HEALTH DIVISION
DEPARTMENT OF CONSUMER AND BUSINESS SERVICES

PROGRAM DIRECTIVE

Program Directive: A-177
Issued: April 5, 1993
Revised: July 24, 2024

SUBJECT: National Emphasis Program (NEP): Process Safety Management of Highly Hazardous Chemicals

PURPOSE: This program directive establishes uniform policies, procedures, standard clarifications, and compliance guidance for enforcement of the standard for Process Safety Management (PSM) of Highly Hazardous Chemicals, 1910.119 and amendments to the standard for Explosives and Blasting Agents, 1910.109.

SCOPE: This instruction applies to all Oregon OSHA.

APPENDICES: A: PSM Questions and Responses

B: Supplemental Definitions, and Questions and Responses

C: References

D: Acronyms and Abbreviations

E: Additional References

CANCELLATION: This instruction cancels all previous versions of A-177.

ACTION: All Oregon OSHA activities, such as enforcement and consultation, related to the PSM standard must adhere to the guidelines of this program directive.

Consultation will adhere to the guidelines except for scheduling lists and citation guidance.

BACKGROUND: In recent years, a number of catastrophic accidents in the chemical industry have drawn attention to the safety of processes involving highly hazardous chemicals. OSHA determined that employees have been and continue to be exposed in their workplaces to the hazards of releases of highly hazardous chemicals which may be toxic, reactive, flammable, or explosive.

The requirements of the PSM standard are intended to eliminate or mitigate the consequences of such releases. The standard emphasizes the application of management controls when addressing the risks associated with handling or working near hazardous chemicals.

In addition, the PSM standard was developed to fulfill OSHA's obligation under the Clean Air Act Amendments (CAAA) of 1990, section 304(a). The final rule is consistent with the mandate of the CAAA.

It is anticipated that joint inspection activities related to the PSM standard will arise between Oregon OSHA, OSHA, the Environmental Protection Agency, and the Chemical Safety and Hazard Investigation Board, which was mandated by the CAAA.

ENFORCEMENT ACTIVITY RELATED TO THE PSM STANDARD:

1910.119 has broad applicability to potentially hazardous processes that may exist in a wide variety of industries. Accordingly, enforcement activities related to the PSM standard either to determine if an employer is covered by the standard or to assess the employer's compliance with it may take place in any of the inspection types described below.

TYPES OF INSPECTIONS: The following guidelines apply to PSM-related compliance activity:

A. Programmed PSM Inspections: Will be initiated from one of the scheduling lists (Ammonia, Chlorine, Formaldehyde, or Miscellaneous)

B. Unprogrammed PSM-Related Inspections: In all unprogrammed inspection activity relating to the PSM standard, a determination must be made as to whether the establishment is covered by 1910.119.

If a formal complaint or referral relating to the PSM standard is received at a company with a PSM-covered process, the complaint or referral items must be investigated and:

1. If an onsite inspection is conducted, all programs required by the PSM standard must be screened for obvious violations.

2. A referral for a PSM inspection must be considered if major deficiencies are indicated. This determination must be documented in the case file.

3. Where complaints or referrals are made for PSM inspections, follow the procedures outlined in Program Directive A-219 Inspection Criteria: Complaint Policies and Procedures and the Field Inspection Reference Manual (FIRM) in evaluating the complaint/referral for action..

C. Responses to Accidents and Catastrophes: Responses to accidents and catastrophes involving PSM must follow the guidelines in Chapter 2 of the FIRM in addition to the guidelines of this Program Directive. If the employer has a PSM covered process, a referral for a PSM inspection must be considered if major deficiencies are indicated.

INSPECTION RESOURCES:

Appropriate levels of staff training and preparation are essential for compliance activities relating to the PSM standard. Inspections using this NEP may be conducted by either a single Oregon OSHA employee or a team. At least one member of the team or the Oregon OSHA employee must be trained in PSM. In particular, it is anticipated that PSM inspections can be highly resource-intensive; they will therefore require careful planning and coordination.

A. PSM Team Members: Only trained Compliance Safety and Health Officers (CSHOs) with knowledge of PSM will be assigned to lead a PSM inspection under this standard.

1. The lead CSHO must have completed one or more courses such as:

- OSHA Training Institute's (OTI) Course 3300, Safety and Health in the Chemical Processing Industries (or equivalent)

- Course 3400, Hazard Analysis in the Chemical Processing Industries (or equivalent)

- Course 3410, Advanced Process Safety Management (or equivalent)

- Course 3430, Advanced PSM in the Chemical Industries, or a specialized course on ammonia refrigeration

2. The lead CSHO must have prior experience including:

   - Accident investigations in chemical, petrochemical, or refinery plants involving fires, explosions, and/or toxic chemical releases, or

   - Previous chemical inspections involving process safety management evaluations, or previous chemical industry employment, or

   - Participation in a PSM inspection of process-specific hazards and systems, e.g., an ammonia refrigeration facility or chlorine (dioxide) use in water/wastewater treatment plants.

B. CSHOs With Less Training. Complaint and other unprogrammed inspections pertaining to some sections of the standard may be conducted by CSHOs who do not have the training and experience described above, but who are experienced in evaluating other programmatic standards such as hazard communication and lockout/tagout and in evaluating respirator programs.

   1. The following sections of 1910.119 may be appropriately evaluated by such CSHO:

      - Employee participation

      - Training

      - Contractors

      - Hot work permits

      - Incident investigation

      - Emergency planning and response

   2. The CSHO must make full utilization of Oregon OSHA Central Office resources in arriving at decisions regarding compliance or noncompliance.

3. Nevertheless, to the extent possible, managers will attempt to utilize CSHOs with experience and training in the chemical industry to perform such unprogrammed inspections. Where possible, managers should arrange for OJT for less experienced staff to continue to grow/maintain PSM expertise.

PSM INSPECTION SCHEDULING: Due to the resource-intensive nature of many inspections for compliance with the PSM standard, Oregon OSHA will only perform a limited number of PSM inspections each year. A special targeting and scheduling system is therefore necessary to maximize the effective use of inspection resources.

A. Targeting. Oregon OSHA wishes to make the most effective use of its limited resources, and therefore data gathered by the Oregon Office of State Fire Marshal (OSFM) Hazardous Substance Information System (HSIS) will be used to generate scheduling lists. The most current HSIS database will be sorted to generate a list of all employers who reported having chemicals stored at their facilities in excess of the PSM Threshold Quantities (PSM-TQ).

The majority of PSM employers have threshold quantities of ammonia, chlorine, or formaldehyde. Thus, Oregon OSHA will divide the list into four groups: ammonia, chlorine, formaldehyde, and miscellaneous. Each of these lists will be randomized and ranked. The lists will generally be completed in order, or for best use of available resources. Lists will be updated when deemed necessary, but at least every three years. (See deletion criteria).

B. Deletion Criteria. An establishment will be deleted from the list if it:

1. Has received a substantially complete systems safety inspection or PSM inspection within the current or the preceding **5 calendar years**; or

2. Is included in a corporate settlement agreement requiring appropriate management systems for process safety; or

3. Is a **VPP** participant; or

4. Is a corporate office/headquarters and is not engaged in actual production or physical research operations; or

5. Is not covered because of exclusions in the PSM standard; or

6. Has been the subject of a PSM-related inspection (complaint or referral) in the preceding year during which PSM programs were screened and a referral for a PSM inspection was not made.

NOTE: Determination for deletion will be made initially, to the extent possible, at the central office when the list is prepared; and/or subsequently, as necessary, at the field office level based on local knowledge (e.g., recent inspections, field office screening).

SCOPE OF A PSM INSPECTION:

PSM inspections initiated under this directive will follow the procedures outlined.

Where PSM-covered chemicals (1910.119, Appendix A) are encountered through scheduled, complaint or referral inspections, the CSHO will assess, in conjunction with their manager, the appropriate means for addressing PSM issues as described within this directive. A separate inspection may be conducted based on the size and complexity of the PSM issues involved.

Based on inspection history at refineries and large chemical plants, OSHA has found that employers may have an extensive written process safety management program, but insufficient program implementation. Therefore, CSHOs should verify the implementation of PSM elements to ensure that the employer's actual program is consistent with their written program.

CSHOs must inspect both the host employer and contract employers, if any.

CSHOs must review the employer's history of Oregon OSHA inspections and any abatement verification submitted for citations resulting from those inspections.

PSM INSPECTION PROCEDURES:

CSHOs must follow the procedures given in the FIRM, Chapter 3, except as modified in the following sections:

A. Opening Conference. Include, when appropriate, the facility safety and health director, Process Safety Manager, or other person capable of explaining the company's Process Safety Management Program in the opening conference.

1. Confirm that the facility has a PSM-covered process.

   a. Request a list of the chemicals onsite and their respective maximum intended inventories. Review the list of chemicals and quantities, and determine if there are highly hazardous chemicals listed in 1910.119 Appendix A or flammable liquids or gases at or above the specified threshold quantity. CSHOs may ask questions, conduct interviews, or conduct a walk-around to confirm the information on the list of chemicals and maximum intended inventories. If it is determined that there are no highly hazardous chemicals, flammable liquids, or flammable gases present in sufficient quantities and the facility is not manufacturing explosives or pyrotechnics as defined in 1910.109, then document the findings and end the inspection.

   b. Confirm that the facility is not a retail facility, oil or gas well drilling or servicing operation, or normally unoccupied remote facility (1910.119(a)(2)). In Oregon, Farm Supply Merchant Wholesalers (NAICS 424910) with 10,000 or more pounds of anhydrous ammonia onsite are covered by the PSM rule. If the facility is one of these types of establishments, document the findings. (See the discussion in Appendix A).

   c. Determine if other exemptions apply. According to 1910.119(a)(ii), a process could be exempt if the employer can demonstrate that covered chemicals are:

      i. Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if these fuels are not a part of a process containing another highly hazardous chemical covered by the standard, or

      ii. Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without the benefit of chilling or refrigeration.

If management believes that the process is exempt, ask the employer to provide documentation or other information that demonstrates why the process is exempt.

d. CSHOs may ask questions, conduct interviews, or conduct a walk-around to confirm that the exemption applies. If, at this point, they determine that the facility is either not covered or covered but exempted, then document findings and end the inspection.

2. During the opening conference, CSHOs must familiarize themselves with the establishment's emergency response procedures and emergency alarms.

3. CSHOs must also request that the management representatives provide them with a reasonably detailed overview of the chemical (and, where applicable, explosives) process and/or manufacturing operations at the facility, including block flow and/or process flow diagrams indicating chemicals and processes involved.

B. PSM Overview. Prior to beginning the walk-around inspection, request an explanation of the company's Process Safety Management Program including, at a minimum:

1. How the elements of the standard are implemented;

2. Personnel designated as responsible for implementation of the various elements of the standard; and

3. A description of company records used to verify compliance with the standard.

C. Interrelationship of Elements. An essential part of verifying program implementation is to audit the flow of information and activities among the elements. When information in one element is changed or when action takes place in one element that affects other elements, the CSHO will review a sample of the related elements to see if the appropriate changes and follow-up actions have taken place.

The following example demonstrates the interrelationship among the elements:

During a routine inspection of equipment (Mechanical Integrity), the maintenance worker discovers a valve that no longer meets the applicable code and must be changed. Because the type of valve is no longer made, a different type of valve must be selected and installed (Management of Change). The type of valve selected may mandate different steps for the operators (Operating Procedures) who will require training and verification in the new procedures (Training). The rationale for selecting the type of valve must be made available for review by employees and their representatives (Employee Participation).

When the new valve is installed by the supplier (Contractors), it will involve shutting down part of the process (Pre startup Safety Review) as well as brazing some of the lines (Hot Work Permit). The employer must review the response plan (Emergency Planning) to ensure that procedures are adequate for the installation hazards. Although Management of Change provisions cover interim changes, after the new valve is in place, the Process Safety Information will have to be updated before the Process Hazard Analysis is updated or revalidated, to account for potential hazards associated with the new equipment. Also, inspection and maintenance procedures and training will need to be updated (Mechanical Integrity).

In summary, 11 PSM elements can be affected by changing one valve. A CSHO would check a representative number of these 11 elements to confirm that the required follow-up activities have been implemented for the new valve.

Three key elements must be routinely reviewed to verify that changes have been implemented. They are:

- Operating Procedures
- Process Hazard Analysis
- Training

These elements must be crosschecked to see if they show that the changes have been followed through to completion.

D. Initial Walk-around. After the overview of the company's PSM Program, the inspection may begin with a brief walk-around inspection of those portions of the facility within the scope of the standard. Additional walk-around activity may be necessary after selection of the process units. The purpose of the initial

walk-around is to:

1. Get a basic overview of the facility operations;

2. Observe potential hazards such as pipework in risk of impact, corroded or leaking equipment, unit or control room siting, and location of relief devices; and

3. Solicit input from the employee representative concerning potential PSM program deficiencies.

E. Personal Protective Equipment (PPE). In addition to normal inspection protective equipment, CSHOs must be provided with flame retardant coveralls for protection from flash fires and with NIOSH approved emergency escape respirators for use during any emergency conditions. PPE must be appropriate to the environment at the workplace. Special equipment will be necessary in environments containing explosive materials.

1. Wear flame-retardant coveralls in all areas of the plant where there is potential for flash fires and as may be required by company policy.

   NOTE: Clothing made of hazardous synthetic fabrics should not be worn underneath flame-retardant coveralls.

2. Carry emergency escape respirators, when necessary, during the walk-around portion(s) of the inspection. CSHOs conducting these inspections must have received proper training in the use of emergency escape respirators.

3. The CSHO must be provided with appropriate alert monitors approved for the environment where they will be used (e.g., Hydrogen Cyanide (HCN), Chlorine (Cl_2)) where the devices are necessary.

4. The CSHO must ensure that any still cameras and/or video cameras used on these inspections are intrinsically safe for use in the process areas being inspected.

NOTE: CSHOs may use video cameras equipped with a telephoto lens from outside classified areas and/or still cameras without batteries. CSHOs may use non-intrinsically safe cameras equipped with a telephoto lens from outside classified areas and/or still cameras without batteries or a flash. If the employer allows the use of non-intrinsically safe cameras in hazardous (classified) locations, CSHOs may use this type of equipment when: (1) the employer issues a hot work permit for the use of the camera; and (2) continuous combustible gas metering, which has been calibrated prior to use, is provided in the areas where the camera will be used.

5. CSHOs must ensure that all electronic devices such as cell phones, PDAs, etc., are turned off.

F. Documentation to be Requested ─ General and Process-Related. At the conclusion of the opening conference, the CSHO must request access to or copies of the documents listed below. Initially, to expedite the inspection process, only access to documents should be requested. During the inspection, as potential violations of the standard are observed, copies of the written documentation described below must be requested to substantiate citations.

Compliance Guidance: The list below is not intended to limit the type and number of documents to be requested. The Oregon OSHA inspection team may request additional documents as necessary.

The list represents documents typically compiled by employers with PSM-covered processes at their facilities. The PSM standard requires the employer to maintain some, but not all, of these documents. Therefore, the employer may not have all of these documents. In some cases, documentation may have been produced by a consultant or contractor.

1. OSHA 300 Logs for the past 3 years for both the employer and all process-related contractor employers.

2. Employer's written plan of action regarding the implementation of employee participation.

3. Written process safety information for the units selected, if available, such as flow diagrams, piping and instrumentation diagrams (P&IDs), and process narrative descriptions.

NOTE: The employer is required to compile process safety information on a schedule consistent with the employer's schedule for conducting the process hazard analyses (PHA).

4. Documented priority order and rationale for conducting process hazard analyses, team members; actions to promptly address findings; written schedules for actions to be completed; documentation of resolution of findings; documentation verifying communication to appropriate personnel; and 5-year re-validation of original PHA required by the standard.

5. Written operating procedures for safely conducting activities in each selected unit; annual certification that operating procedures are current and accurate; written procedures describing safe work practices for potentially hazardous operations, including (but not limited to) lockout/tagout, confined space entry, lifting equipment over process lines, capping over ended valves, opening process equipment or piping, excavation, and control over entrance into a facility of maintenance personnel, laboratory personnel, or other support personnel.

6. Training records for initial and refresher training for all employees in the selected units whose duties involve operating a process; methods for determining the content of the training; methods for determining frequency of refresher training; certification of required knowledge, skills, and abilities to safely perform job for employees already involved in operating a process, who have not received initial training, and training material.

7. Pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information; documentation of employee training.

8. Written procedures and schedules to maintain the ongoing integrity of process equipment; the relevant portions of applicable manufacturers' instructions, codes, and standards; and inspection and tests performed on process equipment in the units selected.

9. Hot work permit program and active permits issued for the units selected.

10. Written procedures to manage change to process chemicals, technology, equipment and procedures; and changes to facilities that affect a covered process.

11. Incident investigation reports for the units selected, resolutions and corrective actions.

12. Written emergency action plan including procedures for handling small releases and evidence of compliance with 1910.120(a), (p), and (q), where applicable.

13. The two most recent compliance audit reports, appropriate responses to each of the findings, and verifications that deficiencies have been corrected.

G. Contractors

Contractors are an integral part of any PSM inspection. There may be only a few contractors or dozens, with several hundred contract employees, depending on whether the facility is undergoing a shutdown or turnaround.

It is imperative that, upon entry, the scope of the contractor activity be determined. The construction specialist on the team will have to formulate an inspection plan and set appropriate priorities. It is not the intent of the PSM inspection to inspect all outside contractors that are on site, rather to inspect only those contractors who may be exposed to, or could cause or be affected by, a catastrophic incident. Food service workers, certain janitorial employees, and similar activities would not normally be inspected. Remote construction projects not associated with catastrophic potential would not necessarily be inspected.

The term "contractor" is not limited to construction-type activities. Many chemical facilities use contract maintenance workers, vessel and piping inspectors, vessel heat treating, cleaning, engineering and similar non-construction contractors who remain at the facility year round or are called in at regular intervals. They are used to supplement existing plant personnel for regular duties and for special projects.

A shared responsibility for both contractors and company is quality assurance. It is essential that all materials and workmanship meet engineering standards. There should be sufficient checks to ensure that materials, such as the proper alloy or carbon steel pipe is used, and that the studs and/or bolts are of the proper size and grade. This is especially important in contractor supplied materials.

H. Documentation To Be Requested – Contractor-related. Request the following information relating to contractor compliance:

1. Documentation from Employer:

a. Information relating to contract employers' safety performance and programs;

b. Methods of informing contract employers of known potential hazards related to contractor's work and the process and applicable provisions of the emergency action plan;

c. Safe work practices to control the entrance, presence and exit of contract employers and contract employees in covered process areas;

d. Evaluation of contractor employer performance in fulfilling responsibilities required by the standard;

e. Contract employee injury and illness logs related to work in process areas; and

f. A list of unique hazards presented by contractors' work or hazards found in the workplace that have been reported to the employer.

2. Documentation from Contract Employer:

a. Records showing employees receive training in and understand safe work practices related to the process on or near where they will be working to perform their jobs safely;

b. Known potential fire, explosion or toxic release hazards related to the job, and applicable provisions of emergency action plan; and

c. A list of unique hazards presented by contractors' work or hazards found in the workplace that has been reported to the employer.

I. Selection of Process. The team leader will select one or more processes to evaluate compliance with the standard. This selection will be based on the factors listed below, and must be documented in the case file:

1. Factors observed during the walkthrough;

2. Incident reports and other history;

3. Company priorities for or completed process hazard analyses (PHA);

4. Age of the process unit;

5. Nature and quantity of chemicals involved;

6. Employee representative input;

7. Current hot work, equipment replacement, or other maintenance activities; and

8. Number of employees present.

Oregon OSHA is one of several state agencies who have entered into a Memorandum of Agreement (MOA) with EPA Region 10, Risk Management Program (RMP), for describing how Section 112(r) of the Clean Air Act Amendments will be implemented in Oregon. It describes duties/responsibilities for compliance, enforcement, information sharing, and outreach opportunities on risk management plans. (See Appendix E for this reference).

COMPLIANCE GUIDELINES FOR SPECIFIC PROVISIONS OF 1910.119:

Guidelines for assessing compliance with the provisions of the PSM standard are provided in Appendix A and B of this program directive.

A. Use the guidance contained in Appendix A and B during all enforcement activities related to the PSM standard.

B. Clarifications and interpretations are provided in Appendix A and B of this instruction. Appendix A (or a subsequent revision) will normally be the first point of reference in interpreting 1910.119.

CITATIONS: Citations for violations of the PSM standard must be issued in accordance with the FIRM with the following additional directions:

Classification. The requirements of the PSM standard are intended to eliminate or mitigate the consequences of releases of highly hazardous chemicals. The provisions of the standard present closely interrelated requirements, emphasizing the application of management controls when addressing the risks associated with handling or working near hazardous chemicals.

- Any violation of the PSM standard, therefore, is a condition which could result in death or serious physical harm to employees.
- Accordingly, violations of the PSM standard will normally not be classified as "other-than-serious."
- The determination of the probability and severity of any violation must follow the guidelines in the FIRM and the rules in OAR 437, Division 1. Discuss specific questions about each case with your manager.

CONSULTATION ACTIVITY RELATED TO THE PSM STANDARD: Consultation activities will utilize this guideline as stated above, except for scheduling lists and citation guidance. Consultation will generally have the same scope with employers for the PSM related consultations and will follow the Consultation Reference Guide instead of the FIRM. Consultation will have PSM consultations specific to the employer in addition to the comprehensive safety and health consultations and rely on the same principles and resources as enforcement. Consultants will also go through the same training requirements stated within.

RECORDING IN OTIS/ORCA:

The instructions that follow are for inspections under this NEP.

A. All activities will need to be coded in the correct database.

B. All enforcement activities-inspections, complaints, accidents, referrals, and compliance assistance (OSHA 55)-conducted under this NEP must be coded with the NEP code "CHEMNEP" entered in the National Emphasis tab in OTIS.

C. All inspections of contractors initiated as a result of a Programmed inspection of the host employer will be identified as Program Related.

D. For OTIS, the OSHA1 for the contractor must indicate "CHEMNEP" in the National Emphasis tab and the Optional Report Information tab must indicate Type = N; ID = 01; and Value = (the OSHA 1 inspection number of the host employer).

E. All PSM inspections must be coded S-27-PSM in OTIS, in the Optional Report Information tab.

F. All consultation activities conducted in response to this NEP must include "CHEMNEP" in the National Emphasis code field in ORCA

EFFECTIVE DATE: This directive is effective immediately and will remain in effect until cancelled or superseded.

History: Issued 4-5-1993; Revised 4-27-2003 and 11-14-2014 and 7-24-2024

APPENDIX A

PSM Questions And Responses

OSHA promulgated the PSM standard in 1992 in response to the numerous catastrophic chemical manufacturing incidents that occurred worldwide. These incidents stimulated broad recognition that handling highly hazardous chemicals (HHC), flammables, and explosives could lead to incidents that may occur infrequently but, due to their catastrophic nature, often result in multiple injuries and fatalities. Since the promulgation of the standard, numerous questions have been submitted and compliance guidance provided to industry on the application of the standard. The below is a compilation of questions, references to applicable Letters of Interpretation (LoIs), or standard interpretations addressing the question, and current Oregon OSHA compliance guidance. The information below is formatted as a question and response, with some questions having a scenario preceding it to provide context for the question and response.

A. 1910.119(a) – Application

QA-01: Must employers register their PSM-covered facilities with OSHA?

Response: No. Facilities covered by the PSM standard are not required to register with or otherwise notify Oregon OSHA.

QA-02: If the PSM standard applies to a process, does an employer have to comply with all provisions of the standard?

Response: Yes. When the PSM standard applies, the employer must comply with all provisions of the standard.

To ensure compliance with PSM, Oregon OSHA requires an employer to perform a compliance audit at least every three years in accordance with Section 1910.119(o). Further, Oregon OSHA provides employers with compliance assistance on its website (http://www.osha.oregon.gov) related to Oregon OSHA's Safety and Health Topics. This information includes the PSM standard, PSM compliance directives, and all applicable letters of interpretation. Further, Section 1910.119 Appendix C, Compliance Guidelines and Recommendations for Process Safety Management (Nonmandatory) is a good tool for employers to obtain background information on the standard. This document is also available on the federal OSHA website along with other resources under Process Safety Management under Safety and Health Topics (https://www.osha.gov/process-safety-management). Olesen LoI 02/01/2002

QA-03: Is the likelihood of a release exceeding the TQ required for the PSM standard to apply?

Response: No. The likelihood of a release does not determine PSM applicability. The quantity of HHC in the process is used to determine PSM applicability. Additionally, the manufacturing of explosives in any amount is covered by the PSM standard.

Crook LoI 05/14/2014, Goodman LoI 08/15/1995, and Mannan LoI 05/25/1994

QA-04: Is OSHA's publication OSHA 3909-03 2017, Process Safety Management for Storage Facilities, a guidance document and not part of the requirements of the PSM standard, Section 1910.119?

Response: Yes. Process Safety Management for Storage Facilities (OSHA 3909-03 2017), is a guidance document and not part of the PSM standard. However, the guidance document does include information on the mandatory requirements of various OSHA standards and how they apply to storage facilities.
Ordile LoI 06/28/2019

QA-05: Is the quantity of a specific HHC aggregated over a period used to determine if the amount exceeds the TQ in a PSM-covered process?

Response: No. The PSM standard applies if, at any single point in time, a process contains equal to or greater than a TQ of a HHC. If the employer intends for the process to not be covered by the PSM standard, they must be prepared to demonstrate to Oregon OSHA that a TQ or greater of a HHC is not in the process at any time.
Anicello LoI 02/15/1994, and Kunst LoI 07/18/1994

1. 1910.119(a)(1)(i) – Threshold Quantities

QA-06: When determining whether a process contains a TQ for those HHCs listed in Appendix A that do not have a listed concentration, do the quantities of the HHC that are part of the solution or mixture count toward the TQ?

Response: Yes. For these HHCs, when an employer is determining whether a process involves a chemical (whether pure or in a mixture) at or above the specified TQ listed in Appendix A, the employer shall perform the One Percent Test as follows:

(a) For chemicals with concentrations listed in Appendix A, determine the total weight of any chemical in the process that meets or exceeds the listed concentration.

(b) For chemicals with no concentrations listed in Appendix A, determine the total weight of any chemical in the process at a concentration of one percent or greater. However, the employer does not need to include the weight of the chemicals in any portion of the process in which the partial pressure of the chemical in the vapor space under handling or storage conditions is less than 10 millimeters of mercury (mm Hg). The employer shall document this partial pressure determination. To calculate this, the employer measures the vapor space partial pressure of the HHC vapor at an ambient pressure of 14.7 psia (760 mmHg) and determines, through analysis, that HHC makes up a certain mole % of the vapor.

In determining the weight of a chemical present in a mixture, only the weight of the chemical itself (i.e., solvent or other non-HHC solute(s) are excluded from the calculation) is used in the calculation.

Example:

If a process involves a 2000-pound mixture of 50% chloropicrin by weight in a solvent, the following formula can be used to determine the weight of chemical to establish PSM coverage:

Weight x [concentration] = amount of HHC

2,000 pounds x 50% = 1,000 pounds chloropicrin

1,000 pounds exceeds the 500-pound TQ in Appendix A.

See SQ&R A-06 in Appendix A for additional examples.

Regional Administrators LoI 07/18/2016

QA-07: Does the PSM standard apply to aqueous solutions of HHCs listed in Appendix A as anhydrous? For example, is muriatic (32% HCl) acid PSM covered?

Response: No. The hydrochloric acid in Appendix A of the PSM standard is designated as "anhydrous." Anhydrous means "containing no water" or "without water." Therefore, Appendix A does not cover aqueous solutions or aqueous mixtures of chemicals specifically listed as "anhydrous." Hydrogen chloride is also listed in Appendix A with the same CAS Number (7647-01-0) and TQ (5000 pounds). OSHA's letters of interpretation (LoI) state that anhydrous hydrochloric acid and hydrogen chloride are the same substance.

An aqueous solution of hydrochloric acid (i.e., muriatic acid) is not listed in Appendix A, and it is not PSM covered. In addition, OSHA has interpreted Appendix A to mean that the PSM standard does not cover Hydrogen Fluoride (CAS 7664-39-3) in aqueous solutions or aqueous mixtures although not specifically designated as "anhydrous."

The following entries in Appendix A are not covered when in aqueous solutions or aqueous mixtures except ammonia solutions greater than 44% by weight:

1. Ammonia, Anhydrous (CAS 7664-41-7);
2. Dimethylamine, Anhydrous (CAS 124-40-3);
3. Hydrogen Cyanide, Anhydrous (CAS 74-90-8);
4. Methylamine, Anhydrous (CAS 74-89-5);
5. Hydrochloric Acid, Anhydrous/ Hydrogen Chloride (CAS 7647-01-0); and
6. Hydrofluoric Acid, Anhydrous/ Hydrogen Fluoride (CAS 7664-39-3).

In such cases, the listing in Appendix A covers only the anhydrous form of the chemical.

For more information, see OSHA's enforcement policy memorandum, Process Safety Management of Highly Hazardous Chemicals and Covered Concentrations of Listed Appendix A Chemicals issued on July 18, 2016.
Grumbles LoI 03/25/1992, Lancour LoI 01/28/1994, Regional Administrators LoI 07/18/2016, Rusczek LoI 05/18/1994, Samartinov LoI 06/24/1992, and Woody LoI 01/21/1993

QA-08: Does the PSM standard apply to aqueous solutions of Dimethylamine (CAS# 12440-3)?

Response: No. Appendix A lists Anhydrous Dimethylamine, which does not include aqueous solutions. However, Dimethylamine in aqueous solutions can be a flammable liquid as defined in Section 1910.119(a)(1)(ii) and could be PSM covered if a TQ exists in the process.
Collins LoI 07/09/1993

QA-09: Does the PSM standard apply to a 50% by weight concentration of "Formaldehyde (Formalin)" listed in Appendix A of the PSM standard, even if the calculated amount of Formaldehyde (Formalin) in the solution is 11,000 pounds (TQ)?

Response: Yes. The Appendix A listing of Formaldehyde (Formalin) should have been listed to read: Formaldehyde (37% by weight or greater). Any amount of mixture of Formaldehyde (Formalin), less than 37% by weight, in solution would not be covered by the PSM standard. In this case, since the concentration of Formaldehyde is greater than 37%, the entire solution weight of the formaldehyde mixture is counted toward the TQ amount. Consequently, 11,000 pounds of a 50% concentration of Formaldehyde solution exceeds the 1,000-pound TQ and a PSM-covered process exists.

Franklin LoI 06/28/1992, (NAME WITHHELD) LoI 01/23/1995, and Schmidt LoI 11/03/2017

QA-10: Does "Ammonia solutions (>44% ammonia by weight)" in Appendix A, only apply to aqueous ammonia solutions?

Response: Yes. "Ammonia solutions (>44% ammonia by weight)" applies only to aqueous ammonia solutions.
Townley LoI 02/03/1993

QA-11: Does the PSM standard apply to an employer who uses cellulose nitrate in a concentration greater than 12.6% nitrogen to which water is added, producing a mixture containing greater than 23% water, which will not burn?

Response: Yes. Appendix A of the PSM standard lists cellulose nitrate in concentrations of greater than 12.6% nitrogen as a chemical which presents a potential for a catastrophic event at or above the TQ of 2500 pounds (1,133.9 kg). The PSM standard does not distinguish between "wet" or "dry" cellulose nitrate.

The 12.6% refers to the extent to which cellulose has been nitrated, not to a solution concentration. Cellulose nitrate with >12.6% nitrogen is a HHC subject to the One Percent Test for determining TQ. Therefore, if an employer's process involves cellulose nitrate in a concentration greater than 12.6% nitrogen with the total quantity of the mixture or solution at or above the TQ, the process is PSM covered.
Schmidt LoI 11/03/2017, Regional Administrators LoI 07/18/2016

QA-12: Does the PSM standard apply to a farmer's usage of ammonia as a fertilizer, and storage of an amount greater than the TQ for anhydrous ammonia or ammonia solutions (10,000 or 15,000 pounds respectively)?

Response: No. Section 1928.21(a)(2) states that Section 1910.111(a) and (b) (storage and handling of anhydrous ammonia) shall apply to agricultural operations.

The PSM rule has a limited retail establishment exemption based on federal OSHA's conclusion that these facilities do not present the same degree of hazard to employees as other workplaces covered by the standard. When the standard was adopted, the discussion in the preamble stated that this decision was made because chemicals in retail facilities are in small volume packages making a large release unlikely. In the case of farm supply merchants, the anhydrous ammonia is frequently stored in large tanks rather than small volume containers making a release a more significant event. Oregon OSHA has determined that these facilities are not part of the retail exemption.

In addition, 1928.21(b) excludes the applicability of any of the standards contained in Subpart B through T and Subpart Z of Section 1910 to agricultural operations. Since PSM is included in Subpart H – Hazardous Materials, PSM does not apply to agricultural operations. However, if postharvest activities such as canning, making of sauces, etc. occur on a farm and those postharvest activities are related to a PSM-covered process, e.g., an ammonia refrigeration process for the sorting and storage of fruits exists on a farm after the fruit has been picked, then the PSM standard may apply.
Hazzan LoI 10/31/1996 and https://osha.oregon.gov/OSHARules/interps/anhydrousammonia.pdf

QA-13: Are Hydrogen and Sodium Hydroxide included in Appendix A of the PSM standard?

Response: No. Hydrogen and Sodium Hydroxide are not listed in Appendix A as a HHC. If a process contains a TQ (i.e., 10,000 pounds) of hydrogen, a flammable gas, it is PSM covered pursuant to Section 1910.119(a)(1)(ii).
Schneider LoI 07/11/1994

QA-14: Are methyl bromide (CAS 74-83-9) and phosphine (CAS 7803-51-2) which are used as fumigants to control insects in food plants covered by the PSM standard?

Response: Yes. A fumigation process which contains a TQ (2500 pounds or greater) of methyl bromide or a TQ (100 pounds or greater) of phosphine (hydrogen phosphide) are covered by the PSM standard, provided no exemptions apply.
Lee LoI 05/03/1993.

QA-15: Does the PSM standard apply to sulfuric acid (H2SO4)?

Response: No. Sulfuric acid, which contains 93% to 98% (H2SO4) and the remainder is water, is not covered by the PSM standard. Please note that percentage range for Oleum (65% to 80% by weight), also called Fuming Sulfuric Acid, which is listed in Appendix A of the PSM standard, has no upper limit of 80%. A process which contains a TQ of 1000 pounds (453.6 kg) or more of Fuming Sulfuric Acid (65% by weight or greater Sulfur Trioxide SO3), is PSM covered.
LaRue LoI 06/24/1993, and Regional Administrators LoI 07/18/2016

2. 1910.119(a)(1)(ii) – Flammables

QA-16: Are the quantities of flammable liquids (Flash Point < 100°F) and flammable gasses (Category 1) combined to determine if a TQ has been exceeded?

Response: No. To determine whether there is a TQ or greater amount at any one point in time, flammable liquids contained in a process are considered aggregate. The same criteria apply to flammable gases. From an aggregate standpoint, flammable liquids and flammable gases are treated separately. Also, the HHCs, listed in Appendix A as toxics are treated separately and aggregated individually for coverage purposes.
Anicello LoI 02/15/1994, and Kunst LoI 07/18/1994

QA-17: For processes involving flammable gas mixtures, are the non-flammable components in the mixture included when determining the TQ?

Response: Yes. The non-flammable components in the mixture are included in the TQ. If the mixture meets the criteria in Section 1910.119(a)(1)(ii) for a flammable gas, the mixture quantity is used to determine if there is a TQ.

QA-18: A mixture consisting of 2,000 pounds of fine, non-soluble, non-combustible solid, and 8,000 pounds of a flammable liquid is contained in a process. Is the total mass of the mixture (i.e., consisting of a fine, non-soluble, non-combustible solid combined with a flammable liquid) considered when determining if a TQ is present in a process? The mixture meets the definition of "liquid" in Section 1910.106(a)(17), has a flash point less than 100°F, and contains more than one percent flammable components.

Response: Yes. If the mixture meets the criteria in Section 1910.119(a)(1)(ii) for a flammable liquid, the mixture quantity is used to determine if there is a TQ. Here, the mixture has a flashpoint of less than 100°F, which meets the definition of a flammable liquid, and a TQ exists in the process. Therefore, the total amount of flammable liquid is 10,000 pounds, even if some component(s) of the mixture alone would not meet the required flash point.
Kaster LoI 05/21/2009

QA-19: Does the PSM standard apply to the distilling industry in North American Industry Classification System (NAICS) 312140?

Response: Yes, however, under an enforcement policy (Taylor LoI 03/14/2003), OSHA does not currently enforce the PSM standard in the distillery industry, NAICS 312140, unless there is an employee fatality or catastrophe involving a process that uses ethyl alcohol, also known as ethanol.
Taylor LoI 03/14/2003

QA-20: Is Dowtherm, a heating medium that is heated to approximately 600°F and operated at a low pressure of 30 pounds per square inch gauge (psig) with a flashpoint of approximately 400°F, covered by PSM?

Response: No. A flammable liquid is any liquid having a flashpoint below 100°F and Dowtherm as described has a flashpoint greater than 100°F.
Hamsayeh LoI 01/26/1994

QA-21: Methyl chloride is a flammable gas and is listed as an Appendix A HHC with a TQ of 15,000 pounds. Is it only covered when a process contains greater than 15,000 pounds?

Response: No. The TQ used in determining PSM coverage is the lower of the following amounts: the TQ specified in Appendix A or 10,000 pounds. In this case, it would be PSM covered based on the TQ of flammable gas of 10,000 pounds.
Kunst LoI 07/18/1994

QA-22: Are biodiesel plants PSM covered?

Response: Yes. Biodiesel plants and processes within can be PSM covered if the process involves a HHC at or above the specified TQ listed in Appendix A or involves flammable liquid or gas on site in one location, in a quantity of at least 10,000 pounds. Biodiesel production processes generally involve the catalyzed esterification of vegetable oils or greases (of either animal or vegetable origin) with a flammable alcohol(s), such as methanol (methyl alcohol), in a batch reactor. However, the process may be exempt from PSM-coverage if the flammable liquids used in the biodiesel manufacturing process are stored in atmospheric storage tanks "which are kept below their normal boiling point without benefit of chilling or refrigeration" in accordance with Section 1910.119 (a)(1)(ii)(B) or if other PSM exemptions apply. However, tanks used for mixing or blending using agitator and pump-around methods, heating, cooling, filtration, clarification, or similar purposes are PSM covered. Therefore, their contents are included when determining if at least 10,000 pounds of flammable materials are contained in the process.
Bacci LoI 03/19/2012, Riggs LoI 09/26/2008

Scenario A-23, A-24, and A-25: An employer stores consumer aerosol products in metal containers at their warehouse. The aerosol containers store up to 33 total ounces per container of aerosol product (i.e., in items such as shaving cream, hair spray, antiperspirant, and their associated flammable gas propellants). The flammable gas propellants used in the aerosol are typically butane, iso-butane, and propane. The warehouse is not a retail facility or an aerosol manufacturer. The warehouse ships these aerosol products to retail facilities. The warehouse is in-compliance with building and fire code requirements, for the storage of consumer aerosol products, including the National Fire Protection Association (NFPA) 30B, Code for the Manufacture and Storage of Aerosol Products, and the International Fire Code.

This warehouse operation includes inventories of flammable gas aerosol containers that may fluctuate, such that the quantities stored are greater than the TQ for flammable gasses (≥10,000 pounds), and other times the quantities are less than the TQ. Given the need for fluctuating inventories the employer has not instituted control measures to keep the inventory below TQ.

QA-23: Is the storage of consumer aerosol products in the warehouse required to comply with the PSM standard if the aggregate weight of flammable gas propellants in the stored aerosol containers exceeds 10,000 pounds?

Response: Yes. The stored consumer aerosol products in metal containers are a PSM-covered process based on the following:

- Flammable gases (e.g., butane, iso-butane, and propane) are PSM covered highly hazardous chemicals (HHCs). Although each aerosol container holds only a small quantity of flammable gas, since the containers are co-located (i.e., containers are near each other), the individual amounts of flammable gas must be aggregated to determine if a TQ exists. In addition, since the containers are co-located such that an incident (e.g., fire) in one process (i.e., small container) could cause the potential release of HHC in another container, these containers are a single PSM-covered process. Therefore, the individual amounts of flammable gas in the co-located aerosol containers, must be aggregated.

- Storage and on-site movement are a PSM-covered process activity; and

- No PSM exemptions apply.

Even though the warehouse complies with building and fire code requirements for the storage of consumer aerosol products, an employer cannot use engineering controls and administrative controls to exclude coverage of a PSM process. However, these codes can be used as recognized and generally accepted good engineering practices (RAGAGEP) to document compliance with Oregon OSHA's PSM requirements in Section 1910.119(d)(3)(ii).
Clark LoI 02/28/1997, Olesen LoI 02/01/2002, and Ordile LoI 06/28/2019

QA-24: Assuming the net weight listed on the aerosol container is the weight of the total amount of product and flammable gas propellant in the container, is there a method to compute the aggregate quantity of the flammable gas in the aerosol cans in Scenario A23, A-24, and A-25?

Response: Yes. A facility could: 1) determine the weight of flammable gas propellant that is filled into each of the aerosol cans by either checking the safety data sheet (SDS) of the product or by contacting the manufacturer(s) of the aerosol cans; then 2) multiply the number of cans that are co-located by the weight of flammable gas per can to determine if that amount exceeds the TQ. If the amount of flammable gas exceeds the TQ, a PSM-covered process exists.
Ordile LoI 06/28/2019

QA-25: Is the warehouse operation described in Scenario A-23, A-24, and A-25 a PSM-covered process even when the inventory is less than the TQ?

Response: No. However, if, at any single point in time, a process contains equal to or greater than a TQ of a HHC, the process is PSM covered and all the elements of the PSM standard must be in place. If the employer intends to limit the quantity of HHC (i.e., below the TQ) in a process to avoid being PSM covered, they must be prepared to demonstrate that the process always contains HHCs in an amount less than the TQ.
Kuiper LoI 06/01/1994, and Ordile LoI 06/28/2019

Scenario A-26: A liquified petroleum gas (LPG) bottle filling process fills consumer size LPG containers, typically used in gas fueled barbecue grills, for wide area distribution.

The facility sells the containers, not to end users, but to large retail distributers/stores (e.g., home improvement centers, convenience stores, etc.). The containers each have a volume of about five gallons and hold less than 20 pounds of LPG.

The facility meets the NFPA Standard for the Storage and Handling of Liquefied Petroleum Gases, NFPA 58, and 29 CFR 1910.110, Storage and Handling of Liquefied Petroleum Gases. Bulk LPG stored on-site exceeds 10,000 pounds in an isolated tank farm. LPG is pumped underground to the production building. The production building is dedicated to inspecting and reconditioning returned bottles and automatic filling of new and reconditioned bottles followed by quality assurance inspection. Finished product bottles are stored in an open sided building remote from both LPG bulk storage and the production building. Bottle reconditioning and filling activities are isolated from each other by the requisite separations in accordance with NFPA 58 and 29 CFR 1910.110.

QA-26: Does the PSM standard apply to this LPG bottle filling process?

Response: Yes. This LPG bottle filling process is covered by PSM. LPG is a PSM-covered material – flammable gas. Requisite activities are conducted which define a covered process such as storage, on-site movement, and handling. Greater than a threshold quantity of flammable gas exists in the process. The covered process includes at least the LPG bulk storage tank(s) and the interconnected bottle filling operation. The retail exemption does not apply to this facility. The LPG is stored in large vessels in a tank farm. A release from such a storage vessel would likely be large and uncontrolled. Note that equipment that is interconnected utilizing underground piping does not negate the interconnected relationship. The finished product storage area could be a covered process by itself if it contains an aggregate quantity of LPG greater than 10,000 pounds. Furthermore, if the operation contains interconnected and/or separate vessels (e.g., bottle reconditioning or finished product storage area) which are located such that the LPG could be involved in a potential release, then such interconnected and/or separate vessels would be considered part of the covered process.
Slaughter LoI 03/14/2000, and Regional Administrators LoI 04/30/2018

a. 1910.119(a)(1)(ii)(A) – Hydrocarbon Fuels

Scenario A-27: The employer has methane collection systems which includes an anaerobic digester to collect methane gas from the biological conversion of organic wastes. Large to mid-sized systems often contain more than 10,000 pounds of methane. The anaerobic digesters are interconnected and supply methane as a fuel for on-site boilers, pump engine drivers, gas turbines, etc. All the methane from the anaerobic digesters is used on-site solely as a fuel.

QA-27: Are the methane collection systems described above PSM covered?

Response: No. Although methane is a flammable gas as defined in Section 1910.119(a)(1)(ii), and the process contains a TQ of flammable gas, the process is not PSM covered because the methane is used solely for workplace consumption as a fuel, see Section 1910.119(a)(1)(ii)(A). As a result, the methane collection system is exempt from the PSM standard because the methane is used as a fuel and is not a part of a process containing another HHC covered by the PSM standard.
Adams LoI 09/21/2000

QA-28: 350-gallon totes containing flammable liquids are used at a facility to refuel vehicles. Are they covered by the PSM standard?

Response: No. Section 1910.119(a)(1)(ii)(A) exempts hydrocarbon fuels used solely for workplace consumption as a fuel. These flammable liquids are, however, covered under Oregon OSHA's flammable liquids standard, Section 1910.106.

S*cenario A-29*: Greater than 10,000 pounds of liquefied petroleum gas (LPG) (i.e., liquid propane) are stored in pressure vessels. These pressure vessels provide fuel to and interconnect with a thermal oxidizer. The thermal oxidizer is an air pollution control device used to treat a sulfur-containing vent stream. The thermal oxidizer is connected, through vent piping, to an otherwise PSM-covered process.

QA-29: Is the LPG process PSM-covered process?

Response: Yes. The propane storage, piping, and thermal oxidizer are a PSM-covered process since there is a TQ of flammable gas and there is interconnection to a PSM-covered process. Therefore, the hydrocarbon fuels exemption in Section 1910.119(a)(1)(ii)(A) does not apply. Neville LoI 02/13/1995, and Neville LoI 02/23/1995

QA-30: Does the PSM standard apply to gasoline used as a fuel to test and run inboard and outboard engines?

Response: No. The PSM standard does not apply to such a situation. In this case, the gasoline, a hydrocarbon fuel, is used solely for workplace consumption as a fuel and thus meets the exemption in Section 1910.119(a)(1)(ii)(A). In addition, the gasoline is not part of a process containing another HHC covered by the PSM standard. However, other Oregon OSHA standards, such as Oregon OSHA's flammable liquid standard, Section 1910.106 may apply. Trinkl LoI 09/16/1992

QA-31: Does hydrogen used as a fuel for powered industrial trucks qualify for the hydrocarbon fuels exemption?

Response: No. Hydrogen is not a hydrocarbon and therefore does not qualify for the hydrocarbon fuels exemption. Hydrogen does not meet the definition of hydrocarbon as defined in Hawley's Condensed Chemical Dictionary, 14th Edition, 2001, "an organic compound consisting exclusively of carbon and hydrogen." Hydrogen presents unique thermodynamic and combustion properties not envisioned in the preparation of the hydrocarbon fuels exemption. Therefore, processes containing a TQ of hydrogen used as a fuel must meet all requirements of the PSM standard. However, if a hydrocarbon fuel (e.g., propane) was used for vehicle refueling of the powered industrial trucks, it would qualify for the hydrocarbon fuels exemption. Wilkins LoI 02/04/2013

QA-32: Does the PSM standard apply to ceramic manufacturing facilities using propane in amounts exceeding the TQ as the fuel for firing ceramic ware in a process which does not involve any other HHCs?

Response: No. The PSM standard does not apply to such a situation. In this case, the hydrocarbon fuel is used solely for workplace consumption as a fuel and thus meets the hydrocarbon fuels exemption in Section 1910.119(a)(1)(ii)(A). In addition, the fuel is not part of a process containing another HHC covered by the PSM standard. However, other Oregon OSHA standards, such as Section 1910.110, Liquified Petroleum Gases, may apply. Marvin LoI 08/28/1992

QA-33: Does the PSM standard apply to a plant that has more than TQ of hydrocarbon fuel on site where the fuel is used solely as a fuel for a furnace used to melt glass?

Response: No. The PSM standard does not apply to such a situation. In this case, the hydrocarbon fuel is used solely for workplace consumption as a fuel and thus meets the hydrocarbon fuels exemption in Section 1910.119(a)(1)(ii)(A). In addition, the fuel is not part of a process containing another HHC covered by the PSM standard.
Cole LoI 10/22/1992, and Orth LoI 08/19/1993

Scenario A-34: Public display of flame effect systems are one or more visible or sensory flame producing effects used for entertainment purposes at theme parks, concerts, shows or theatrical, musical, or other performing arts productions before an audience. The basic components of a flame effect system are piping, valves (manual and automatically controlled), ignition method, and sometimes storage vessels. These flame effects may be fueled by natural gas, propane, or other flammable gas or liquid hydrocarbon fuels. The flame effect may be installed and attached permanently to a hydrocarbon fuel supply such as a natural gas distribution piping system or a propane storage container(s) or be portable in nature and moved/transported to various locations and attached to a permanent or portable fuel supply before use during a specific period of entertainment. The flammable gases or liquids in use may be connected to storage or pipeline containing quantities more than the TQ. Use of the flame effect results in a consumption of the fuel at the workplace or on site and are dedicated systems not a part of any other system or process.

QA-34: Does PSM apply to public displays of flame effect equipment which contain flammable gases more than the TQ?

Response: No. PSM does not apply to flame effect equipment (i.e., piping, valves, an ignition system, and storage vessels) that contain flammable gases greater than the TQ. The natural gas (i.e., hydrocarbon fuel) is exempt in accordance with Section 1910.119 (a)(1)(ii)(A) since it is used solely for workplace consumption and is not part of a process containing another HHC covered by the PSM Standard.
Renfrew LoI 05/16/1997

QA-35: A facility uses annealing furnaces where large coils of rolled aluminum sheet, weighing up to 30,000 pounds, are placed in ovens. The coils are left in the ovens for several hours. The ovens are fueled by propane stored on site at greater than the TQ. The process does not include any other HHCs listed in Appendix A. Would the process qualify for the hydrocarbon fuels exemption?

Response: Yes. The propane used as a fuel for the furnaces is used solely for workplace consumption as fuels and are not part of a process containing another HHC, so it qualifies for the hydrocarbons fuel exemption.
Evans LoI 09/14/1995, and Zoll LoI 04/14/1993

QA-36: An employer has aluminum melt furnaces. These furnaces and boiler used to make steam for the process are fueled with propane stored on site above the TQ. Chlorine is also in these processes and gaseous chlorine is pumped into liquid aluminum to react with and remove impurities. The chlorine storage connected to the process exceeds the 1500-pound TQ. Does the propane meet the hydrocarbon fuels exemption?

Response: No. The furnaces and their fuel supply systems are PSM covered. They are part of a process containing another HHC, chlorine, above the TQ and therefore are not excepted by Section 1910.119(a)(1)(ii)(A). The propane to the boiler and the boiler itself may be included if they are interconnected or co-located to the covered process such that an incident in the propane boiler could cause a release of chlorine or interfere in the mitigation of the consequences of a chlorine release.
Evans LoI 09/14/1995, Feldman LoI 01/31/2008, and Zoll LoI 04/14/1993

b. 1910.119(a)(1)(ii)(B) – Flammable Liquid Atmospheric Storage Tanks

QA-37: Are flammable liquids which are kept below their normal boiling point without benefit of chilling or refrigeration that are stored in or transferred to atmospheric tanks counted toward the 10,000 pounds TQ for a flammable liquid?

Response: No. Flammable liquids which are stored in or transferred to atmospheric tanks are not used to determine if a process contains a TQ of a flammable liquid. However, if a process other than storage or transfer is occurring, the flammable liquids would not be exempt from counting towards the TQ.
Bacci LoI 03/19/2012, Regional Administrators LoI 05/12/1997

QA-38: Does storing a flammable liquid with the benefit of chilling or refrigeration negate the atmospheric storage exemption when the flammable liquid is not required to be refrigerated to keep it below its normal boiling point?

Response: No. The process you described meets the exemption in Section 1910.119(a)(1)(ii)(B) regarding storage and transfer of flammable liquids in atmospheric storage tanks. The chemicals described do not require refrigeration to stay below their normal boiling points. The fact that an employer elects to refrigerate the chemical, for example for quality control, does not negate the exemption. However, if it was documented that the employer must use chilling or refrigeration to keep the flammable liquid below its normal boiling point, then the exemption in Section 1910.119(a)(1)(ii)(B) would not apply.
LaLumondier LoI 09/11/1995, and Miller LoI 11/14/1994

QA-39: Does storing a flammable liquid under a dry nitrogen pressure of 8-10 psig negate the atmospheric storage exemption?

Response: Yes. Tanks containing flammable liquids that operate at pressures exceeding 0.5 psig are not atmospheric tanks by the definition of atmospheric tank in the PSM standard. Therefore, the storage of the TQ of flammable liquids above 0.5 psig is a PSM-covered process.
Miller LoI 04/28/1993

QA-40: Are 55-gallon flammable liquid atmospheric storage tanks covered by the PSM standard?

Response: No. Section 1910.119(a)(1)(ii)(B) exempts PSM coverage of flammable liquids stored in atmospheric tanks or transferred kept below their normal boiling point without the benefit of chilling or refrigeration. Therefore, PSM does not apply to the storage of flammable liquids in 55-gallon drums, even if the quantity exceeds 10,000 pounds. However, such flammable liquid storage must meet Oregon OSHA's flammable liquid standard, Section 1910.106.
Gerard LoI 06/04/1992, and Virsack LoI 07/09/1999

QA-41: A process contains a TQ of flammable liquids in non-atmospheric tanks or other processes that are not storage or transfer. The process is interconnected or co-located to atmospheric storage tanks containing a flammable liquid which is kept below its normal boiling point without benefit of chilling or refrigeration. Is the atmospheric storage of that flammable liquid covered by the PSM standard?

Response: No. Flammable liquids which are stored in or transferred to atmospheric tanks are not used to determine if a process contains a TQ of a flammable liquid. However, if a process other than storage or transfer is occurring, such as manufacturing a finished product by blending components using an agitator in the atmospheric tanks, the flammable liquids would not be exempt from counting towards the TQ.
Bacci LoI 03/19/2012, and Regional Administrators LoI 05/12/1997

Scenario A-42: An employer has four large tanks in their flammable storage room. Tank sizes are between 2,000 and 6,000 gallons. When they make a batch, they order a flammable material. The flammable material is delivered by tank truck and pumped into one of the tanks. In some instances, quantities exceed 10,000 pounds. Other ingredients (non-flammables) are added to the tank and materials are mixed via a permanently mounted agitator. The final flammable liquid mixture is pumped to a dispensing and packaging operation via fill lines, where it is transferred to five gallon containers.

QA-42: Does the PSM standard apply to the above scenario?

Response: Yes. PSM applies to the process for the following reasons:

- A HHC is present in the process in amounts greater than the TQ,

- The facility conducts requisite activities that define a PSM-covered process (e.g., manufacturing and handling) including blending using agitator and pump-around methods, and

- The facility uses the tanks to perform a process operation (blending) and the exemption for flammable liquids stored in atmospheric tanks does not apply.

Bacci LoI 03/19/2012

Scenario A-43: An aluminum rolling mill contains an aluminum sheet coating line where the aluminum sheet is passed through a piece of equipment that applies a flammable liquid paint on the sheet. The entire system holds less than the TQ of 10,000 pounds of flammable liquids. However, the coating line is interconnected by a pipeline to a storage room where flammable coatings are mixed, blended, and stored in process tanks. The storage room has process tanks that involve mixing and blending of flammable liquid paints. Typically, the flammable paints are processed below their normal boiling points (i.e., no chilling or refrigeration is provided). The amount of flammable liquids in the process tanks, coating equipment and the interconnecting piping when aggregated contain a TQ or greater amount of flammable liquids.

QA-43: Does the PSM standard apply to the coating process which involves mixing and blending of flammable liquid paints inside atmospheric tanks?

Response: Yes. The coating process consists of tanks, coating equipment and interconnected piping that when combined contain a TQ or greater amount of flammable liquids. Although the flammable liquid is in atmospheric tanks, the exemption in Section 1910.119(a)(1)(ii)(B) for storing flammable liquids in atmospheric tanks does not apply to tanks containing flammable liquids that involve mixing or blending. In this scenario, the atmospheric tanks are used for mixing and blending operations; therefore, the coating process is PSM covered.
Bacci LoI 03/19/2012, Zoll LoI 09/20/1993

QA-44: Are flammable liquids contained in atmospheric tanks in a terminal or tank farm PSM covered?

Response: No. The tanks meet the definition of flammable liquid atmospheric storage. Therefore, the tanks and their contents are exempt from coverage in accordance with Section 1910.119(a)(ii)(B) if the flammable liquid storage tanks only store or transfer the liquid. However, if a process other than storage or transfer is occurring, such as manufacturing a product by blending components using an agitator in the atmospheric tanks, the flammable liquids would not be exempt from counting towards the TQ.
Hazzan LoI 10/31/1996

QA-45: A dock is interconnected to tanks in a refinery tank farm. Flammable liquids are transferred from ships moored at the dock to the tank farm using dock side equipment. The tank farm tanks, which operate at atmospheric pressure, are interconnected to other PSM-covered process units within the refinery. Is the transfer equipment on the dock part of the PSM-covered process?

Response: No. Assuming that the flammable liquid storage tanks are interconnected to conduct storage and transfer operations where no mixing or blending occurs, the transfer equipment is exempt from coverage in accordance with Section 1910.119(a)(ii)(B).
Hazzan LoI 10/31/1996

QA-46: Suppose a gasoline (flammable liquid) storage terminal uses butane to raise the Reid-vapor pressure of gasoline during the winter months. In this scenario, the butane is delivered to the terminal by a Department of Transportation (DOT) conveyance (either a railcar or cargo tank motor vehicle (CTMV)). Is the process PSM covered?

Response: No. The process is not PSM covered for the following reasons:

The off-loading of the butane from the conveyance is covered by the DOT regulations, 49 CFR Subchapter C. Therefore, OSHA is preempted at least from PSM-coverage for the DOT conveyance.

Gasoline from a large tank is pumped through piping where the butane from the DOT conveyance while in control of the DOT covered driver, is mixed with the gasoline from the tank. Next, the gasoline/butane mixture is routed via piping back to the gasoline tank. The process only involves flammable liquid atmospheric storage tanks and associated transfer and is therefore exempt from PSM coverage.

However, if the conveyance is not covered by DOT regulations, Oregon OSHA is not preempted from PSM-coverage for the conveyance. The conveyance and mixing prior to storage would be a PSM-covered process per guidance in 7. OSH Act 4(b)(1) – Preemption by Other Agencies. Mattingly LoI 05/17/1995

3. 1910.119(a)(2)(i) – Retail Facilities

QA-47: The PSM standard does not apply to "retail facilities," Section 1910.119(a)(2)(i). Are there any industrial sectors or NAICS codes where Oregon OSHA will not enforce the PSM standard?

Response: Yes. Oregon OSHA will not issue citations under the PSM standard for employers in the following NAICS codes:

- 424510 - Grain and Field Bean Merchant Wholesalers
- 424590 - Other Farm Product Raw Material Merchant Wholesalers
- 424910 - Farm Supplies Merchant Wholesalers

Oregon OSHA expects employers in these industries to continue to comply with other applicable Oregon OSHA standards, including 29 CFR 1910.109(i) (storage of ammonium nitrate), 29 CFR 1910.111 (storage and handling of anhydrous ammonia), 29 CFR 1910.120 (hazardous waste operations and emergency response), and 29 CFR 1910.1200 (hazard communication). Oregon OSHA standard 1910.111 addresses similar types of ammonia hazards as the PSM standard.

For additional information refer to RA Memo Process Safety Management Retail Exemption Enforcement Policy and Oregon OSHA's interpretation.
Regional Administrators LoI 04/30/2018 and
https://osha.oregon.gov/OSHARules/interps/anhydrousammonia.pdf.

QA-48: Does Oregon OSHA use any criteria to determine when the retail facilities exemption in Section 1910.119(a)(2)(i) applies?

Response: Yes. Oregon OSHA exercises enforcement discretion in accordance with the following explanation from the preamble to the PSM standard:

"With respect to the exclusion of retail facilities … OSHA believed that such facilities did not present the same degree of hazard to employees as other workplaces covered by the proposal. Therefore, OSHA should not require a comprehensive process safety management system in addition to other applicable OSHA standards addressing flammable and combustible liquids, compressed gases, hazard communication, etc., for retail facilities… Certainly highly hazardous chemicals may be present in [retail] … operations. However, OSHA believes that chemicals in retail facilities are in small volume packages, containers and allotments, making a large release unlikely. OSHA received few comments disagreeing with the exemption of retail facilities (e.g., gasoline stations). OSHA has retained the exemption in the final rule." 57 Fed. Reg. 6356, 6369 (Feb. 24, 1992).

See SQ&R A-48 in Appendix B for additional information on what it means to make a large release unlikely.
Regional Administrators LoI 04/30/2018

4. 1910.119(a)(2)(ii) – Oil or Gas Well Drilling or Servicing Operations

QA-49: Are oil or gas production facilities equipped with separation, heating, or storage tanks exempt from PSM coverage under Section 1910.119(a)(2)(ii)?

Response: No. Section 1910.119(a)(ii) exempts oil or gas well drilling or servicing operations. Oil and gas well production facilities are PSM covered when they contain a TQ of a covered HHC. The exemption does not apply to oil or gas production operations. Oil production, as recognized by the petroleum industry, is a phase of well operations that deals with bringing well fluids to the surface, separating them, and then storing, gauging, and otherwise preparing the product for the pipeline. This production phase occurs after a well has been drilled, completed, and placed into operation, or after it has been returned to operation following workover or servicing. A completed well includes a ''Christmas tree'' (control valves, pressure gauges and choke assemblies to control the flow of oil and gas) which is attached at the top of the well where pressure is expected. It is at this point, the top of the well, where the PSM-covered process begins. The distance between separation equipment and the well is not a factor when determining PSM applicability for production facilities.

Once drilling and servicing activities are completed and the well(s) are put into production, the exemption in Section 1910.119(a)(2)(ii) no longer applies. However, other exemptions such as the NURF exemption in Section 1910.119(a)(2)(iii) may apply. See QA-52 for start of questions addressing the NURF exemption.

QA-50: Is the PSM standard enforced for oil and gas production facilities?

Response: No. An enforcement stay for oil and gas production facilities is in place. A memorandum to RAs, dated April 11, 2000, states that OSHA "will not enforce the PSM standard at oil and gas production facilities" pending an economic analysis regarding the feasibility of compliance at oil and gas production wells. Therefore, the PSM enforcement policy for production facilities announced in 2000 only applies to facilities in Standard Industrial Classification (SIC) codes that were not covered by an economic analysis in the original PSM rulemaking. The NAICS codes subject to the future economic analysis include 211120 – Crude Petroleum Extraction and 213112 – Support Activities for Oil and Gas.

However, the enforcement stay does not apply to natural gas liquids (NGL) processing facilities, known as gas plants which include establishments in NAICS 211112 (Natural Gas Liquids)/NAICS 211130 (Natural Gas Extraction). Therefore, Oregon OSHA enforces the PSM standard over processes that recover NGLs and/or further process gas when they contain a TQ of 10,000 pounds or more of flammable gases or flammable liquids.
Regional Administrators LoI 04/11/2000, Hunter LoI 12/19/2018, Smith LoI 02/16/2005

QA-51: Does the PSM standard apply to oil or gas well drilling or servicing operations on U.S. navigable waters or Outer Continental Shelf production facilities?

Response: No. The PSM standard does not apply to oil or gas well drilling or servicing operations performed on an offshore platform located on U.S. navigable waters or the Outer Continental Shelf in accordance with Section 1910.119(a)(2)(ii).
CPL 02-01-047 02/22/2010, and (NAME WITHHELD) LoI 02/02/1993

5. 1910.119(a)(2)(iii) – Normally Unoccupied Remote Facilities

Scenario A-52: Water Treatment Plant Z has no workers permanently stationed at its plant and is located 4 miles from the main facility. Plant Z consists of a 2-million-gallon water tank, a valve/instrument house, and a chlorine building. One ton chlorine cylinders are used at the water treatment plant. The chlorine building consists of a cylinder room, a scrubber room, an emergency generator room, and a utility/storage room. Workers spend an average of 1.5 worker-hours per day checking operations, 2.5 worker-hours once a week doing routine maintenance, and 6.5 worker-hours once a month doing additional maintenance. There are no conveniences for a permanent presence at Plant Z, such as vending machines or bathroom facilities. Workers are dispatched from the main facility.

QA-52: Based on the above scenario, would Plant Z be considered a normally unoccupied remote facility (NURF)?

Response: Yes. Plant Z would be considered a NURF exempted from PSM coverage under Section 1910.119(a)(2)(iii) because of the following:

- There are no permanently stationed workers at the facility.

- Plant Z's process is an off-site wastewater treatment facility, it is not contiguous with, and is geographically remote from all other buildings, processes, or persons working at the main facility.
  Bundy LoI 05/29/1998

QA-53: Does a facility that meets or exceeds the required separation distances specified in a NFPA Code meet the term "geographically remote" in Section 1910.119(b) for NURF?

Response: No. A NURF is defined in Section 1910.119(b). Facilities meeting this definition are not contiguous with, and must be geographically remote from all other buildings, processes, or persons. The intent is to ensure that employees are isolated from the hazards. Geographically remote, when used in context of normally unoccupied and remote, means that any incident including a catastrophic release, fire or explosion in the "remote" location could not affect or impact any buildings, equipment, property, or employees at the plant site. Generally, the distance required to meet NURF exemption is much greater than the separation distances listed in NFPA standards.
Fegley LoI 02/15/2017

QA-54: Can a facility that is in a distant corner of a larger facility qualify for the NURF exemption?

Response: No. The NURF exemption does not apply to a facility that is within the boundaries of or contiguous to other operations or facilities.
Plaisance LoI 12/14/1993

Scenario A-55: Sour gas is compressed and transferred by pipeline from Facility A to Facility B. Facility A also dehydrates and stores any hydrocarbon liquids and water that are separated from the natural gas. A TQ of flammable gasses and liquids is handled at Facility A. Facility B is the gas plant for processing the sour gas. A TQ of flammable gas is handled at Facility B.
Facility A is not contiguous with Facility B and is located about 5 miles away.
Employees are stationed at Facility B where there are offices, meeting rooms, and bathrooms.
Facility A has employees that visit the facility every day for an average of 1.5 worker-hours to perform normal servicing or maintenance. Additionally, on a less frequent monthly basis, employees spend an additional 12 worker-hours on average at Facility A to perform tasks associated with more extensive maintenance and equipment repairs.

QA-55: Does Facility A qualify for the NURF exemption under situation above scenario?

Response: Yes. Facility A would qualify for the NURF exemption for the following reasons:

- Employees only work periodically at Facility A to perform necessary operating and maintenance tasks and are not permanently stationed at the facility.

- Facility A is also not contiguous with and is geographically remote from all other buildings, processes, and persons.

Based on the analysis explained in QA-52, OSHA set an expectation that employees are not permanently stationed at a facility when employees visit the site for less than an average of 1.5 worker-hours per day or a total of 14.5 worker-hours per week. In the case of Facility A, employees visit the site for operations and maintenance activities for a total of 13.5 worker-hours per week. Therefore, these are periodic visits to Facility A and the NURF exemption applies.
Smith LoI 02/16/2005

Scenario A-56: A geological underground storage facility is located on an employer's property. The underground storage facility contains flammable gas at quantities greater than the TQ. The flammable gas is used as inventory control and feeds the employer's manufacturing process. From the manufacturing process, the product, which remains a flammable gas, is routed to an interstate pipeline where it is transported to out-of-state customers.

QA-56: Is the underground storage facility and piping to the manufacturing process under the jurisdiction of US Pipeline and Hazardous Material Safety Administration (PHMSA) because it is part of the process that transports flammable gas in an interstate pipeline?

Response: No. USDOT-PHMSA has not exercised any authority under 4(b)(1) of the OSH Act, 29 U.S.C. 653(b)(1) by issuing an applicable regulation to date. Section 4(b)(1) of the OSH Act, 29 U.S.C. 653(b)(1), provides that OSHA has no authority to regulate a working condition of employees if another federal agency exercises statutory authority to prescribe or enforce a standard or regulation affecting occupational safety or health that addresses that same working condition.

Therefore, if it is used to control the inventory of flammable gas for the manufacturing process and a TQ exists, the underground storage facility is PSM covered unless or until USDOT-PHMSA exercises any authority under 4(b)(1) of the OSH Act, 29 U.S.C. 653(b)(1) by issuing an applicable regulation.
Linhard LoI 10/07/2008

6. 1910.109(k)(2) and 1910.109(k)(3) – Explosives and Pyrotechnics

QA-57: Does the PSM standard apply to pyrotechnics (fireworks) and explosives?

Response: Yes. When OSHA promulgated the PSM standard, it amended the scope of Section 1910.109, Explosives and blasting agents, by adding Section 1910.109(k). Section 1910.109(k) requires that the manufacture of explosives and pyrotechnics meet the requirements of Section 1910.119. Therefore, employers who manufacture explosives and fireworks must comply with both Sections 1910.109 and 1910.119, regardless of the quantity of explosives or pyrotechnics. In addition, the applicability of Section 1910.109 to employers who manufacture fireworks is described in Program Directive 286, Explosive Materials and Pyrotechnics: Compliance Policy for Manufacture, Storage, Sale, Handling, Use and Display.

Scenario A-58 and A-59: Employer Z manufactures automobile air bag inflation modules at its facility including some individual components of the modules. Several of the individual components are listed as Class B (Division 1.2 and 1.3) explosives by U.S. DOT, including propellant grains, gas generator propellant, sodium azide based propellants and the assembled passenger air bag restraint module. Manufacturing activities for explosive components include weighing, mixing, blending, coating, handling, and packaging. Employer Z obtained an exemption from U.S. DOT that classified the final assembled modules as a flammable solid instead of a Class B explosive.

QA-58: Does the PSM standard apply to the final assembled module described in the above scenario?

Response: No. Oregon OSHA's Explosives and Blasting Agents Standard, 1910.109(a)(3) states that "[t]he term 'explosives' shall include all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation..." In this scenario, the U.S. DOT has designated the final assembled air bag module as not an explosive. The final assembled air bag module is therefore not PSM covered.
Lancour LoI 12/30/1993, Lee LoI 06/30/1997, Roberts LoI 12/30/1993, and Rountree LoI 12/02/1994

QA-59: If the PSM standard does not apply to the final assembled modules described in the scenario, can PSM apply to any of Employer Z's explosives process?

Response: Yes. Employer Z manufacturers many of the components that become part of the final assembled modules. Several of the individual components, including propellant grains, gas generator propellant, sodium azide based propellants, etc., are classified by U.S. DOT as Class B (Division 1.2 and 1.3) explosives. Employer Z's process of manufacturing Class B (division 1.2 and 1.3) components intended to explode is, therefore, covered by the PSM standard.

The manufacturing of explosives and pyrotechnics is covered by the PSM standard as set forth in Section 1910.109(k)(2) and (k)(3), respectively. Oregon OSHA considers the manufacture of explosives to mean: mixing, blending, extruding, synthesizing, assembling, disassembling, and other activities involved in the making of a product or device which is intended to explode or contains DOT classified explosive materials as described above.
However, the PSM standard does not apply to the installation of explosive devices, such as, explosive bolts, detonating cords, explosive actuators, squibs, heating pellets, thermal batteries, ejection seat rocket motors and similar small explosive devices into larger finished products or devices that are not intended to explode (e.g., assembly of the air bag module). This type of installation is considered a handling activity covered by Section 1910.109(k).
Lancour LoI 12/30/1993, McLean LoI 12/30/1993, and Roberts LoI 12/30/1993,

QA-60: Is the manufacture of solid propellant rocket motors covered by PSM?

Response: Yes. The PSM standard covers the manufacturing of solid propellant rocket motors to be used for propulsion when such motors are classified as Class A (1.1), Class B (1.1, 1.2, 1.4) and Class C (1.1, 1.2, 1.3, 1.4) explosives by the DOT.

McLean LoI 01/31/1994

QA-61: Is the manufacture of flares to be used for battlefield illumination or for heat source protection of aircraft covered by PSM?

Response: Yes. The PSM standard applies to the manufacturing of flares when such flares are classified as Class A (1.1), Class B (1.1, 1.2, 1.4) and Class C (1.1, 1.2, 1.3, 1.4) explosives by the Department of Transportation (DOT).
McLean LoI 01/31/1994

QA-62: Employer A uses ammonium perchlorate, an Appendix A chemical, in its process. Additionally explosive compounds CycloTetraMethylene-TetraNitrimine (HMX) and nitroglycerin are used in the process. Both explosives are received from other manufacturers. HMX is dried and ground in batches up to 5000 pounds and nitroglycerin is blended with other ingredients for insertion into propellant mixes. If the product is not intended to explode and the HMX and nitroglycerin are manufactured elsewhere and delivered to the manufacturing worksite, is the process PSM covered?

Response: Yes. The PSM standard applies to employers who initially manufacture explosive materials, including nitroglycerin and HMX and to employers who further process such explosives. Additionally, the PSM standard applies to manufactured end products classified as explosives by the DOT.
McLean LoI 01/31/1994

QA-63: Employer B stores more than the TQ of ammonium perchlorate and the ammonium perchlorate is not interconnected or co-located to the other processes. The ammonium perchlorate is processed by grinding but never in amounts greater than the TQ. The ground ammonium perchlorate is added to the propellant mixes but never in amounts greater than TQ. Do these explosives manufacturing processes which contain less than the TQ PSM covered?

Response: Yes. The manufacturing (i.e., a process) of any amount of explosive, classified as such by DOT, is covered by the PSM standard.
McLean LoI 01/31/1994

QA-64: Is the re-packaging from bulk containers to smaller containers of smokeless powder (DOT Class 1.3C) without mixing, blending, or otherwise changing or altering the product as received covered by the PSM standard?

Response: No. Re-packaging without mixing, blending, or otherwise changing or altering the product as received would be considered storage and handling. Under Section 1910.109(k)(2) only the manufacture of explosives is covered by the PSM standard.
Delsemme LoI 08/18/1994

QA-65: If an explosive manufacturing process does not have the associated mechanical equipment that is listed in the rules such as pressure vessels, storage tanks, piping systems, relief or vent systems, and devices or pumps, is it covered by the PSM standard?

Response: Yes. The employer must determine the boundaries of the process used to manufacture the explosive device. A PSM-covered process may include equipment within the facility which may or may not contact the explosive, or explosive device components, during the manufacturing activity. Note that the process hazard analysis (PHA) required by Section 1910.119(e) of the PSM standard would help determine the scope of process coverage within the facility including manufacturing hardware and associated equipment used to operate and control the process. See OSHA Publication 3912-03 (2017) Process Safety Management for Explosives and Pyrotechnics Manufacturing for additional information.
Mannan LoI 05/25/1994

QA-66: Is there a TQ for explosives?

Response: No. The manufacturing of explosives in any amount is covered by the PSM standard.
Mannan LoI 05/25/1994

QA-67: Is using explosives PSM covered?

Response: No. Only the manufacture of explosives is covered. The activity of "use" (see the Section 1910.119(b) definition of process) does not apply to explosives unless the explosive is otherwise covered by the PSM standard as a flammable liquid or gas, pursuant to Section 1910.119(a)(1)(ii), or as a highly hazardous chemical listed in Appendix A, pursuant to Section 1910.119(a)(1)(i).
Mannan LoI 05/25/1994

QA-68: Does the Bureau of Alcohol, Tobacco, and Firearms (ATF) have a role in fireworks manufacturing?

Response: Yes. ATF regulates the storage of fireworks, subject to exemptions in 27 CFR Part 555, including minimum separation distances. See 27 CFR 555 Subpart K. Therefore, where ATF regulates the storage of fireworks, OSHA is preempted from enforcing the PSM standard for pyrotechnic storage in accordance with Section 4(b)(1) of the OSH Act. ATF does not regulate the manufacturing of fireworks.
Schulte MoU 08/08/1974

QA-69: Is the assembly of fireworks/pyrotechnics at a pyrotechnic manufacturing facility PSM covered?

Response: Yes. The manufacturing of explosives is subject to PSM requirements. Pyrotechnics are a subset of explosives, and Oregon OSHA considers the manufacturing of explosives to include assembly. Therefore, the assembly of fireworks/pyrotechnics is PSM covered.
White LoI 02/04/1998

QA-70: Is the PSM standard preempted by ATF for fireworks or explosives?

Response: No. ATF does not regulate the manufacturing of fireworks or explosives. By 27 CFR Part 555 Subpart K, ATF regulates the storage, including minimum distances, of explosive materials including fireworks in the workplace, subject to exemptions in 27 CFR Part 555.

7. Interface with Other Agencies

QA-71: Does Oregon OSHA have jurisdiction over employers that manufacture explosives and pyrotechnics at contractor-owned contractor-operated munitions facilities and are these facilities covered by the PSM standard?

Response: Yes. Oregon OSHA has jurisdiction at contractor-owned contractor-operated munitions facilities that manufacture explosives and pyrotechnics. The manufacturing processes at these facilities are covered by the PSM standard; however, OSHA may be preempted under section 4(b)(1) of the OSH Act where other federal agencies' regulations address working conditions. For more information, see SQ&R A-71 in Appendix A and Program Directive A-206, Explosive Materials and Pyrotechnics: Compliance Policy for Manufacture, Storage, Sale, Handling, Use and Display.
Ludlow LoI 06/15/1992

Scenario A-72 to A-77: A rail car with greater than a TQ of a HHC is delivered by the railroad carrier to Company A's private track. The rail car is then used to feed Company A's process. The process equipment downstream of the rail car does not have the capacity to contain a TQ of the HHC.

QA-72: Is storing the rail car on Company A's private track a PSM-covered process?

Response: Yes. Storage of a freight container or transport vehicle containing a TQ of a HHC with no exemptions is a PSM-covered process. After its delivery by a carrier, or, in the case of a rail car, storage of a rail car on private track, the container is not covered by DOT's Hazardous Material Regulations (HMR) in 49 CFR Subchapter C. The rail car is no longer "in-transit" because it has been delivered on Company A's private track and the motive power has been disconnected.

OSHA has stated that commercial railroad tank cars and CTMVs are covered by the PSM standard to the extent that they are not covered by any other regulatory authority. For example, the DOT HMR covers rail cars. These DOT regulations cover rail car design, construction, maintenance (including repairs) and certain operations. In general, if the rail cars are considered "in transit" by DOT, OSHA would defer jurisdiction to DOT. Therefore, if the rail car is no longer "in-transit" because it is located on a private siding or track and the motive power is disconnected, the rail car is PSM covered. See 49 CFR § 171.1 for definition of private siding or track.
Anicello LoI 02/15/1994, and Schneider LoI 07/11/1994

QA-73: If the rail car contained a flammable liquid with a flashpoint below 100°F and is normally kept at atmospheric pressure inside the rail car, would the flammable liquids be exempt from PSM coverage in accordance with the flammable liquid atmospheric storage tank exemption in Section 1910.119(a)(1)(ii)(B)?

Response: No. Relief valves provided on DOT-compliant rail cars are, generally, set significantly higher than 0.5 psig. Tanks containing flammable liquids designed to operate at greater than 0.5 psig are not atmospheric tanks. Therefore, the storage of a TQ of flammable liquids on Company A's private track or siding is a PSM-covered process.
Marchlik LoI 08/16/1996, and Schneider LoI 07/11/1994

QA-74: After the rail car is connected to the downstream process, is the downstream equipment part of the PSM-covered process?

Response: Yes. The rail car containing a TQ of a HHC is a PSM-covered process. Therefore, all the interconnected downstream equipment that contains the HHC is part of the PSM-covered process. Anicello LoI 02/15/1994

QA-75: If a rail car or a CTMV is delivered to Company A's facility and the motive power is disconnected, would this be a PSM-covered process?

Response: Yes. Like the rail car jurisdiction discussed in QA-72, a CTMV that contains at least a TQ of HHC delivered by the carrier and stored on Company A's property is under OSHA jurisdiction. Therefore, the trailer containing the HHC is a PSM-covered process assuming no exemptions apply. DOT regulations, generally, require the set point of pressure relief valves containing flammable liquids to be higher than the 0.5 psig for CTMVs. Therefore, Company A's storage of flammable liquids in the CTMV does not qualify for the flammable liquid atmospheric storage tank exemption in Section 1910.119(a)(1)(ii)(B).
Schneider LoI 07/11/1994

QA-76: For the rail car and CTMV in QA-72 and QA-75, Employer A does not own nor maintain them. Does Employer A need to comply with the mechanical integrity (MI) requirements (Section 1910.119(j)) when the rail car or CTMV becomes part of the PSM-covered process?

Response: Yes. OSHA considers the rail car and CTMV equipment (i.e., pressure vessel or storage tank) in the process in accordance with Section 1910.119(j)(1). All equipment in the process, regardless of ownership, must be included in the facility's MI program. Schneider LoI 07/11/1994, and Anicello LoI 02/15/1994

QA-77: Does Employer A need to include the rail car and CTMV that are addressed in QA72 and QA-75, in the PHAs?

Response: Yes. If the employer determines that the rail car or CTMV is part of the PSM-covered process, the rail car and CTMV must be included in their PHA.
Schneider LoI 07/11/1994

Scenario A-78: A CTMV containing greater than the TQ of a HHC arrives at Company B. Company B's process equipment does not contain at least the TQ. During the unloading process, the motive power stays attached to the trailer of the CTMV, and the driver remains in the loading area.

QA-78: When the CTMV is interconnected to Company B's process, would this be a PSM-covered process?

Response: No. Even though the CTMV and Company B's process are interconnected, and the combined system contains greater than a TQ of HHC, the loading and unloading of HHC into the CTMV while in control of the DOT covered driver is still considered "in-transit" and under DOT jurisdiction. Therefore, Oregon OSHA does not include the quantity inside the CTMV as counting towards the TQ.

Where the DOT has jurisdiction over CTMV unloading, the unloading must be attended by a qualified person who may be the CTMV driver in compliance with the Hazardous Material Regulations, 49 CFR § Subchapter C – Hazardous Materials Regulations. Anicello LoI 02/15/1994

Scenario A-79: Hydrogen peroxide at 60% by weight is delivered to a process by a CTMV. The CTMV driver, with no involvement of work site employees, dilutes the hydrogen peroxide downstream of the delivery hose, by mixing water and injecting the water upstream of the storage tank. There is less than the TQ of 7500 pounds of the hydrogen peroxide in the process at any point in time.

QA-79: Would the dilution of the HHC below its covered concentration (52%) prior to the material entering a storage tank be considered a PSM-covered process?

Response: No. The unloading of the hydrogen peroxide by a CTMV driver is a DOT covered transportation function. Since the unloading activity is under DOT jurisdiction, OSHA does not include the amount inside the CTMV towards the TQ when determining if a PSM-covered process exists. Since the hydrogen peroxide was diluted below 52% prior to entering the storage tank, it is not PSM covered. Bierlein LoI 09/08/1993, and Tappan LoI 09/09/1993

QA-80: Does Oregon OSHA's Section 1910.269 standard, Electric Power Generation, Transmission, and Distribution preempt application of the PSM standard to electrical utility systems at facilities with PSM-covered processes?

Response: No. The regulatory text and the preamble provide that OSHA did not intend for the Section 1910.269 standard to preempt the application of the PSM standard. Feldman LoI 01/31/2008

QA-81: Does PSM apply to LNG export facilities?

Response: No. OSHA's PSM Standard does not apply to LNG export facilities, subject to DOT PHSMA's LNG Federal Safety Standards, 49 CFR Part 193. OSHA is preempted by DOT regulations at 49 CFR Part 193 which address the same working conditions. Pursuant to Section 4(b)(1) of the OSH Act, OSHA's PSM Standard does not apply to LNG facilities unless a 49 CFR § 193.2001(b) exemption applies.

For example, 49 CFR § 193.2001(b)(2) exempts PHMSA from covering "LNG facilities used in the course of natural gas treatment or hydrocarbon extraction which do not store LNG." Therefore, OSHA's PSM Standard may apply to LNG pretreatment plants located offsite or beyond the property boundary of a LNG export terminal which involve natural gas treatment, or hydrocarbon extraction facilities that do not store LNG.
(NAME WITHHELD) LoI 04/27/2021

QA-82: Does the PSM standard apply to laboratory and research operations involving at least the TQ of one or more HHC?

Response: Yes. When a laboratory or research operation includes a process with a least a TQ of a HHC, the process is PSM covered.
Reamv LoI 06/24/1992

QA-83: An employer operates a chemical research and development program using a small chemical laboratory and an open-air pilot plant. The facility does not use or store any Appendix A HHCs more than the TQ, and only has a TQ of flammable liquids in atmospheric storage tanks and not in any process connected to the flammable liquid storage. Is the employer required to comply with the PSM standard?

Response: No. The employer is exempt from PSM coverage because the flammable liquids are in atmospheric tanks which are kept below their normal boiling points without benefit of chilling or refrigeration liquids.

In addition, the facts regarding the laboratory and pilot plant processes and the product not being offered for commercial sale have no bearing on the scope and application of the PSM standard. Laboratories and research facilities are not exempt from the PSM standard when they have processes that contain a TQ or greater amount of a HHC.
Moeller LoI 02/11/2003

QA-84: Does the PSM standard apply to the U.S. Environmental Protection Agency (EPA) regulated and permitted Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities, when such facilities have TQ of a HHC?

Response: Yes. Employers with treatment, storage, and disposal facilities which contain covered processes must comply with the PSM standard.
Walker LoI 12/21/1992

QA-85: Is a publicly owned treatment works that operates a methane collection system and supplies methane solely as a fuel for on-site boilers, pump engine drivers, and gas turbines a PSM-covered process?

Response: No. The hydrocarbon fuels exemption in Section 1910.119(a)(1)(ii)(A) applies since the methane is used solely for workplace consumption as a fuel.

However, if other HHCs exist at the facility, the employer may be required to comply with PSM for the entire methane system based on the methane system's interconnection and/or proximity to other covered HHCs. If the process is covered, the contract employees would be PSM covered. Based on the type and extent of their work activities, contract employers must control hazards related to specific requirements of PSM and comply with Section 1910.119(h)(3).
Adams LoI 09/21/2000

B. 1910.119(b) – Definitions

QB-01: Can a facility contain more than one process?

Response: Yes. A facility is defined by the PSM standard in Section 1910.119(b) as the buildings, containers or equipment which contain a process.

QB-02: For determining PSM coverage, does "on site in one location" mean the process must be under the control of a single employer?

Response: No. This term means that the standard applies when a TQ of a HHC exists within contiguous areas under the control of an employer, or group of affiliated employers, in any group of vessels that are interconnected, or in separate vessels that are located in such proximity (i.e., co-located) that the HHC could be involved in a potential catastrophic release, as indicated in the regulatory definition of "process." The term "contiguous" has been found to mean either "nearby" or "in actual contact" in terms of the application of the PSM standard. Federal Register LoI 06/07/2007

QB-03: To determine if a process contains a TQ and is covered by the PSM standard, do employers need to determine if HHCs in separate/co-located equipment count toward the TQ amount?

Response: Yes. Quantities of a particular covered HHC contained in vessels that are in separate unconnected vessels (i.e., co-located equipment) that could be involved in a potential release must be combined to determine if a TQ of HHC exists. If the TQ is exceeded by the combination of the amount in separate equipment (e.g., vessels, tanks, piping,) then all the equipment may be considered one (or more) process(es).
Federal Register LoI 06/07/2007

QB-04: Can an employer who stores or uses a TQ or greater of HHCs (i.e., a process) and segregates the HHC into smaller lots or containers in separate systems or locations, be exempt from the requirements of the PSM standard?

Response: Yes. The PSM standard does not apply to an employer who segregates their processes such that each process contains less than the TQ and are located such that HHCs in one process could not be involved in a potential HHC release from a different covered process. Segregation requires ensuring that processes are not interconnected or co-located.
Atwood LoI 09/01/1992, Clark LoI 02/28/1997, and Kohlhauff LoI 09/27/1994

QB-05: Can blending, mixing, or agitation affect coverage under the PSM standard?

Response: Yes. Blending, mixing, and agitation can affect coverage under the PSM standard.

For example, if a facility has an atmospheric storage tank that contains a TQ of a flammable liquid and performs blending, mixing, or agitation inside the tank, the exemption at Section 1910.119(a)(1)(ii)(B) does not apply. A process as defined at Section 1910.119(b) exists and the requirements of the PSM standard apply to the tank and its contents. For more information, see QA-43 and SQ&R B-05 in Appendix A.
Bacci LoI 03/19/2012, and Mannan LoI 10/25/1995

QB-06: Concerning the physical limits of a PSM-covered process, would a storage tank which is hard-pipe connected to the process be considered part of the process?

Response: Yes. By the definition of process defined at Section 1910.119(b), a storage tank interconnected to a process is considered part of the PSM-covered process provided no exemptions apply.
Barker LoI 04/28/1994

QB-07: Can employers use engineering and administrative controls to prevent a catastrophic release of a covered HHC to determine the boundaries of a process?

Response: No. Employers cannot use engineering and administrative controls to prevent a catastrophic release of a covered HHC to determine the boundaries of a process as defined in Section 1910.119(b).
Clark LoI 02/28/1997, and Feldman LoI 01/31/2008

QB-08: Can mitigating devices such as excess flow valves, be used to isolate a part of an interconnected PSM-covered process containing less than a TQ of a HHC to avoid coverage by the PSM standard?

Response: No. Fires and explosions can occur in the process despite the presence of engineering controls (e.g., mitigating devices) and administrative controls (e.g., operating procedures). Therefore, these controls may not be used to determine the boundaries of a PSM-covered process.
Schneider LoI 07/11/1994, and Clark LoI 02/28/1997

QB-09: Does the presence of a double block and bleed in a pipeline (i.e., a pipeline containing two closed valves, with a vent open in between) or a temporary flexible hose running between two vessels affect interconnection?

Response: No. A double block and bleed arrangement in a pipeline containing two closed valves between which they are vented (i.e., bled open to the air) is interconnected as this term is used to define a process in Section 1910.119(b). Engineering and administrative controls may not be used to determine the boundaries of a process. Interconnection includes hard piping and temporary flexible hoses between two vessels when they are connected.
Evans LoI 09/27/1995

QB-10: Does the PSM standard apply to a tank that is interconnected to a PSM-covered process if it can be isolated from the PSM-covered process by a valve?

Response: Yes. The tank is considered part of the PSM-covered process regardless of the presence of an engineering control (i.e., isolation valve to isolate the storage tank). Engineering controls (e.g., shutoff valves) and administrative controls (e.g., operating procedures and training) required by the PSM standard to prevent catastrophic release of a covered HHC may not be used to determine the boundaries of a PSM-covered process.
Barker LoI 04/28/1994, and Clark LoI 02/28/1997

QB-11: If a tank containing HHC is isolated from the PSM-covered process by disconnection, or only occasionally connected by hoses, is the tank part of the PSM-covered process?

Response: Yes. The tank is considered part of the process because it is interconnected to the PSM-covered process provided no exemptions apply. Also, a co-located tank is considered part of the PSM-covered process when it could be affected by an incident in the PSM-covered process or could cause a release from the PSM-covered process. If the employer intends for the process to not be covered by the PSM standard, they must be prepared to demonstrate to Oregon OSHA that a TQ or greater of a HHC is not in the process at any time.
Barker LoI 04/28/1994, Clark LoI 02/28/1997, and Mannan LoI 10/25/1995

QB-12: Does Oregon OSHA have an evaluation technique or tool that is appropriate to determine adequate separation distances?

Response: No. Oregon OSHA has not developed any standard evaluation technique or tool to determine adequate distances to separate chemical inventories. If an employer chooses to separate HHC, the separation distances would have to be determined by the employer on a case-by-case basis, considering such factors as the nature and TQ of the chemicals, total inventories, process conditions, site conditions, and facility layout.

QB-13: How are the boundaries of a PSM-covered process determined?

Response: To determine the boundaries of a PSM-covered process, employers must evaluate the following:

1) the boundaries of the process(es) by using the definition of a process [Section 1910.119(b)] which includes any vessels which are connected and co-located vessels that could be involved in a potential release. Note: Employers may not use engineering and administrative controls to determine the boundaries of a PSM-covered process;

2) determine whether the process contains at any particular time a TQ or greater amount of a PSM HHC. If so, the process is PSM covered; and

3) consider each part of the process (i.e., aspect of the process) to determine the boundaries of PSM coverage for each aspect. The process containing a HHC must meet all PSM elements, such as process safety information (PSI), process hazard analysis (PHA), and mechanical integrity (MI). Aspects that do not contain HHC but are interconnected or co-located are part of the process and may or may not be PSM covered depending on whether the aspects could cause a HHC release or mitigate the consequences of a HHC release. If the specific aspects do not contain a HHC but could cause a HHC release or interfere with mitigating the impacts of a HHC release, then based on the employer's analysis, PSM applies to the aspect.

If, based on this analysis, the employer determines that interconnected equipment downstream from the PSM-covered process cannot cause a HHC release or interfere with the mitigation of the consequences of a HHC release, and the equipment does not contain a TQ or greater amount of a HHC, then such equipment is outside the limits or boundaries of the covered process.

The employer's PHA may be used to verify the boundaries of the PSM-covered process. In addition, Section 1910.119(l) - management of change (MOC) addresses anticipated changes over the life of the process. Therefore, the employer must evaluate aspects of the process affected by a change when determining the extent to which the PSM standard covers them. Unanticipated changes to a PSM-covered process could contribute to the cause of a catastrophic release or interfere with mitigating the consequences if there was a HHC release.
Clark LoI 02/28/1997, and Feldman LoI 01/31/2008

Scenario B-14: Suppose there is a nitrogen inerting system that supplies nitrogen to the headspace of an interconnected PSM-covered process (i.e., two flammable liquid storage tanks) with a greater than TQ of flammable liquid.

QB-14: Is the nitrogen inerting system part of the stipulated PSM-covered process?

Response: Yes. Based on the definition of process in Section 1910.119(b), an interconnected non-HHC aspect (i.e., part of the process) such as a utility system is part of a PSM-covered process if it could be involved in a potential release of HHC. The boundaries of the process must contain at any time a TQ of HHC.

In this scenario, the nitrogen inerting system is interconnected to the flammable liquid storage tank. It supplies nitrogen vapor to the tank headspace to control the generation of the ignitable vapor-air mixture in the tank headspace. If the nitrogen system fails, a flammable atmosphere could develop in the vessel headspace, resulting in a catastrophic release of HHC from the PSM-covered process. The nitrogen inerting system is part of the PSM-covered process because it prevents and mitigates catastrophic releases of HHC.

If an employer determines that the nitrogen system can affect or cause a release of HHC or interfere in the mitigation of the consequences of a release, then, relevant elements of PSM could apply to these parts. Oregon OSHA's position is that any engineering control, including utility systems, which meets the above criteria must be, at a minimum, evaluated, designed, installed, operated (training and procedures), changed, and inspected/tested/maintained in accordance with PSM requirements.

If an employer determines, through a PHA, that a component failure of the nitrogen system can no longer affect or cause a release of HHC or interfere in the mitigation of the consequences of the release, then, the nitrogen system, at that point, would no longer be considered part of the covered process. If an employer makes this determination, then, the employer must be able to proactively demonstrate why the nitrogen system is no longer part of the covered process.
Clark LoI 02/28/1997, and Feldman LoI 01/31/2008

QB-15: Suppose there is a steam boiler that is interconnected to other PSM-covered refinery processes. The steam boiler is fueled from the refinery gas system which collects flammable gasses and vapors from other parts of the refinery that are covered processes. Is the steam boiler part of the PSM-covered process?

Response: Yes. The steam boiler is part of the PSM-covered process for the following reasons:

- The steam boiler is interconnected to the PSM-covered process (i.e., refinery fuel gas), and the refinery gas is part of a process containing other HHC;

- the steam boiler is interconnected to the refinery fuel gas and co-located to other PSM-covered processes; and

- loss of steam downstream from the steam boiler could affect a release (e.g., steam is also used for snuffing of accumulated flammables inside a fired heater).

The boiler, through its interconnection and co-location, poses a risk of causing a release or preventing the mitigation of a release of HHC. As a result, if an employer determines that a utility system or any part of a process that does not contain a HHC can affect or cause a release of HHC or interfere in the mitigation of the consequences of a release, then relevant elements of the PSM standard could apply to these aspects (part of the process).
Clark LoI 02/28/1997, and Feldman LoI 01/31/2008

QB-16: Does the hydrocarbon fuels exemption apply to a refinery fuel gas system?

Response: No. The hydrocarbon fuels exemption in Section 1910.119(a)(1)(ii)(A) does not apply to a refinery fuel gas system since the fuel gas system is part of a process containing another HHC (natural gas from off-site). The primary determination is whether the hydrocarbon fuel is used solely as a fuel. In this case, it is not used solely as a fuel, it is also used to make steam for process applications. In the PSM final rule preamble, "[OSHA clarified] its intent not to exclude from coverage hydrocarbon fuels used for process related applications such as furnaces, heat exchangers and the like," 57 FR 6356. In this case, since the refinery fuel gas system is interconnected to the steam system and other refinery units, the refinery fuels system is part of the PSM-covered process.

QB-17: Can utility systems be part of the PSM-covered process?

Response: Yes. Utility systems can be part of the PSM-covered process for the following reasons:

- Utility systems are used to operate and are interconnected to the PSM-covered process.
- Utility systems are used to control or prevent and mitigate catastrophic releases of HHC.
- Plant utility systems are also used to operate chemical processes which may or may not be covered by PSM.

Therefore, employers must evaluate the impact of a failure of utilities in their PHA. If the employer determines that the loss of utilities could result in a potential release of HHC from the process, then the employer must determine which engineering controls, standard operating procedures, instrumentation, employee training, etc. would be necessary to prevent or minimize the potential loss of a utility from contributing to a catastrophic release. See QE-15 and QE-16 for additional details.

As a result, if an employer determines that a utility system or any part of a process that does not contain a HHC can cause a release of HHC or interfere in the mitigation of the consequences of a release, then relevant elements of PSM apply to these aspects (parts of the process). The following are examples of parts of the process that are important for preventing and mitigating catastrophic releases:

- A flexible hose connection, pump seals, vessel/tank welds, etc. that given a failure could lead directly to a catastrophic release;
- An inerting system, a utility system, a lube oil system on a large compressor, software for a distributive control system, portable combustible gas meter, etc., where the failure of a system could cause or prevent catastrophic release from occurring;
- All safety devices, both mechanical and instrumentation (e.g., relief valves and rupture disks, gas detectors, safety instrumented systems); and
- All means of limiting the potential damage (e.g., emergency equipment – fire prevention and protection systems, deluge systems, evacuation alarms, etc.).

Therefore, the employer, at a minimum, must design, install, operate (training and procedures), evaluate changes, and inspect/test/maintain parts of the process that are important for preventing and mitigating catastrophic releases. However, if an employer determines in their PHA that failure of a utility system can no longer affect or cause a release of HHC, then the utility system, at that point, would no longer be considered part of the PSM-covered process. See QB-13 for additional details on determining boundaries of a process.
Feldman LoI 01/31/2008

Scenario B-18: Two pressurized (e.g., 100 psig) storage tanks each contain propane (liquefied petroleum gas). The amount of propane in each tank is 8,000 pounds. The tanks are not interconnected. Each tank has a dike that could contain the volume of the entire tank should a release from a tank occur. The two tanks are located such that they share one dike wall (i.e., the tanks are near each other).

QB-18: Are these two propane tanks co-located and, therefore, covered under the PSM standard?

Response: Yes. When processes that are not interconnected, but are co-located (i.e., in proximity) to each other such that an incident in one process could involve the potential release of HHC in another process, these processes are considered a single process. See the definition of process in Section 1910.119(b).

In this scenario, a release from one propane vessel will likely create an ignitable vapor cloud resulting in a fire/explosion that can affect the second propane vessel. Based on the conditions of this process, the amounts of flammable gas must be combined from both tanks resulting in a single, co-located process with an amount of flammable gas that is greater than TQ (16,000 pounds > 10,000 pounds). Therefore, the process is covered under the PSM standard.
Anicello LoI 02/15/1994, Fecht LoI 03/05/2012, Federal Register LoI 06/07/2007, and FR 57:6356 02/24/1992

Scenario B-19: Two pressurized (e.g., 100 psig) storage tanks each contain ammonia, a covered HHC with a threshold quantity of 10,000 lbs. The amount of ammonia in each tank is 8,000 pounds. The tanks are not interconnected. Each tank has a dike that could contain the volume of the entire tank should a release from a tank occur. The two tanks are located such that they share one dike wall (i.e., the tanks are near each other).

QB-19: Are these two tanks co-located and, therefore, covered under the PSM standard?

Response: No. When processes that are not interconnected, but are co-located (i.e., in proximity) to each other such that an incident in one process could involve the potential release of HHC in another process, these processes are considered a single process. See the definition of process in Section 1910.119(b).

In this scenario, if a release occurred spilling ammonia into a dike, even though the tanks are co-located, there is no reasonable condition that can occur where a release from one tank can cause a release from the other tank. Therefore, in this example, there is no PSM-covered process.

Scenario B-20: A company has a warehouse for the storage and distribution of laboratory grade chemicals, flammable liquids, and formaldehyde. The company's storage and distribution operation does not include any processing, dispensing, mixing, stirring, agitation, blending, filtering, evaporating, or drying. Chemical containers can range in size from 1-liter bottles in multi-container boxes to 4-liter bottles in six container boxes. Additionally, the flammable liquids are stored in five (5) gallon metal containers at atmospheric pressure. The flammables liquids and oxidizers (formaldehyde) are stored separately in engineered flammable storage vaults. Both the flammable liquids and formaldehyde aggregate storage quantities in the vaults exceed each of their TQs. Incompatible materials are separated so that, should a container be broken, incompatible materials will not mix to form a reactive hazard.

QB-20: Does PSM apply to the warehouse operation described in the above scenario?

Response: Yes. A PSM-covered process exists in the warehouse given storage or on-site movement of at least a TQ of HHC. The storage in the engineered vault of a TQ of formaldehyde containers in one location that are co-located is a PSM-covered process.

However, the flammable liquids in this scenario are exempt from PSM coverage since the flammable liquids are kept below their boiling points in atmospheric containers without the benefit of chilling or refrigeration, see Section 1910.119(a)(1)(ii)(B). This exemption also applies to the storage of flammable liquids in small containers, even if an aggregate TQ or greater amount is stored.
Furthermore, OSHA stated that engineering controls (e.g., sprinkler systems, self-closing fire doors. etc.), and administrative controls, (e.g., operating procedures), used to prevent or mitigate a catastrophic release of a covered HHC may not be used to determine the boundaries of a PSM-covered process as defined in Section 1910.119(b). However, passive safeguards may be used to limit the boundaries of a PSM-covered process for non-interconnected equipment (i.e., co-located equipment). Passive safeguards prevent or reduce the severity of release (e.g., fire explosion, toxic release, etc.) without actions or interventions (i.e., secondary containment or a blast wall). Passive safeguards may include but are not limited to separation of processes by adequate distance, blast resistant construction, or drainage and containment dikes. Engineering controls are equipment that is physically actuated to perform its function (i.e., designed to maintain a process within safe operating limits to safely shutdown in the event of a process upset, or reduce exposure to the effects of the upset) such as instrumented protection systems. When determining if co-located equipment is part of a PSM-covered process, the employer's evaluation may account for well-designed and reliable passive safeguards. For example, if the employer's evaluation determines that a storage tank is not co-located (e.g., the likelihood of a fire impacting adjacent tank is very low) to the PSM-covered process under consideration, the storage tank would not be considered part of the PSM-covered process.

In addition, since the small containers are co-located such that an incident (e.g., fire) in one process (i.e., small container) could involve the potential release of HHC in another process, these containers are a single PSM-covered process when determining if a TQ exists.

Feldman LoI 01/31/2008, Olesen LoI 02/01/2002, and Ordile LoI 06/28/2019

Scenario B-21, B-22, and B-23: A facility uses anhydrous hydrogen fluoride (AHF) to treat plastic bottles. AHF is stored in a single story, open-warehouse type building in 80pound DOT 3AA-2400 cylinders. The process connects two full AHF cylinders (160 pounds) total in the barrier treatment area (BTA). There are two adjacent BTAs that contain an aggregate amount of either 160 or 320 pounds of AHF. The facility has two AHF cylinder storage racks located within a warehouse building that contain 24 cylinders (12 cylinders per rack) for a total AHF rack inventory of 1,920 pounds. The AHF cylinder locations include: two-cylinder storage racks on opposite sides of the warehouse building at least 120 feet (ft) apart; and the two-cylinder storage racks are at least 120 feet from the BTA(s). In some cases, there are partial racks of full cylinders located near the BTA(s). The AHF quantity in the partial racks and the BTA(s) do not exceed the TQ for AHF.

QB-21: Do DOT-rated cylinders provide an effective barrier such that each independent and unconnected cylinder of AHF constitutes a separate process for purposes of PSM coverage?

Response: No. The cylinder design cannot be used as an effective barrier when determining the boundaries of a PSM-covered process. If the aggregate amount of AHF is at least the TQ of 1,000 pounds at the facility, and the stored AHF is co-located, the facility has a PSM-covered process. The facility stores all the non-interconnected cylinders in an open warehouse with no adequate separation in the event of a warehouse fire. Should a fire occur that envelops the warehouse, the AHF cylinders would catastrophically fail and release their AHF contents. For co-located equipment to be considered a PSM-covered process, there must be a reasonable probability that an event such as an explosion or fire would affect unconnected vessels which contain at least a TQ of HHC. In general, unconnected vessels must be evaluated by the employer to determine if they would interact during an incident, and if such a reasonable condition exists these vessels would be included in the boundaries of PSM-covered process.
Crook LoI 05/02/2014

QB-22: Is storage of all AHF cylinders in one building or under the same roof, regardless of the distance between storage areas, a single PSM-covered process?

Response: Yes. For storage and use of cylinders of AHF inside an open warehouse, separation distance is likely not a determinate factor for establishing the boundaries of the PSM-covered process. If there is a reasonable probability that an event such as an explosion or fire would affect any nearby unconnected vessels, the PSM standard requires an employer to take steps to minimize the hazard of an uncontrolled release of HHC. However, in this scenario, there are no barriers to separate or protect the cylinders if a fire or explosion envelops the warehouse and its contents. See QB-20 regarding barriers. Because AHF cylinders on their own are not designed to withstand a building-wide fire, the entire contents of all the AHF cylinders could be released. As a result, if a TQ of AHF is present in the co-located cylinders, the PSM standard applies.
Crook LoI 05/02/2014

QB-23: Would the storage racks constitute separate processes if each rack were in the same building, but each rack was located behind a separate concrete block wall that is a minimum of eight feet high? If not, would the separation of the rack storage areas by 120 feet be sufficient to constitute multiple processes, or is the appropriate distance for separate processes a facility management determination? What factors should be the basis for the determination of the distance needed to establish a separate process?

Response: To adequately separate the AHF cylinder storage racks in the warehouse such that no PSM-covered process exists, the employer must consider the adequacy of any constructed barrier (i.e., firewall) to separate the storage of the AHF cylinders. The barriers must be constructed in a manner that minimizes potential for any fire or explosion hazards to the degree that a release of HHC in one storage area will not lead to the release of HHC in the other area. If the AHF storage adequately separates AHF into two or more areas such that no one area contains at least the TQ of 1,000 pounds of AHF, then OSHA would consider the storage of AHF cylinders in the warehouse not PSM covered. An effective wall that provides complete separation (e.g., up to the ceiling) between two AHF storage racks and is constructed to an appropriate fire resistant rating may be an effective barrier for separating rack storage areas. For more information about RAGAGEP and other safe practices related to the storage, handling, and use of AHF cylinders and other corrosive and toxic gas materials, see SQ&R B-23 in Appendix B.
Crook LoI 05/02/2014, Dzwierzynski LoI 12/30/1993

Scenario B-24: Process A is a PSM-covered process using more than the TQ of flammable liquids. Process A supplies a metered flow of flammable liquid through pumps and small diameter piping to Process B. Process B contains less than the TQ of flammable material and is located under one roof by one employer (i.e., on site in one location), but separated by distance with the use of fire walls from Process A (i.e., not co-located). A release in Process A or B would not be expected to directly involve or cause a release in the other process. Both processes use multiple controls and monitoring to prevent a release of flammable liquid.

QB-24: Is Process B a PSM-covered process?

Response: Yes. Process B is a PSM-covered process because Process A and Process B are interconnected and a TQ exists within the interconnected processes. Although Process A and B are separated by distance (i.e., not co-located), they are interconnected and within contiguous areas under the control of the employer (i.e., "on site in one location"). Employers cannot use engineering and administrative controls to prevent a catastrophic release of a covered HHC to determine the boundaries of a process as defined in Section 1910.119(b).
Federal Register LoI 06/07/2007, and Kaster LoI 05/21/2009

Scenario B-25: Processes A and B are located on the same contiguous property and are owned and operated by affiliated employers. Process A contains a HHC and is owned and operated by Company A. Process B is owned and operated by Company B. Company B distributes the HHC. Process A and B are interconnected and contain the same HHC. Process A contains greater than the TQ and Process B contains less than the TQ.

QB-25: Are Process A and B enforceable PSM-covered processes?

Response: Yes. Since the affiliated employers have interconnected processes that contain greater than a TQ at a contiguous location (i.e., on site in one location), it is PSM covered.
Federal Register LoI 06/07/2007, and Fegley LoI 02/15/2017
Scenario B-26: Employer A and B are affiliated employers and Employer A owns and operates a facility, located on Employer B's property (see Figure 1 – Diagram of Employer A's and B's facility property boundaries as used in Scenario B-26).

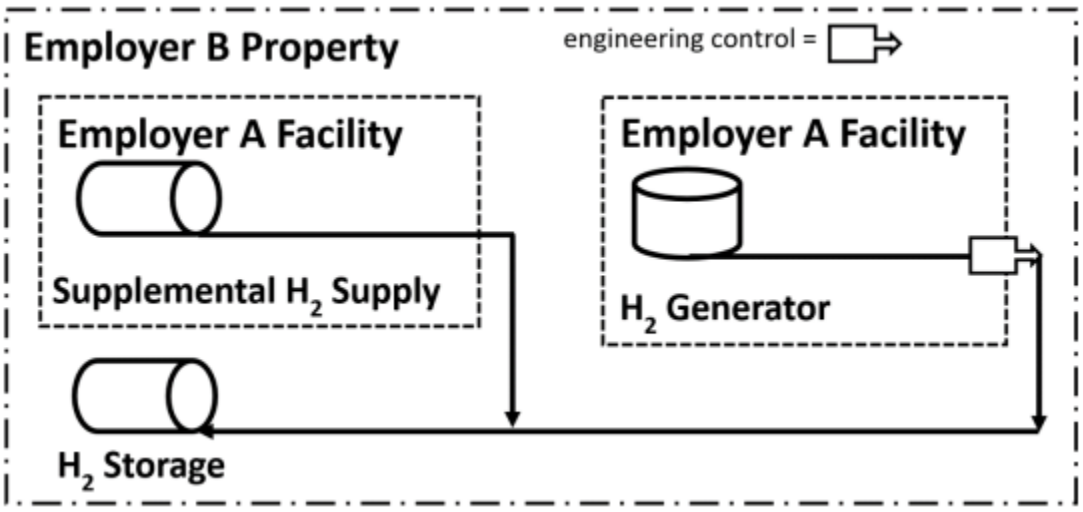

Figure 1 – Diagram of Employer A's and B's facility property boundaries as used in Scenario B-26

In accordance with Figure 1, Employer A operates a hydrogen (H2) gas generator. The generator delivers H2 through piping to the facility of Employer B by interconnected piping on Employer B's property. The process uses engineering controls to prevent material from returning to Employer A's hydrogen generation facility. Ownership of the piping changes at the property boundary between Employer A and Employer B.
As depicted in Figure 1, Employer A also operates a supplemental H2 supply system at a separate location within Employer B's property that provides H2 to Employer B's H2 storage tank. The supplemental H2 supply system complies with NFPA 55 and meets all the separation distance requirements.

The mass of the hydrogen in the system taken as a whole (Employer A hydrogen generator, Employer A supplemental hydrogen supply, and Employer B hydrogen storage) exceeds the TQ for H2.

QB-26: Is the process described in the above scenario covered by the PSM standard? If so, which employer is responsible for complying with the PSM standard?

Response: Yes. Since the affiliated employers have interconnected processes that contain greater than a TQ at a contiguous location (i.e., on site in one location), it is PSM covered.

The fact that the supplemental system meets the separation distances in NFPA 55 is not a factor when establishing the boundaries of a PSM-covered process. Additionally, these separation distances cannot be used for determining whether a part of the PSM-covered process is "geographically remote," to qualify for the NURF exemption, Section 1910.119(a)(2)(iii).

In this case, since all the H2 inventories are interconnected, located within employer B's facility property, and share a common border (i.e., contiguous), the process is PSM covered. However, PSM coverage may be excluded when some of the HHC inventory required to meet the TQ in interconnected or co-located vessels are located outside of the perimeter of the employer's facility.

Both employers would be responsible for complying with the PSM standard. The determination of individual employer responsibilities may be a business or contractual decision. Oregon OSHA will evaluate determination of PSM coverage involving multiple employers and employee exposures on a case-by-case basis. In general, both employers may have responsibilities under Oregon OSHA's PSM standard.
Federal Register LoI 06/07/2007, and Fegley LoI 02/15/2017

Scenario B-27: A polymers manufacturing unit is divided into two separate locations. The first location contains processes involving flammables above the TQ. The second location does not involve any flammables and is in a separate part of the plant such that it is not likely to be impacted from any fires or explosions in the first location (i.e., process involving flammables above the TQ). The two locations are interconnected by a polymer pellet pneumatic conveying line, which is set up so that no flammables or HHCs can pass through it (i.e., no HHC is present in the interconnected equipment). The PHA confirms that the first location containing processes involving flammables above the TQ cannot adversely affect the second location.

QB-27: Is the second part of the process part of the PSM-covered process?

Response: No. The employer has determined that interconnected equipment downstream from the PSM-covered process cannot cause a HHC release or interfere with the mitigation of the consequences of a HHC release, and the equipment does not itself contain or has the potential to contain a HHC. The equipment therefore would be considered outside boundaries of the PSM-covered process. Clark LoI 02/28/1997, Evans LoI 09/27/1995

C. 1910.119(c) – Employee Participation

QC-01: Does Oregon OSHA specify how employees and their representatives access the PHA and all other information required to be developed under the PSM standard?

Response: No. The intent of access under Section 1910.119(c)(3) is for the information to be made available for employees and their representatives in accordance with the employer's written employee participation plan (EPP) of action in Section 1910.119(c)(1). The EPP needs to address how and where employees and their representatives are provided access to the information. In addition, the trade secret provision in Section 1910.119(p) permits the employer to require confidentiality agreements before providing the information.

QC-02: Does informing employees about the PSM program satisfy the EPP requirements under Section 1910.119(c)(2)?

Response: No. The term "consult" in Section 1910.119(c)(2) refers to a dialogue between the employer, employees, and their representatives (where they exist), to ensure employees' concerns and suggestions regarding the PSM program are addressed. The employer must develop a written plan of action regarding how they will consult with employees and their representatives on the development of the elements in the PSM standard.

QC-03: Does the host employer have to consult with workers hired and paid by a staffing agency and supplied to the host employer to perform work on PSM-covered processes?

Response: Yes. As joint employers under OSHA's joint employment policy, both the host employer and the staffing agency have responsibilities for protecting the safety and health of the workers under the OSH Act. The host employer is the primary party responsible for complying with workplace-specific standards and therefore must consult with these workers and their representatives on the conduct and development of process hazards analyses and on the development of the other elements of the PSM standard.
Regional Administrators LoI 07/15/2014

D. 1910.119(d) – Process Safety Information

QD-01: Does Oregon OSHA require the employer to compile PSI in any specific format?

Response: No. PSM is a performance-based standard; therefore, Oregon OSHA does not specify the way an employer documents or compiles PSI in Section 1910.119(d).
Hyde LoI 12/12/1997

QD-02: Can an employer discard process safety information (PSI) after the process has been in operation for an extended period?

Response: No. The PSI must be kept current and accurate for the life of the process and updated whenever changes other than replacement-in-kind are made. Palmer LoI 07/12/2006

QD-03: Does an employer need to consider or comply with a RAGAGEP provision that is not applicable to their specific worksite conditions, situations, or applications?

Response: No.
Regional Administrators LoI 05/11/2016

QD-04: If the employer's selected RAGAGEP does not control all the hazards in the employer's PSM-covered process, does the employer need to adopt other RAGAGEP?

Response: Yes. There may be cases where the selected RAGAGEP does not control all the hazards in an employer's PSM-covered process. In such situations, the employer is expected to adopt other RAGAGEP (potentially including internal standards, guidance, or procedures) to address remaining process hazards. Whether internal standards constitute RAGAGEP will be reviewed on a case-by-case basis. Regional Administrators LoI 05/11/2016

QD-05: If an employer develops internal standards for use within their facilities, can those standards constitute RAGAGEP?

Response: Yes. Examples of RAGAGEP include widely adopted codes, consensus documents, non-consensus documents, and internal standards. Internally developed standards must still represent recognized and generally accepted good engineering practices. Reasons an employer might choose to follow internal standards can include:

- Translating the requirements of published RAGAGEP into detailed corporate or facility implementation programs and/or procedures.
- Setting design, maintenance, inspection, and testing requirements for unique equipment for which no other RAGAGEP exists.
- Supplementing or augmenting RAGAGEP selected by the employer that only partially or inadequately addresses the employer's equipment.
- Controlling hazards more effectively than the available codes and consensus and/or non-consensus documents when deemed necessary by the employer's PSM program.
- Addressing hazards when the codes and consensus and/or non-consensus documents used for existing equipment are outdated and no longer describe good engineering practice.

Regional Administrators LoI 05/11/2016

QD-06: Does an employer have to follow "should" provisions in RAGAGEP?

Response: No. Use of the term "should" or similar language in RAGAGEP denotes a recommendation that reflects an acceptable and preferred practice. If a "should" provision in the employer's selected RAGAGEP is applicable to the covered process or particular situation, Oregon OSHA presumes that employer compliance with the recommended approach is acceptable. If an employer selects RAGAGEP that contains "should" provisions, but does not follow them, Oregon OSHA will not presume a violation. In such cases, Oregon OSHA's CSHO should evaluate whether the employer's approach reflects RAGAGEP and whether the employer documented that its equipment complies with RAGAGEP. An employer does not need to document deviations from a "should" statement provided it documents that its equipment complies with RAGAGEP.
Regional Administrators LoI 05/11/2016

QD-07: Does Oregon OSHA select the RAGAGEP to apply to a covered process in determining compliance with the RAGAGEP provisions of the PSM standard, such as Sections 1910.119(d)(3)(ii) and 1910.119(j)(4)(ii)?

Response: No. The PSM standard is a performance-based standard. In keeping with the performance-oriented nature of the PSM standard, employers select the RAGAGEP they apply in their covered processes. See QD-04 for selecting RAGAGEP to control the hazards in the process.
Evans LoI 12/07/1995, Ferson LoI 03/23/2000, Ferson LoI 11/29/2005, FR 57:6356 02/24/1992, Regional Administrators LoI 05/11/2016

QD-08: Is a previous edition of a current code or standard considered to be a code or standard "no longer in general use" under Section 119(d)(3)(iii)?

Response: Yes.
Barry LoI 03/05/1998

QD-09: If an employer determines that they have equipment that is designed or constructed to older standards that are no longer in general use, must an employer take some action?

Response: Yes. Section 1910.119(d)(3)(iii) requires employers to determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.
Regional Administrators LoI 05/11/2016

QD-10: For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, does Oregon OSHA specify what methods employers must use to determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner?

Response: No. PSM is a performance-based standard, and therefore it does not specify the methods employers must use to comply with Section 1910.119(d)(3)(iii). However, OSHA did include language in the preamble to the PSM standard for various approaches the employer could use to ensure that the older equipment still functions safely, and is still appropriate for its intended use, such as:

- documenting successful prior operating history;
- documenting that the equipment is consistent with the latest editions of codes and standards; or
- performing an engineering analysis to determine that the equipment is appropriate for its intended use.

FR 57:6356 02/24/1992 and Regional Administrators LoI 05/11/2016

QD-11: Does the employer have to upgrade its PSM-covered equipment to meet a change in a later version of the RAGAGEP than the version to which the equipment was designed, installed, or commissioned?

Response: If the updated document explicitly provides that new clauses or requirements are retroactive, those updates are relevant to determining whether the employer's practice continues to conform to RAGAGEP. Where RAGAGEPs are updated to be more protective but are not explicitly retroactive, the PSM standard does not mandate that employers upgrade their equipment, facilities, or practices to meet current versions of their selected RAGAGEP. However, under Section 1910.119(d)(3)(iii), employers must determine and document that their equipment is designed, maintained, inspected, tested, and operating in a safe manner.
Regional Administrators LoI 05/11/2016

QD-12: Given a pressure vessel is designed, constructed, inspected and Code-stamped in accordance with a previous edition of the ASME Code, and for which a manufacturers U1 form exists, is it necessary to recalculate the vessel's design characteristics (wall thickness, nozzle reinforcement, etc.)?

Response: No. If the original design and construction is consistent with the current edition of design and construction codes and standards for equipment covered by the PSM standard, then Section 1910.119(d)(3)(iii) does not require the employer to recalculate design characteristics of PSM-covered equipment. However, if there are differences between the original and the latest edition of design and construction codes and standards, then Oregon OSHA requires the employer to determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner. See QD-10 for various approaches the employer could use to ensure that the older equipment still functions safely and is still appropriate for its intended use.
Barry LoI 03/05/1998

QD-13: When performing recalculation as a means of establishing suitability for intended service in Section 1910.119(d)(3)(iii), and given a pressure vessel for which no documentation of materials of construction, welding procedures or radiographic testing exists, is it acceptable to assume the lowest value for these variables (i.e. lowest weld joint efficiency factor, lowest allowable stress value applicable to the class and date of materials involved, etc.) and to incorporate these values into the recalculation?

Response: Yes. When an employer conducts an engineering analysis for a pressure vessel, including recalculation, when no documentation exists for the material of construction, welding procedures or radiographic testing, it is appropriate to assume the lowest value for the listed variables, applicable to the class and date of the materials involved, in the engineering analysis as a means of determining that the in-service condition of PSM-covered pressure vessel is appropriate for its intended use. The engineering analysis must be conducted in conformance with the latest editions of codes and standards.
Barry LoI 03/05/1998

QD-14: Does the PSM standard require employers to install safety instrumented systems (SIS) in lieu of other non-SIS automatic controls?

Response: No. The PSM standard does not require that employers utilize a SIS. However, if an employer does utilize a SIS in a PSM-covered process, the SIS must be designed, installed, tested, and maintained in accordance with the employer's chosen RAGAGEP in accordance with Section 1910.119(d)(3)(ii).
Ferson LoI 03/23/2000

QD-15: Do the electrical classification information in Section 1910.119 (d)(3)(i)(C) need to be updated to accurately represent the hazards involved and reflect the flammable or combustible material hazards in the process?

Response: Yes. An employer must maintain electrical hazardous area classification information to ensure that information is accurate for their employees.
Hyde LoI 12/12/1997

QD-16: If a PSM-covered process is modified after May 26, 1992, does the employer need to have material and energy balances in accordance with Section 1910.119(d)(3)(i)(G)?

Response: Yes. PSM-covered processes built or modified after May 26, 1992, are required to have material and energy balances.
Wobser LoI 09/25/1995

QD-17: Is an employer required to compile PSI for a blast-resistant structure used to protect operators and control systems such as distributed control systems (DCS), or programmable logic control (PLC) from explosion/fire hazards in a PSM-covered process?

Response: Yes. Oregon OSHA considers the blast resistant structure part of the process equipment in that it contains and protects the process control equipment in accordance with Section 1910.119(j)(1)(v) and operators from the effects of an explosion/fire allowing for continued operation or orderly shutdown during an emergency. When the PHA or facility siting analysis requires a blast resistant structure to mitigate the effects of a fire/explosion, the employer must compile the PSI and RAGAGEP used to design and maintain the blast resistant structure. This requirement includes documentation related to the ability of blast resistant structure(s) to withstand the appropriate explosion potential hazards.
Vitter LoI 02/01/2010

QD-18: Does Oregon OSHA consider ANSI/ISA document Application of Safety Instrumented Systems for the Process Industries, ANSI/ISA-S84.01 (1996) a RAGAGEP for SIS?

Response: Yes. Consensus documents are one example of RAGAGEP. Certain organizations follow the American National Standards Institute's (ANSI) Essential Requirements: Due process requirements for American National Standards when developing consensus standards and recommended practices. Under the ANSI and similar requirements, these organizations must demonstrate that they have diverse and broadly representative committee memberships. Such consensus documents are widely used as sources of RAGAGEP by those knowledgeable in the industry.

In keeping with the performance-oriented nature of the PSM standard, employers select the RAGAGEP they apply in their covered processes. Based on input from stakeholders, OSHA stated in the PSM final rule (see Section 1910.119, Process Safety Management of Highly Hazardous Chemicals; Final Rule; February 24, 1992, Federal Register Vol. 57, No. 36, p. 6390) that it did not intend to incorporate by reference into PSM all the codes and standards published by consensus groups.
Evans LoI 12/07/1995, Ferson LoI 03/23/2000, Ferson LoI 11/29/2005, FR 57:6356 02/24/1992, and Regional Administrators LoI 05/11/2016

QD-19: Can RAGAGEP be used to document ventilation system design as required by Section 1910.119(d)(3)(i)(E)?

Response: Yes. Employers who have a PSM-covered process that use ventilation systems as part of their PSM program must compile written PSI pertaining to that equipment, including the design basis for it. Under section 1910.119(d)(3)(i)(F), employers must document design codes or standards employed when compiling such written PSI. The documentation must also include all assumptions and calculations. Therefore, industry standards could serve as examples of design basis for ventilation systems, when those are designated and employed, and the documentation containing such information will meet 1910.119(d)(3)(i)(E) requirements.
Barker LoI 12/22/2003

Scenario D-20: Portable tanks containing flammable liquids (flash point <100°F, no chilling or refrigeration is provided; <660 gallon capacity; amount – enough needed to supply the process for one continuous 24-hour period) are staged and used within an indoor processing area to fill mixing tanks (process tanks). This operation is conducted in either an industrial plant (Section 1910.106(e)) or a processing plant (Section 1910.106(h)). The portable tanks are both staged in the processing area and when needed are interconnected to the mixing tanks with hard piping and hoses. All the interconnected equipment downstream from the portable tanks contain greater than a TQ of flammable liquids (i.e., the downstream equipment is an enforceable PSM-covered process). The portable tanks are equipped with emergency relief devices. The portable tanks' emergency relief devices are set at 6 psig to comply with Section 1910.106(d)(2)(ii). Should there be a relieving event from the portable tanks they will discharge to the inside of the processing area.

QD-20: In the scenario above, does Oregon OSHA require that the discharge from the mixing/process or portable tank emergency relief devices relieve to the outside of the building?

Response: No. Oregon OSHA's Section 1910.106 standard do not include specific requirements that processing tanks/vessels such as the mix tank described in the scenario or portable tanks (flammable liquids with flash points ≤100°F; operates at <15 psig) vent to the outside of the building. The employer is responsible for controlling the serious hazard of relieving/venting a process or portable tank into a confined area such as a room/building.

For process or portable tanks that are PSM covered, Section 1910.119(d)(3)(ii) requires that employers document that they have complied with RAGAGEP such as NFPA 30 Flammable Liquids Code. In addition, the employer would be required to identify, evaluate, and control the fire/explosion hazard related to discharging flammable and combustible materials through an emergency relief device inside of a building as part of the PHA requirements in Section 1910.119(e). Lewis LoI 12/26/2007

E. 1910.119(e) – Process Hazard Analysis

QE-01: Is there a timeframe for completion of the initial PHA and for updating and revalidating the PHA?

Response: Yes. An initial PHA must be completed with recommendations resolved or implemented before startup (See Section 1910.119(i)(2)(iii)). In addition, the initial PHA must be updated and revalidated at least every 5 years (see Section 1910.119(e)(6)). When employers update and revalidate a PHA before the 5-year deadline, the subsequent update and revalidation must be completed within the next 5-year period after the latest update and revalidation.

QE-02: Does Oregon OSHA require that all PHAs be redone at least every 5 years?

Response: No. Oregon OSHA does not intend that the requirement in Section 1910.119(e)(6) to mean that an employer must conduct all new and completely redo PHAs on processes, which have received initial PHAs as required by the standard. Rather, Section 1910.119(e)(6) requires the employer to update and revalidate the initial PHA at least every 5 years to assure that the PHA is consistent with the current process. Fellner LoI 01/22/1998

QE-03: Can the "at least every 5 years" requirement for updating or revalidating PHAs in Section 1910.119(e)(6) be delayed and restarted again after a facility has shut down for an extended period?

Response: No. The requirement in Section 1910.119(e)(6) that a PHA be updated and revalidated at least every five years cannot be delayed or applied retroactively while a plant or process unit within a chemical facility is shutdown. Since the "at least every five years" requirement of Section 1910.119(e)(6) contains no exceptions for extensions, it is therefore a fixed requirement, and the maximum time-period between the initial PHA and subsequent PHAs is dependent on the completion date of the prior PHA. For example, if the initial PHA or last PHA is completed on January 1, 2020, the next PHA update/revalidation is due no later than January 1, 2025.

Oregon OSHA will not require a PHA or PHA revalidation during the period a PSM-covered process is shutdown (i.e., the system has been de-inventoried and purged of all HHC). However, if the 5-year revalidation period expires before reintroduction of HHC to the process and start-up, the employer is required to update and revalidate their PHA prior to reintroduction of HHC and restart.

Extended plant shutdowns can introduce new hazards into a process that were not previously identified, evaluated, or controlled during the initial PHA. To minimize the risk of incidents prior to restart of a previously shutdown facility, the PSM standard requires an employer to perform other activities aside from PHA revalidations, including, but not limited to, the following:

- Verify that process changes, other than replacement-in-kind, since the last PHA, undergo a documented MOC process, as required in Section 1910.119(l).
- Review and update process safety information in Section 1910.119(d)(3) (e.g., piping and instrumentation diagrams (P&IDs)), and operating procedures in Section 1910.119(f)(4), as necessary.
- Evaluate the adequacy of the training program to determine whether operating personnel, as well as employees engaged in both routine and non-routine work activities, necessitate refresher training or additional training as required in Sections 1910.119(g), 1910.119(i)(2)(iv), and 1910.119(l)(3).
- Review previous incident investigation reports and compliance audits for any recommendations that may affect the startup operation.
- Perform a pre-startup safety review (PSSR) prior to introducing HHC into the modified facilities in accordance with Sections 1910.119(i)(1) and 1910.119(i)(2).

Schieli LoI 10/28/1992, and Worthington LoI 09/20/2019

QE-04: Can an employer discard a PHA when the next PHA update/revalidation is completed?

Response: No. The employer must retain all PHAs and PHA revalidations for the life of the process.
29 CFR § 1910.119(e)(7)

QE-05: Can an employer choose any type of PHA methodology to conduct a PHA?

Response: Yes. Section 1910.119(e)(2) allows employers to use one or more of the PHA methodologies that are appropriate to determine and evaluate the hazards of the process. Employers are expected to choose a methodology appropriate to the complexity of the process. It is not the intent of the standard to require a PHA methodology that is excessively burdensome, but rather one that is appropriate, and which will have the capability to identify, evaluate and control all hazards, defects, failure possibilities, etc., for the process being analyzed, and also have the capability to address all the requirements in Section 1910.119(e)(3). 29 CFR § 1910.119(e)(1)

QE-06: Can an employer choose a PHA method not listed under Section 1910.119€(2)?

Response: Yes. The PSM standard gives the employer the choice of using one or more of the listed methodologies for evaluating the hazards of the process which includes an appropriate equivalent methodology. Employers are expected to determine a methodology appropriate to the complexity of the process. Rataj LoI 07/26/1995

QE-07: Is there a prescribed format for PHA documentation?

Response: No. The PSM standard is performance based. Thus, employers have flexibility in complying with the requirements of PSM. With respect to complying with the PHA requirements (Section 1910.119(e)), employers must follow the general formats for documentation as established in the PHA methodology they use. Given a particular PHA methodology (e.g., HAZOP) there may be variations on the specifics of the technique and the method of documentation. It is important that through the methodology used, employers focus on achieving the over-arching principles/requirements of a PHA which are to identify, evaluate, and control the hazards of the process. Harmon LoI 02/01/2005

QE-08: Is there any requirement under the PSM Standard for an hourly employee such as a system operator to be a member of the PHA team, audit team, or incident investigation team?

Response: No. Oregon OSHA's PSM standard provisions relating to team composition requirements for PHA, incident investigation, and audit teams are Sections 1910.119(e)(4), 1910.119(m)(3), and 1910.119(o)(2), respectively. Membership on any of these specified teams is not based on compensation. Rather, these team composition requirements are based on an employee's knowledge of and experience with the process, which is undergoing a PHA, being investigated after an incident, or being audited to determine compliance with the PSM standard.

In addition, Section 1910.119(c)(1) requires employers to implement an employee participation written plan of action. If this plan of action requires an hourly employee(s), then Oregon OSHA requires the employer to implement that plan of action and provide the specified number of individuals with appropriate backgrounds on the respective teams.

For more information on PSM team composition requirements, see SQ&R E-08 in Appendix B.
Palmer LoI 07/12/2006

QE-09: Are maintenance personnel required to be involved in the PHA?

Response: No. Section 1910.119(e)(4) does not explicitly require maintenance employee participation in the PHA. However, Section 1910.119(e)(4) states that the PHA "shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has specific experience and knowledge on the process evaluated." In addition, Section 1910.119(c)(1), the employer's written plan of action regarding employee participation may require participation by maintenance personnel on a facility's PHA teams. As a result, maintenance employees may have to be involved in PHA, but are not explicitly required by the PSM standard. See SQ&R E-09 in Appendix B for team involvement guidance.
Neal LoI 02/04/2013

QE-10: Does Section 1910.119(e)(4) specifically require that a PHA facilitator or team leader have formalized training to lead and facilitate a PHA?

Response: No. Section 1910.119(e)(4) does not specify formal training requirements such as attending PHA facilitation courses for PHA team members. However, Oregon OSHA may determine whether a team leader or the facilitator is knowledgeable in the chosen PHA methodology by requesting training records (formal, non-formal, on-the-job training, etc.) and interviewing team members. Based on the training records and interviews, Oregon OSHA would then determine if the PHA team leader has acquired a level of understanding that enables them to effectively use the chosen PHA methodology. Summers LoI 11/19/2001

Scenario E-11: The PHA team leader performs the PHA alone or with the help of other people, but not as a team effort. The PHA worksheets are completely filled-in except for the recommendation's column. The team leader then brings the results of that effort to a PHA team representing the unit or process under consideration, the team reviews the completed worksheets, and makes the appropriate recommendations.

QE-11: Could Oregon OSHA find a PHA conducted as described in the above scenario acceptable?

Response: No. Section 1910.119(e)(4) requires the PHA to be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and the knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific PHA methodology being used.

In this case, the PHA team leader performs the PHA, but not as a team effort. In that respect, there is no PHA team, and it is inaccurate to state that the person filling in the worksheets is a team leader. The collaboration and team input are essential for determining the basis of PHA findings and recommendations. Hazzan LoI 10/31/1996

QE-12: A natural gas company has five sites with facilities performing the same process. Does a separate PHA need to be performed for each process at each site?

Response: Yes. An employer must perform an initial PHA on each PSM-covered process. The employer may use a generic hazard analysis approach for the same (or nearly the same) covered process at an individual worksite. However, the employer must account for variations (e.g., differences in siting, incident histories, technology, equipment, or operations) for each PSM-covered process addressed by this generic approach. For more information on the use of generic PHAs in gas plants, see Part 4 of Section 1910.119 Appendix C, Compliance Guidelines and Recommendations for Process Safety Management (Nonmandatory). Schieli LoI 10/28/1992

QE-13: Is an employer required to shut down a process when hazards exist? For example, several PSM-covered processes might be co-located, and if a fire were to occur in one process, a domino effect might result in a catastrophic release. The PHA recommendation may be to separate the processes, but there is no additional property on which to expand.

Response: No. In such situations, the employer could install protective measures to control the hazard (i.e., minimize the probability of a major uncontrolled release). An appropriate response in this specific case, for example, might be to install additional fire and gas detection systems which may be interlocked to a firewater deluge system for tanks and process equipment, to provide additional protective measures for onsite personnel, and to implement administrative controls, such as reducing inventories and numbers of exposed personnel by relocating non-essential personnel.

See QE-20 below for more information about an employer's justification related to accepting and declining PHA Team recommendations.

QE-14: Would an employer be following Section 1910.119(e)(1) if a hazard were not controlled in the process?

Response: No. The PHA is intended to identify, evaluate, and control process hazards. Acceptable controls or safeguards are key to preventing and mitigating the consequences of process hazards. See QE-15 for determining adequacy of safeguards.

QE-15: Does the employer need to determine adequacy of safeguards in the PHA?

Response: Yes. The PHA must identify, evaluate, and control the hazards involved in the process in accordance with Section 1910.119(e)(1). Therefore, if the employer takes credit for safeguards in the PHA to prevent and mitigate a release of a HHC, then those safeguards must be effective. Likewise, the employer must evaluate the consequences of failure of engineering and administrative controls in accordance with Section 1910.119(e)(3)(iv).

For example, an employer determines during a PHA that its electrical utility system needs to be relied upon for the safe operation of their PSM-covered process. The employer must determine that a safeguard such as an uninterruptible power supply (UPS) is needed to prevent loss of electrical power to the process equipment. In this example, the employer would need to determine effectiveness of the UPS (i.e., a safeguard) by verifying that the on-site electrical distribution system, from the main power supply and the UPS, would not be compromised by a fire, explosion, or damaged for some other reason. For example, if the electrical utility cannot function to safely operate the process because the electrical distribution system is compromised, the UPS safeguard would not be a credible safeguard for the process. In addition, the employer must ensure the reliability of the UPS system through inspection, testing and maintenance in accordance with Section 1910.119(j). Therefore, the employer must ensure effectiveness of safeguards, including parts of the process which do not contain HHCs such as utilities, to ensure they are designed, installed, operated (training and procedures), changes are reviewed and authorized, and inspected/tested/maintained to meet the PSM standard.
Feldman LoI 01/31/2008

QE-16: Must the employer make a quantitative determination to determine the consequences of failure of the controls in Section 1910.119(e)(3)(iv)?

Response: No. The intent of Section 1910.119(e)(3)(iv) is to require the employer to at least identify each type of control and the possible consequences of the failure of the listed control. Employers can determine the consequences of a failure of these controls (Section 1910.119(e)(3)(iv)) and establish a reasonable estimate of the safety and health effects on employees (Section 1910.119(e)(3)(vii)), without conducting a specialized quantitative evaluation. Therefore, in accordance with Section 1910.119(e)(3)(vii), employers typically use a qualitative risk matrix (e.g., risk = loss event/scenario frequency times severity of consequences) based on an evaluation of the likelihood of the loss event (e.g., loss of reactor cooling, pool fire, etc.) occurring and the possible safety and health effects of failure of engineering and administrative controls on employees in the workplace. This evaluation is for the purpose of guiding risk-based decisions and priorities in planning for prevention and control, mitigation, and emergency response.
Harmon LoI 02/01/2005

QE-17: Is there a difference between the requirements in Sections 1910.119(e)(3)(iv) and (e)(3)(vii)?

Response: Yes. Section 1910.119(e)(3)(iv) requires the PHA team to identify process hazards (e.g., deviations) involving the failure of engineering and administrative controls and to identify the consequences of those failures, commonly referred to as PHA cause/consequence pairs. The consequences of failure information in Section 1910.119(e)(3)(iv) is then used by the PHA team to conduct a qualitative evaluation of the possible safety and health effects related to the failure of the identified controls for each of the identified hazards required by Section 1910.119(e)(3)(vii). This is typically done using a risk matrix, see QE-16.
Harmon LoI 02/01/2005

QE-18: Is facility siting in Section 1910.119(e)(3)(v) limited to occupied structures?

Response: No. Facility siting refers to the facility location with respect to the facility layout, the spacing of equipment and buildings, and the protection for workers in occupied buildings.

QE-19: Must employers "promptly" address the problems identified in the PHA in a "timely manner," and complete actions "as soon as possible?"

Response: Yes. Section 1910.119(e)(5) requires the employer to establish a system to promptly address the PHA team's findings and recommendations and complete actions as soon as possible. Oregon OSHA expects employers to develop a schedule for completion of corrective actions, to document what actions are to be taken, and to document the completion of those actions as they occur. In the PSM preamble, OSHA stated in 57 Federal Register at 6356, "In most cases, OSHA believes that employers will be able to complete these actions within a one-to-two-year timeframe, but notes that in unusual circumstances longer completion periods may be necessary." Oregon OSHA believes that PHA action item completion periods related to "unusual circumstances" would be those that need to be completed during a shutdown. As such, Oregon OSHA would expect that employers schedule and complete these "unusual circumstances" PHA action items during the first regularly scheduled shutdown or turnaround of the applicable PSM-covered process.

QE-20: Can PHA recommendations be resolved if the employer does not accept and implement the recommendations?

Response: Yes. Section 1910.119(e)(4) requires that a team with expertise in engineering and process operations conduct a PHA. When the PHA team determines that the consequences of a process hazard are not mitigated based on available safeguards, the PHA team makes specific findings and recommendations to address the process hazard (i.e., mitigate the consequences of the process hazard). Then, pursuant to Section 1910.119(e)(5), the employer is required to establish a system to promptly "address" and "resolve" the team's findings and recommendations in a timely manner, document what actions are taken, complete actions as soon as possible, and develop a written schedule of when actions are to be completed and communicate these actions to the affected employees.

Oregon OSHA also considers an employer to have "resolved" the team's findings and recommendations when the employer either has modified or justifiably declined to adopt a recommendation. When a PHA recommendation is rejected or modified, the employer should communicate this to the PHA team, and expeditiously resolve any subsequent recommendations of the team.

It is recommended that an employer justifiably decline to adopt a PHA recommendation in writing, based upon adequate evidence, that one or more of the following conditions are true: *This document should be retained with the recorded PHA findings.*

- The analysis upon which the recommendation is based contains material factual errors;
- The recommendation is not necessary to protect the health and safety of the employer's own employees, or the employees of contractors;
- An alternative measure would provide a sufficient level of protection; or
- The recommendation is infeasible.

QE-21: Do recommendations from the facility siting study report need to be included on the PHA worksheet to comply with Sections 1910.119(e)(5) and 1910.119(e)(7) [PHA update/revalidation]?

Response: No. The employer is not required to include findings and recommendations from the facility siting study report in the same PHA worksheet or recommendations log to comply with Sections 1910.119(e)(5) and 1910.119(e)(7). Section 1910.119(e)(3)(v) requires an employer to address facility siting as part of the PHA. When facility siting studies are conducted to supplement a PHA, all findings and recommendations from the facility siting study must be documented and the employer must ensure timely resolution of findings and recommendations as required in Section 1910.119(e)(5). Employers must also consult with employees and their representatives on the conduct and development of PHAs, which would include facility siting, as part of the employer's written plan of action regarding the implementation of the employee participation.

Since the PSM standard is performance-based, Oregon OSHA does not specify the way an employer documents, compiles, or tracks actions taken on PHAs or facility siting study findings and recommendations. Nevertheless, the employer's documented findings and recommendations from the facility siting study must be maintained and consistent with the employer's system to promptly address those findings and recommendations as required in Sections 1910.119(e)(5) and 1910.119(e)(7).
Worthington LoI 10/02/2020

F. 1910.119(f) – Operating Procedures

QF-01: If an employer includes information from a SDS in their operating procedures that address control measures to be taken if physical contact or airborne exposure occurs, would they meet the intent of Section 1910.119(f)(1)(iii)(c)?

Response: Yes. Section 1910.119(f)(1)(iii)(c) is primarily meant to address first aid procedures or emergency medical attention that may be needed if a worker is exposed to a HHC. Therefore, the information in the operating procedure(s) should be consistent with the information in the SDS that meet the requirements of 29 CFR 1910.1200(g).

QF-02: Can an employer use simplified loop diagrams, narrative descriptions, and flow charts to describe the logic of computerized process control systems and SIS to meet the requirements for written operating procedures at Section 1910.119(f)(1)?

Response: No. Simplified diagrams, flow charts, and narratives cannot be used as a substitute for written operating procedures as described in Section 1910.119(f)(1). Employers may include loop diagrams, flow charts, and narrative descriptions of control and interlock systems as amendments and enhancements to written operating procedures. In addition, employers may include loop diagrams, flow charts, and narrative descriptions of control and interlock systems in their compilations of written PSI required by Section 1910.119(d), including Section 1910.119(d)(3)(i)(H), before conducting any PHAs required by Section 1910.119(e).
Stubblefield LoI 09/21/1992

Scenario F-03: At many PSM-covered facilities within a corporation, groups of maintenance personnel are assigned to a particular PSM-covered processing area. These maintenance personnel are general wage roll personnel and are responsible for the actual maintenance work in PSM-covered processes. These wage roll personnel are trained in the specific hazards of the process and participate in the daily safety meetings in the PSM-covered process areas with their operation counterparts.

The maintenance supervision of these maintenance wage roll personnel participates directly in the management of the area. The maintenance supervisors are involved in the day-to-day scheduling of maintenance, safety meetings, training, and decision making for the maintenance and general operation of the PSM-covered process area. Unlike general wage roll maintenance personnel, they are not directly involved in the actual maintenance work in the area. General wage roll maintenance personnel must either sign into an area using a logbook system or be covered under a work permitting system.

QF-03: Does Section 1910.119(f)(4) apply to maintenance supervisors as described in Scenario F-03 above?

Response: Yes. Section 1910.119(f)(4) requires the employer to develop and implement safe work practices to control the entrance into a facility by maintenance, contractor, laboratory, or other support personnel. Reasons for this requirement are stated in OSHA's Section 1910.119, Preamble [57 FR 6356]:

- To ensure that those persons operating high hazard processes are cognizant of any non-routine work (i.e., maintenance, construction, sampling, or other activity) occurring in the process;
- To ensure that those in responsible control of the facility are also in control of such non-routine work to ensure that the work does not undermine the safe control of the process (i.e., create new unmitigated hazards); and
- To provide information to those workers performing non-routine work regarding the hazards and necessary safety precautions that applies to their work.

Maintenance supervisors are considered “other support personnel” who are required to be covered by the employer’s safe work practices for the control over the entrance to the facilities. However, the PSM standard does not require that the same safe work practices (SWP) apply to all the employees. For example, the employer may choose to develop and implement a SWP for the entrance to facilities for contract employees that may be different than the entrance SWP for maintenance supervisors. However, due to the complexity of managing multiple procedures for various employee groups performing the same task, as well as other potential safety impacts, Oregon OSHA recommends that employers use one SWP to control the entrance to facilities for those employees listed in Section 1910.119(f)(4).

Information related to this requirement can be found in Section 1910.119 Appendix C, Compliance Guidelines and Recommendations for Process Safety Management (Nonmandatory).
Krzystowczyk LoI 03/16/2005

QF-04: Must "other support personnel" be accounted for after evacuation in the event of an emergency?

Response: Yes. All personnel including "other support personnel" must be accounted for if an emergency occurs at the facility. This accountability ensures that emergency responders will not attempt risky, unwarranted rescue operations during an on-going uncontrolled incident. The safe work practices required by Section 1910.119(f)(4) to control the entrance into facilities by employees can also be used to supplement Oregon OSHA's PSM requirement for Emergency Planning and Response, Section 1910.119(n). Employers are required to develop and implement emergency action/response plans or provisions through the pertinent requirements of either Sections 1910.38 or 1910.120(a), (p) and (q) or both, to account for all employees after evacuation.
Krzystowczyk LoI 03/16/2005

QF-05: Does Section 1910.119(f)(4) require written and verbal communication for controlling entrance into PSM-covered facilities by employees and contractors?

Response: No. Section 1910.119(f)(4) does not require written and verbal communication for controlling entrance into PSM-covered facilities by employees and contractors. Since the PSM standard is performance-based, how the employer meets the requirement for controlled access in Section 1910.119(f)(4) is not prescribed. For example, an employer's safe work practice (SWP) for the entrance of maintenance personnel into a PSM-covered area only requires verbal notification to the lead operator of their intent to enter and the reason for entry and signing an entrance log located in the control room prior to entering a PSM-covered area. Then Oregon OSHA would expect the employer to implement this SWP. If the employer's SWPs for controlling entrance into PSM-covered facilities are adequately developed, communicated to affected employees, and those employees have been trained on the SWPs, Oregon OSHA considers the employer in-compliance with Section 1910.119(f)(4).
Krzystowczyk LoI 03/16/2005

QF-06: A PSM-covered facility stores, processes, and moves a large volume (up to 750,000 gallons daily) of flammable and combustible liquids, flammable solids, and flammable gases. The facility has chosen to implement a plant-wide flame-resistant clothing (FRC) program. If a facility employee or contract employee were exposed to flash fire hazards in the facility where flammable or combustible materials are stored, processed, or moved, could the host and/or contractor employers be cited for not providing appropriate personal protective equipment (PPE), e.g., FRC?

Response: Yes. Since flammable (liquids, solids, and gases) are stored, processed, and moved at the facility, the employer must perform a hazard analysis of the workplace using standards such as NFPA 2113, Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against ShortDuration Thermal Exposures from Fire, to:

- Determine whether flash fire hazards exist on a continuous basis in various areas (including but not limited to operating, storage, loading/off-loading, etc.) at the facility; and

- Ensure that when employees such as operators and maintenance personnel (host and contract workers) are in the areas where flash fire hazards exist, employees are provided with and wear appropriate PPE (i.e., FRC) to protect against the flash fire hazards.

It is possible, then, that if an employer has such flash fire hazards present and fails to address them, Oregon OSHA could issue a citation for a violation of Section 1910.132(a), the general requirement to provide protective equipment, including protective clothing, when necessitated by a hazard. A citation could be issued regardless of whether there had been an incident that initiated the inspection.

Additionally, this facility is covered under the PSM standard, and the employer has determined that a flash fire hazard exists to a degree that it decided to institute a plant wide FRC program. The employer is therefore required by Section 1910.119(f)(1)(iii)(B) to include in their operating procedures any "[p]recautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment." This necessary PPE includes FRC for all workers (host and contractor) that are exposed to the flash fire hazards.

If the facility uses contractors, Oregon OSHA expects contract employees to wear FRC in this facility when they conduct work activities for which they are exposed to flash fire hazards. One key for determining if contract employees need FRC would be to examine the requirements for the host employer's employees — if the host employer requires FRC for its employees for various locations and work activities throughout their facility, then contract employees would also be required to wear FRC for the same activities. Depending on the degree of their involvement with the covered process and their specific work activities, if contract employees do not wear FRC when required, contract employers may be subject to violations of Sections 1910.119(f), 1910.119(j), and/or 1910.119(h)(3). Additionally, the host employer may be cited for violations of Sections 1910.119(h)(2)(iv) and 1910.119(h)(2)(v) for not assuring contract employees wear flame-resistant clothing in their facility when they are exposed to flash fire hazards when working on or near a PSM-covered process.
Zemen LoI 03/07/2006

G. 1910.119(g) – Training

QG-01: Is an employee job applicant required to have PSM training before being hired by an employer to work on or near a PSM-covered process?

Response: No. The PSM Standard does not require employers to direct employees to undertake specific training courses before employment. Employees and contractors must be trained in accordance with Sections 1910.119(g), 1910.119(h), and 1910.119(j) prior to working on a covered process.
(NAME WITHHELD) LoI 10/09/1992

QG-02: Are there circumstances in which refresher training must be provided more often than every 3 years?

Response: Yes. Pursuant to Section 1910.119(g)(2), employers, in consultation with employees, shall determine the appropriate frequency, which may be based on consideration of such factors as deviations from standard operating procedures or apparent deficiencies in training to assure that the employees understand and adhere to the current operating procedures of the process.

QG-03: To coincide with a scheduled process shutdown, an employer wants to schedule operator refresher training such that operators would have their refresher training interval exceeding the three-year requirement. Does this refresher training interval comply with Section 1910.119(g)(2)?

Response: No. Refresher training of an employee involved in operating a process is to be measured from the date of the employee's last training and is required to be provided at least every three years, and more often if necessary. See QG-02 for situations where refresher training should be more frequent.

QG-04: Is a specific method of testing required to make sure that operators understand the training provided to them under Section 1910.119(g).

Response: No. PSM is a performance-based standard therefore, the employer must determine if employees have understood the training provided and are capable of adhering to the current operating procedures as developed and implemented for the process. This could include the administration of a written test, or other means of ascertaining comprehension of the training, such as on-the-job (OTJ) demonstrations, etc., are acceptable, if the method of providing the verification of understanding is adequately documented in accordance with Section 1910.119(g)(3).

QG-05: Does Section 1910.119(g)(2) require maintenance personnel to have refresher training at least every three years?

Response: No. Section 1910.119(g)(2) applies to employees involved in operating a process. Section 1910.119(j)(3), which applies to employees involved in maintaining the on-going integrity of process equipment, does not contain a recurrent training requirement. However, Section 1910.119(j)(3) requires that employers train employees responsible for maintaining the ongoing integrity of the process in the procedures applicable to the employee's job tasks. As those procedures improve, expand, or change in any way, the employer must ensure that the employee is trained accordingly.

To train maintenance workers in "procedures applicable" to their job tasks pursuant to Section 1910.119(j)(3), an employer must, in appropriate circumstances, train these workers in the safe work practices required by Section 1910.119(f)(4), in the written procedures to manage change required by Section 1910.119(l), and in the appropriate provisions of the EAP required by Section 1910.119(n). These provisions, in turn, may further require compliance with other Oregon OSHA general industry requirements, such as, training requirements for the lockout/tagout standard in Section 1910.147(c)(7).

In addition, employees involved in operating and maintaining a process and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change before the start-up of the process or affected part of the process in accordance with Section 1910.119(l)(3).
Neal LoI 02/04/2013

H. 1910.119(h) – Contractors

QH-01: Are job classifications used to define whether a contract employer is subject to Section 1910.119(h)?

Response: No. PSM coverage of contractors (e.g., engineering and safety consultants) does not depend on job classification. Section 1910.119(h)(1) applies to "contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process." The preamble to the PSM standard (57 Federal Register at 6356) further explains that OSHA intended to cover contractors “whose work brings them into direct contact with, or whose work could affect the hazards of processes covered by the standard.” Therefore, Section 1910.119(h)(1) depends on the precise nature of contractors’ onsite activities and not on the job (OTJ) classification of the contractor.
Hazzan LoI 10/31/1996

QH-02: Do contractors performing construction work at a PSM-covered site also have to comply with OAR 437-003, “Construction”?

Response: Yes. Contractors performing construction work must comply with all applicable standards under Division 3 and must follow the requirements in Section 1910.119.

QH-03: Is the host employer of a PSM-covered facility responsible for the safety of subcontractors?

Response: Yes. Section 1910.119(h) applies to all subcontractors whose work falls within the scope of covered work, as established in Section 1910.119(h)(1). Section 1910.119(h) applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services which do not influence process safety, such as janitorial work, food and drink services, laundry, delivery, or other supply services. The host employer and the general contractors are both responsible for ensuring that the duties contained in Section 1910.119(h)(2) are performed. Furthermore, under Section 1910.119(h)(2)(v), the host employer is responsible for assuring that the contract employer and the contract employees, which may include subcontractor(s), are properly performing their obligations under Section 1910.119(h)(3).

Scenario H-04: The host employer is currently evaluating options for ensuring their contract employees are adequately trained. The host employer believes their internal training program addresses Sections 1910.119(h)(2)(ii)–(iv) and 1910.119(h)(3)(ii) requirements which can be used to train contract employees. The host employer's training program will not cover training required by Section 1910.119(h)(3)(i). The host employer proposes to require their contract employers to schedule training for each of their contract employees. The host employer would conduct the training and then provide the training documentation to the contract employers to certify completion of training.

QH-04: Will the contract employer comply with Sections 1910.119(h)(3)(ii)–(iv) if their employees are trained by the host employer, rather than by their employer?

Response: Yes. However, the contract employer must assure that the host employer's training program satisfies the requirements in Section 1910.119(h)(3)(ii). Similarly, a contract employer's responsibility under Section 1910.119(h)(3)(iii) to document that each contract employee has received and understood the required training may be satisfied by documentation provided by the host employer after the training is completed, provided the contract employer has assured that the host employer's documentation satisfies the requirements of the standard. This includes assuring that the host employer has used adequate means to verify employees' understanding of the training. The contract employer is responsible for maintaining the training documentation provided by the host employer, and the training records must include the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training. The contract employer is also responsible for verifying that new contract employees are adequately trained prior to performing work activities. The contract employer remains responsible for compliance with Section 1910.119(h)(3)(iv), assuring that contract employees follow the guidance of the host employer's training program, which includes safe work practices required by Section 1910.119(f)(4).
Moulton LoI 02/16/2022

QH-05: Must contract employees who operate and/or maintain a PSM-covered process receive the training in Sections 1910.119(g) and 1910.119(j)?

Response: Yes. If contract employees are involved in operating a PSM-covered process or maintaining the on-going integrity of process equipment, then they must receive training in Sections 1910.119(g) and 1910.119(j), respectively. To satisfy its obligations under Section 1910.119(h)(2)(v), the host employer must ensure, through periodic evaluations, that training provided to the contract employees by their employer is equivalent to the training that the standard requires for direct hire employees. Such training does not need to be identical in format, content or context of training given to the host employer's employees. However, it is critical that information required by the PSM standard be conveyed to and understood by contract employees as well as direct hire employees. The training obligation may be satisfied by joint training or by separate training. Moreover, Section 1910.119(h) requires that every employee of a PSM-covered contractor be trained in the safe work practices necessary to perform safely their job. The contract employee must be able to perform their own job tasks safely and must receive:

(a) training prior to beginning work on or near a covered process, which should encompass (i) instruction regarding known process hazards related to their job, including training in the applicable provisions of the emergency action plan (EAP); and (ii) training in the safe work practices adopted by the host employer and the contract employer; and

(b) additional training as necessary (i) to prepare the employee for changes in the operations or work practices at the facility and (ii) to ensure that the employee's understanding of the applicable safe work practices and other rules remains current.

QH-06: When selecting a contractor, must an employer document the evaluation of the potential contractor's safety performance and programs?

Response: No. The PSM standard does not require the employer to document the evaluation of the information obtained regarding contractor safety performance and programs. However, Oregon OSHA compliance officers are directed to review records about these aspects of the selection process and to determine if the employer has met the intent in Section 1910.119(h)(2)(v).

QH-07: Can the host employer use a different type of injury and illness log rather than an OSHA 300, 300A or DCBS Form 801 when complying with Section 1910.119(h)(2)(vi)?

Response: Yes. Acceptable methods would be for the employer to develop a contract employee injury and illness log separately for each contractor, or a combined log for all contractors if the combined log distinguishes among contractors.

I. 1910.119(i) – Pre-Startup Safety Review

QI-01: An existing facility has a pump and adds a spare pump that is piped in parallel with the existing pump. Does the employer need to conduct a PSSR?

Response: Yes. The addition of a spare pump piped in parallel with an existing pump is considered a modified facility. A facility, subsequently constructed on the work site such that the facility or the process(es) it contains is connected to or otherwise dependent on an existing facility including the process(es) it contains, is considered collectively to be a modified facility. Since the modification requires adding new suction and discharge piping connected to the existing pump piping, a change to the PSI (i.e., piping and instrumentation diagrams) is required. Therefore, the employer is required to perform a PSSR under Section 1910.119(i)(1) as the modification is significant enough to require a change in the PSI. Additionally, the employer must ensure that the modified facilities meet the requirements contained in Section 1910.119(l) for MOC.
Tolley LoI 01/11/1996

QI-02: Does the employer need to conduct a PHA for a modified facility?

Response: No. The employer does not need to conduct a PHA for a modified facility. However, the employer is required under Section 1910.119(l)(2)(ii) to evaluate the impact of the change on safety and health.
Tolley LoI 01/11/1996

Scenario I-03: A new PSM-covered tank is constructed on the work site such that it is not co-located or interconnected to the existing PSM-covered facility that currently handles and stores crude oil.

QI-03: Is this considered a "new facility"?

Response: Yes. A facility constructed on a work site where there are no other facilities, or a facility constructed on an existing work site such that it is not co-located or interconnected with the existing facilities, is considered a new facility. Since the new unconnected PSM-covered tank is subsequently constructed on the work site physically separated from and otherwise independent from the existing facility (i.e., not co-located or interconnected), it is considered a new facility.
Tolley LoI 01/11/1996

QI-04: Does the installation of the new PSM-covered storage tank (i.e., new facility) require the employer to complete a PSSR?

Response: Yes. The employer must perform a PSSR for new facilities in accordance with Section 1910.119(i)(1).
Tolley LoI 01/11/1996

QI-05: Does a PHA need to be completed prior to start-up of the new PSM-covered storage tank (i.e., new facility)?

Response: Yes. Employers are required to perform a PHA and ensure PHA recommendations have been resolved or implemented before startup under Section 1910.119(i)(2)(iii) for new facilities.
Tolley LoI 01/11/1996

QI-06: Does the employer need to ensure equipment is in accordance with design specifications prior to startup?

Response: Yes. Section 1910.119(i)(2)(i) requires the employer to ensure that process equipment is constructed and is in accordance with design specifications prior to the introduction of HHC into a process. In addition, quality assurance (QA) as outlined in Section 1910.119(j)(6) must be evaluated for new equipment. The QA evaluations may be incorporated into the PSSR in accordance with Section 1910.119(i)(2)(i).

J. 1910.119(j) – Mechanical Integrity

QJ-01: An employer determines the boundaries of a process. After this determination if an employer determines during the PHA that there is no risk of a HHC release from equipment specified in Section 1910.119(j)(1) within the boundaries of the PSM-covered process they determined, may the employer exclude such equipment from their MI program?

Response: No. The equipment specified in Section 1910.119(j)(1) in a PSM-covered process must be part of the employer's MI program. Oregon OSHA believes equipment listed in Section 1910.119(j)(1), which is common to many processes, is critical to process safety.
Schneider LoI 07/11/1994

QJ-02: A process vessel in a PSM-covered process has a level control system as part of the basic process control system (BPCS). In addition, there is a high-level (HL) alarm and a high, high-level (HHL) alarm with an interlock to shut down the supply pump to the process vessel. Along with the alarms and interlocks, must the employer include the BPCS in the MI program in accordance with Section 1910.119(j)?

Response: Yes. Section 1910.119(j)(1) applies to controls (monitoring devices and sensors, alarms, and interlocks) in Section 1910.119(j)(1)(v). Controls, such as basic process control systems, programmable logic controllers (PLC), and safety instrumented systems, which can impact the process are all considered PSM covered.
Barnett LoI 03/10/1994

Scenario J-03: A fluid catalytic cracking unit (FCCU) at a refinery includes a blast-resistant control room located within the unit. This control room includes a positive pressure unit (PPU). The PPU includes an air intake that draws in outside air and a fan that pulls the air into the control room. The PPU maintains positive pressure inside the FCCU control room which keeps hazardous (i.e., toxic or flammable) vapors from entering the control room. Without the PPU, hazardous vapors could enter the FCCU control room through doors, windows and air-intake and harm employees operating the FCCU process. The PPU is designed with two sensors. One sensor detects whether the FCCU control room is pressurized and triggers an alarm that indicates when positive pressure is lost. The other sensor detects the presence of flammable gas, toxic gas, or both, and will shut down the air intake to prevent the gas from entering the control room if such gas is detected.

QJ-03: Is the PPU described in the above scenario part of the PSM-covered process and is the employer required to comply with Section 1910.119(j) MI requirements although there is no explicit requirement in Section 1910.119(j)(1) that PPUs are included in Section 1910.119(j)

Response: Yes. The MI provision applies to listed categories of process equipment, e.g., controls (including monitoring devices and sensors, alarms, and interlocks) in Section 1910.119(j)(1)(v). Structures near hazardous process operations frequently contain such controls and these controls are covered by the MI provision. In this case, while the PPU is not explicitly listed in the Section 1910.119(j)(1), a PPU is considered a pressure control device in accordance with Section 1910.119(j)(1)(v). Therefore, all the MI requirements listed in Section 1910.119(j) apply to the PPU.
Barnett LoI 03/10/1994, Feldman LoI 01/31/2008, and Vitter LoI 02/01/2010

QJ-04: Do written MI procedures need to be specific to each vessel, each type of vessel, or each group of equipment types listed?

Response: Yes. The written MI procedures need to be specific to the type of vessel or equipment. Identical or similar vessels and items or groups of equipment in similar service do not need to have individualized maintenance procedures. However, each procedure must clearly identify the equipment to which it applies, and inspection records for each type of process equipment is required in accordance with Section 1910.119(j)(4)(iv).

QJ-05: Does the employer need to maintain inspection records including maintenance work orders in a computer database?

Response: No. The provisions of the PSM Standard, including the MI requirements, are performance-based. Therefore, an employer has the option of including required MI documentation of process equipment such as inspections and test records and maintenance work orders in Section 1910.119(j)(4)(iv) using computer software or may choose to keep paper copies of inspection records and repair documentation. Documentation of inspection records and repairs for equipment should be kept up to date, retrievable, and accessible to all personnel.
Fretwell LoI 09/16/1996

QJ-06: Does Section 1910.119(j)(4)(iv) require employers to document only process equipment conditions that require further action (i.e., additional inspection, or repair/replacement)?

Response: No. Section 1910.119(j)(4)(iv) requires an employer to document the inspections and tests required under Section 1910.119(j)(4)(i) for all process equipment to identify, in addition to other information, "the results of the inspection or test." Documentation of both negative and positive results are intended to be used as references in determining the on-going MI of the process equipment. For example, both positive and negative results are used to determine the frequency of inspections and tests based on operating experience vis-a-vis manufacturers' recommendations and RAGAGEP. Therefore, if the written MI procedures make clear that the absence of a finding in the inspection report indicates a positive finding, this would meet the intent of the standard.
Fretwell LoI 09/16/1996

QJ-07: Does the employer only need to document inspection deficiencies by process unit?

Response: No. The employer must document inspections of individual pieces of process equipment listed under Section 1910.119(j)(1) to maintain the ongoing MI of process equipment. The employer must document routine and external inspection of all process equipment listed under Section 1910.119(j)(1) to assure the equipment is maintained for safe operation. Section 1910.119(j)(4)(iv) requires an employer to document each of the inspection and tests required under Section 1910.119(j)(4)(i) to ensure the frequency of the inspection and tests is adequate to meet manufacturer’s recommendations and RAGAGEP. Fretwell LoI 09/16/1996

Scenario J-08: An employer repackages and redistributes chlorine, bleach, and sulfur dioxide for water and wastewater treatment applications. The employer ships the products in one-ton containers and 150-pound cylinders. When a customer returns the cylinders and/or containers to the employer, maintenance personnel remove, disassemble, inspect, reassemble, test, and reinstall the cylinder and container valves. While the employer has a PSM program for processes containing a TQ of HHCs (e.g., chlorine and sulfur dioxide), the employer does not include the valve inspection and test program in their MI program.

QJ-08: Does Oregon OSHA consider the removal, disassembly, inspection, reassembly, and reinstallation of the cylinder and container valves a mechanical integrity activity in accordance with Section 1910.119(j), including the documentation requirements in Section 1910.119(j)(4)(iv)?

Response: Yes. When the employer connects a cylinder or container to a PSM-covered process (e.g., during the filling process), the cylinder or container becomes process equipment in the PSM-covered process. The cylinder or container and its associated valves are process equipment and must be maintained in accordance with Section 1910.119(j). The employer must document the inspections and tests performed to ensure the integrity of the 150-pound cylinders and one-ton containers and the associated valves. As required in Section 1910.119(j)(2), the employer must develop written procedures to maintain the on-going integrity of process equipment and document inspections and tests performed on process equipment in accordance with Section 1910.119(j)(4)(iv).

Therefore, container and cylinder valve inspection are MI activities subject to the requirements of Section 1910.119(j), including the documentation requirement in Section 1910.119(j)(4)(iv). Furthermore, one-ton chlorine containers are PSM-covered processes because they contain a TQ of a HHC (i.e., 1500 pounds of chlorine).
Casmey LoI 12/04/2012

QJ-09: If equipment is found to be operating outside acceptable limits, must the process be shut down and the equipment deficiencies corrected before further use?

Response: No. When an equipment deficiency is discovered during inspection, testing and preventive maintenance activities, the employer must determine in a timely manner if the deficiency results in the equipment being operated outside of the design limits and determine if the equipment is acceptable for continued safe operation. To ensure the ongoing MI of the PSM-covered process, equipment deficiencies must be corrected promptly when equipment is outside the acceptable limits as defined in the PSI in Section 1910.119(d). There may be situations where it may be infeasible to correct deficiencies before further use. When an employer chooses not to correct an equipment deficiency before further use, the employer must demonstrate that the equipment is still safe to operate which may require incorporating interim/protective measures to bring the process parameters into conformance with safe operating limits imposed by the equipment deficiency until the equipment deficiency is corrected. If the interim measures results in a change in the equipment or its operation, the employer must conduct a MOC procedure in accordance with Section 1910.119(l).

QJ-10: If contractors are installing new equipment, does this require the employer to implement a QA program, Section 1910.119(j)(6), to monitor the activities of these contractors?

Response: Yes. The employer is responsible for ensuring that equipment installed by contractors is consistent with design specifications and manufacturer's instructions. This may require the employer to be involved in the review, inspection, testing, certification, and QA of work performed by contractors.

QJ-11: Does Section 1910.119(j)(3) require personnel maintaining pressure relief devices to be trained on the procedures necessary to safely perform that task?

Response: Yes. Personnel maintaining pressure relief devices must be trained on the procedures necessary to perform that task safely. Section 1910.119(j)(3) requires the employer to "train each employee involved in maintaining the ongoing integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can safely perform the job tasks."
Neal LoI 02/04/2013

K. 1910.119(k) – Hot Work Permit

QK-01: Is brazing a "spark producing operation" included in the definition of "hot work" in Section 1910.119(b)?

Response: Yes. "Spark-producing operations" include operations, such as grinding, welding, cutting, burning, or brazing, that can ignite flammable vapors or gases. For more examples of ignition sources, see SQ&R K-01 in Appendix B.

QK-02: Is there any requirement to maintain a file of old or closed hot work permits so that an inspector can verify that the program is being followed?

Response: No. The PSM standard does not require employers to maintain a file of old or closed hot work permits. Section 1910.119(k) does not require hot work permit record retention beyond completion of the hot work operations. Section 1910.119(k)(2) states, "the permit shall be kept on file until completion of the hot work operations." However, to comply with provisions under Section 1910.119(o)(1), an employer must audit the procedures and practices required by PSM and assure they are adequate and are being followed. Since hot work permits are part of the hot work procedure, Oregon OSHA expects that employers would audit a statistically valid number of hot work permits to assure they were completed and implemented per their hot work procedure. This practice is consistent with industry auditing safe work practices such as the Center for Chemical Process Safety (CCPS), which states, for example, that the auditor should sample maintenance records to verify that work authorizations and hot work permits have been completed as required.

Due to the performance-based nature of PSM, how the employer audits its hot work permits/procedure, or any procedure, is a matter of assuring performance (i.e., procedures are developed, adequate, and are being implemented as written), rather than a matter of Oregon OSHA specifying how compliance audits are to be conducted. One way to audit hot work permits to evaluate compliance with Section 1910.119(k) is to audit hot work permits before the permits are discarded.
Palmer LoI 07/12/2006

L. 1910.119(l) – Management of Change

QL-01: For employers with a PSM-covered process, does Oregon OSHA expect employers to keep equipment and chemicals based MOC documentation for the life of the equipment?

Response: No. Employers must retain MOCs for PSM-covered process equipment and chemicals for the life of the PSM-covered process through their incorporation in the PSI in accordance with Section 1910.119(l)(4). The equipment's original design, design basis, and all subsequent changes are essential for the continued safe operation of a PSM-covered process. The original equipment design and design basis provides a history of all process changes. These changes are important to know for those responsible for continued safe operation and maintenance and those that may need to consider future changes to the process.
Palmer LoI 07/12/2006

QL-02: For employers with a PSM-covered process, does Oregon OSHA expect employers to keep MOC documentation for the life of the process, when the change is related to procedures or practices?

Response: No. If an employer conducts a MOC related to changing procedures and practices pursuant to Section 1910.119(l)(5), Oregon OSHA would only require the employer to retain that particular MOC procedure until it is incorporated into the next PHA revalidation or update required by Section 1910.119(e)(6). Therefore, the MOC record retention time period is based on the PHA revalidation schedule which is established pursuant to Section 1910.119(e)(6).
Palmer LoI 07/12/2006

QL-03: Does an employer need to start a new MOC log after the completion of the 5-year revalidation PHA?

Response: No. Oregon OSHA does not require an "MOC log." Oregon OSHA only requires that MOC procedures be implemented whenever a change to the PSM-covered process is made except when a replacement-in-kind is contemplated. However, Oregon OSHA recommends that an employer use some type of tracking process to assure that all MOC records are appropriately managed. This is especially important where employers have many MOC records in various stages of completion (e.g., under review, on-going, completed). Palmer LoI 07/12/2006

QL-04: Are employers required to comply with Section 1910.119(l) for all changes related to a PSM-covered process?

Response: No. Changes that are replacement-in-kind which satisfies the design specification are changes that are excepted from Section 1910.119 (l)(1). Otherwise, changes to process chemicals, technology, equipment, and procedures; and changes to facilities that affect a PSM-covered process must be managed by the employer in accordance with Section 1910.119(l)(1).

For example, replacing a gasket that satisfies the design specifications of the original gasket would be a replacement-in-kind. However, if the new gasket to be installed is of a different material, composition, shape, size, or design, then a MOC would be required.
For more information, see SQ&R L-04 in Appendix B.

QL-05: A facility repairs a piece of equipment by replacing a part. The initial MOC lists the change as a replacement-in-kind. After reviewing the change, the facility maintenance manager/engineer, determines that the change was a replacement-inkind. Is there any requirement for documenting and maintaining a MOC to prove to an inspector that the change was in fact a replacement-in-kind?

Response: No. Employers are not required to conduct a MOC when changes are replacement-in-kind. However, Section 1910.119(d)(3) requires that employers compile information related to equipment which is part of the PSM-covered process. This includes all component parts, whether the components are original or replacement parts, including replacement-in-kind or replacements with different design specifications. Employers must maintain up-to-date and accurate PSI data for PSM-covered equipment for the life of the process. Palmer LoI 07/12/2006

QL-06: Do the MOC provisions in Section 1910.119(l) apply when maintenance procedures are changed?

Response: Yes. Section 1910.119(l)(1) requires that the employer establish and implement written procedures to manage changes except for replacement-in-kind to process chemicals, technology, equipment, and procedures; and changes to facilities that affect a PSM-covered process. Therefore, the MOC provisions in Sections 1910.119(l)(1) through 1910.119(l)(5) apply to changes in maintenance procedures.
Hazzan LoI 10/31/1996

QL-07: Do the MOC provisions in Section 1910.119(l) apply to changes made to equipment inspection, testing and preventive maintenance frequencies?

Response: Yes. Sections 1910.119(l)(1) through 1910.119(l)(5) apply to changes in maintenance procedures and for changes made to PSM-covered equipment inspection, testing and preventive maintenance frequencies. Since PSM-covered equipment inspection, testing and preventive maintenance is part of the employer's written MI procedures in Section 1910.119(j)(2), the employer must also capture any changes to equipment inspection, testing and preventive maintenance frequencies in the employer's written MI procedures.
Hazzan LoI 10/31/1996

QL-08: Is training under MOC in Section 1910.119(l)(3) considered to be refresher training?

Response: No. Section 1910.119(l)(3) only applies when there are changes to operations and maintenance that affect the PSM-covered process.

QL-09: Does the PSM standard requires employers to develop and implement written MOC procedures to address the safety and health impacts of organizational changes?

Response: Yes. The PSM standard requires employers to develop and implement written MOC procedures to address the safety and health impacts of contemplated changes, including organizational changes, as they relate to process chemicals, technology, equipment, procedures, and facilities.

Organizational changes that may affect PSM at the plant level and would therefore trigger a PSM MOC procedure could include:

- changes resulting from mergers, acquisitions, reorganizations,
- staffing or personnel changes including changes in staffing levels or staff experience,
- contracting out that directly impacts the PSM-covered processes, and
- policy changes such as budget cutting that impact PSM covered processes.

For example, when the number of employees operating a process is to be reduced due to an organizational change, operators may not be able to continue implementation of existing operating procedures. An MOC procedure must be implemented to manage the change, possibly by modifying existing operating procedures to reflect the new, reduced staffing level, and to ensure that operations remain safe under normal production and emergency upset conditions.

However, organizational changes that do not impact PSM-covered processes are not affected by the MOC provisions of the PSM standard. For example, changes to corporate or administrative personnel whose duties do not relate to operations or maintenance functions do not trigger MOC procedures.
Regional Administrators LoI 03/31/2009, and Palmer LoI 07/12/2006

M. 1910.119(m) – Incident Investigation

QM-01: Can an employer reject their incident investigation team's recommendation(s) that are contained in the team's incident report?

Response: Yes. An employer may reject their incident investigation team's recommendation(s) that are contained in the team's incident report. However, Section 1910.119(m)(1) requires that a team be established to investigate every "incident which resulted in, or could reasonably have resulted in a catastrophic release of [HHCs]." Section 1910.119(m)(5) requires the employer to promptly "address and resolve" recommendations and document corrective actions. Similar to Section 1910.119(e) regarding PHAs, this provision was designed to require the employer to respond to the investigation findings and recommendations, while at the same time allowing the employer the flexibility not only to reject incident investigation recommendations that are erroneous or infeasible, but also to modify recommendations that may not be as protective as possible or may be no more protective than less complex or expensive measures.
(See 57 Fed. Reg. 6395/3.)

Oregon OSHA considers an employer to have "resolved" the investigation team's findings and recommendations when the employer either has adopted the recommendations or has justifiably declined to do so. Resolutions and corrective actions shall be documented.

When an employer chooses to accept an incident investigation team's finding or recommendation, the employer is required to document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; and communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

Where a recommendation is rejected or modified, the employer should communicate this to the team, and expeditiously resolve any subsequent recommendations of the team.
An employer can justifiably decline to adopt an incident investigation team's recommendation where the employer can document, in writing and based upon adequate evidence, that one or more of the following conditions is true:

- The analysis upon which the recommendation is based contains material factual errors;
- The recommendation is not necessary to protect the health and safety of the employer's own employees, or the employees of contractors;
- An alternative measure would provide a sufficient level of protection; or
- The recommendation is infeasible.

N. 1910.119(n) – Emergency Planning and Response

QN-01: Does an employer have to comply with Oregon OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 CFR § 1910.120, for every release at a PSM-covered facility?

Response: No. With respect to the magnitude of a release of a HHC, Oregon OSHA recognizes that there are PSM-covered processes where the employer is not required to comply with Section 1910.120 based on the magnitude and nature of the hazard of a potential release. For example, employers may not be required to comply with Section 1910.120 for incidental releases. Incidental releases are those releases that neither pose a significant safety or health hazard to employees in the immediate vicinity or to the employees cleaning it up, nor have the potential to become an emergency within a short time frame. Incidental releases are limited in quantity, exposure potential, or toxicity. These releases can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area or by maintenance personnel. Examples of incidental releases include extremely small vapor releases, such as minor valve packing leakage and similar releases where exposures in the breathing zone of the employee would be less than the permissible exposure limit (PEL) and there is no risk of a catastrophic release. Emergency action plan procedures in accordance with OAR 437-002-0042 should specifically address the criteria used to determine whether a particular release is incidental. Certain considerations such as properties of the hazardous substance, the circumstances of the release, and the mitigating factors in the work area combine to define the distinction between incidental releases and releases that require an emergency response. The distinction is site-specific, and its impact is a function of the emergency response plan.

If the employer is not required to comply with Section 1910.120 and elects to comply with OAR 437-002-0042, actions taken to control or stop emergencies or incidental releases must be planned for in advance, and emergency procedures such as in Section 1910.119(f)(1) must be developed and implemented. Pre-planning for handling incidental releases for minor emergencies in the PSM-covered process area needs to be completed, appropriate equipment for the hazards must be provided, and training must be conducted for those employees who will perform the emergency work before they respond to handle an actual small or incidental release. The employer's training program must address the training for employees who are expected to handle incidental or small releases when the employer complies with OAR 437-002-0042.

The properties of hazardous substances, such as toxicity, volatility, flammability, explosiveness, corrosiveness, etc., as well as the circumstances of the release itself, such as quantity, confined space considerations, ventilation, etc., will have an impact on what releases employees can handle safely and what procedures should be followed. Additionally, there are other factors that may mitigate the hazards associated with a release and its remediation, such as the training or experience of the employees in the immediate work area, the response and available PPE, and the pre-established operating procedures such as in Section 1910.119(f)(1) for responding to releases of hazardous substances. There are also some engineering control measures that employers may have at their PSM-covered facilities to mitigate the release including the activation of an emergency shutdown system to control and stop the release.

Program Directive A-206 3/01/2008, Hudson LoI 06/24/2003, and Paulsen LoI 10/02/2017

QN-02: Must an employer with a PSM-covered process have an EAP as required in OAR 437-002-0042?

Response: Yes. Section 1910.119(n) requires the employer to establish and implement an EAP in accordance with the provisions of OAR 437-002-0042. The employer "may also be subject to the hazardous waste and emergency response provisions contained in Section 1910.120 (a), (p) and (q)." An employer's decision to completely evacuate the danger area and allow the local community emergency response organizations to handle a hazardous substance release is the foundation for deciding the applicability of the Section 1910.120 standard. There may be small or incidental releases where an employer may choose to comply with OAR 437-002-0042 instead of Section 1910.120. If the employer is not required to comply with Section 1910.120 and elects to comply with OAR 437-002-0042, the employer may decide as part of their EAP or operating procedures required by Section 1910.119(f)(1) that specific qualified employees are permitted to control or stop minor emergencies or incidental releases in the immediate release area. In accordance with OAR 437-002-0042, these actions must be planned for in advance, and procedures such as in Section 1910.119(f)(1) must be developed and implemented. See QN-01 for more details on incidental releases.
Program Directive A-206 3/01/2008, Hudson LoI 06/24/2003, and Paulsen LoI 10/02/2017

Scenario N-03: An employer operates an ammonia refrigeration system containing approximately 55,000 pounds of anhydrous ammonia. Emergency procedures and actions put in place by the employer include:

- *An EAP.*
- *The refrigeration staff will be the employees remaining behind or going into an adjoining space, to affect an emergency shutdown of ammonia equipment including electrical controls and isolation of equipment or lines using existing valves. This response is not responding to an incidental release (i.e., Section 1910.120 applies).*
- *To respond to an ammonia release, the employer plans for and has emergency responders don self-contained breathing apparatuses (SCBAs) when an ammonia release has occurred.*
- *An ammonia release horn sounds indicating the need for a facility evacuation. There is a mechanism in place for accounting for all employees and contractor employees on site after an emergency evacuation.*
- *The existing emergency response plan (ERP) has duties and responsibilities for those who must react to a fire or release within the facility.*

QN-03: Does the employer have to comply with Section 1910.120(q) requirements in Scenario N-03?

Response: Yes. The ammonia refrigeration process is a PSM-covered process because it contains greater than 10,000 pounds of anhydrous ammonia and none of the PSM exemptions apply to this process. Therefore, the employer must comply with all PSM requirements including the pertinent provision, Section 1910.119(n), emergency planning and response which requires employers to establish and implement an EAP in accordance with OAR 437-002-0042. Additionally, given the facts and actions described in Scenario N-03, Section 1910.119(n) also requires the employer to comply with the hazardous waste and emergency response requirements of Section 1910.120(a) and (q).

In this scenario, employees are not responding to an incidental release and must comply with Section 1910.120(q). The employees respond from outside the machine room (i.e., outside the immediate release area) and perform actions to control the release including emergency shutdown of ammonia equipment and isolation of equipment or lines using existing valves.

Oregon OSHA stated in its HAZWOPER compliance directive that limited actions, such as process operators turning valves during a release of hazardous materials, are regulated by Section 1910.120 [specifically Sections 1910.120(q)(6)(ii) or 1910.120(q)(6)(iii)]. The limited action taken by process operators must be addressed in the ERP required by Section 1910.120(q)(1). Program Directive A-206 3/01/2008, Hudson LoI 06/24/2003, and Paulsen LoI 10/02/2017

QN-04: Does Oregon OSHA require the employer to respond to a release of ammonia from their PSM-covered process?

Response: No. Section 1910.120(q)(1) allows employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, to be exempt from the requirements of this paragraph if they provide an emergency action plan in accordance with OAR 437-002-0042. See QN-01 for guidance on responding to releases, including incidental releases.
(NAME WITHHELD) LoI 01/26/1993

QN-05: Is there a requirement for two HHC release drills per year?

Response: No. There is no explicit Oregon OSHA requirement for the number of HHC release drills to be conducted each year. However, if an employer has a PSM-covered process that requires its employees to take some action in response to the release of a HHC, these actions must be addressed in the employer's PSM "procedures or plans" (i.e., Section 1910.119(f) — Operating Procedures, and Section 1910.119(n) — Emergency Planning and Response). If the employer decides drills are needed to assure that employees are adequately trained in those procedures, then Oregon OSHA requires the employer to include those drills in their procedures and plans, and the employer must also ensure that employees are trained in those procedures.

Section 1910.119(n) requires employers to establish and implement an EAP for the entire plant in accordance with OAR 437-002-0042. Section 1910.119(n) also states, "Employers covered under this standard may also be subject to the hazardous waste and emergency response provisions contained in Section 1910.120(a), (p) and (q)." Therefore, if the employer's EAP required by OAR 437-002-0042 contains provisions for conducting any type of drills, Oregon OSHA would require the employer to implement/conduct those drills. Likewise, employers subject to Section 1910.120(a) are required by Section 1910.120(l)(2) to have an ERP which includes specified minimum elements. Again, if the employer's ERP includes provisions for conducting any type of drills, Oregon OSHA would require the employer to implement/conduct those drills.
Palmer LoI 07/12/2006

O. 1910.119(o) – Compliance Audits

QO-01: Are audits required by the PSM standard part of Oregon OSHA's self-audit policy?

Response: No. Audits required by a standard are not self-audits. See OSHA's Final Policy Concerning the Occupational Safety and Health Administration's Treatment of Voluntary Employer Safety and Health Self-Audits, FR 65, pp 46498-46503, July 28, 2000.
White LoI 09/11/1996

QO-02: Are compliance audits in Section 1910.119(o) required for a new facility, one that is less than three years old?

Response: No. A new facility does not need to have an initial compliance audit. The compliance audit would be required to be completed at least every three years after the start of the PSM-covered process.

QO-03: Does an employer need to conduct another compliance audit after completion of their initial compliance audit?

Response: Yes. Employers must certify at least every three years that they have evaluated compliance with the PSM standard by verifying that the procedures and practices developed under the standard are adequate and implemented. Under Section 1910.119(o)(1), employers must conduct compliance audits within three years from the previous audit to meet the certification requirement.

QO-04: Regarding compliance audits, does Oregon OSHA require a specific sampling size for documents in elements which are specific to one covered process, such as PSI and MOC, to produce confident audit results?

Response: No. PSM is a performance-based standard and does not provide for or require the use of specific metrics on compliance audit sample sizes. However, during an inspection, employers may be expected to explain their sampling strategies in terms of statistical validity and audit results (see Section 1910.119 Appendix C, Compliance Guidelines and Recommendations for Process Safety Management (Nonmandatory).
Hazzan LoI 10/31/1996

QO-05: Does an employer have to document an appropriate response to each of the findings in the compliance audit and meet the provisions of Section 1910.119(o)(4)?

Response: Yes. The purpose of Section 1910.119(o)(4) is to ensure that employers determine an appropriate response to each of the report findings and, if employers identify a deficiency that needs to be corrected, that they document the correction of the deficiency. The appropriate response to each of the report findings must be promptly documented. The correction of any identified deficiency must be documented as soon as possible after the corrective action is taken.

QO-06: Do audit findings need to be corrected promptly after the audit is conducted?

Response: Yes. Oregon OSHA believes a compliance audit provides a critical function to verify that the procedures and practices developed under the PSM standard are adequate and implemented as written. Therefore, the employer shall promptly determine and document an appropriate response to each of the compliance audit findings. Therefore, the corrective actions of any finding must be completed promptly and documented.
DeGhetto LoI 02/24/1995, and McDonald LoI 01/05/1995

APPENDIX B

Supplemental Definitions, and Questions and Responses -
Additional non-mandatory information

The below definitions do not constitute official definitions of terms in the PSM standard. The following information provides clarification on some of the terms used in the PSM standard. Adding new definitions to Section 1910.119 requires rulemaking changes. The following definitions are included here as a quick reference to terms included in existing Letters of Interpretations (LoIs).

1. "At least every five years thereafter" - a periodic PHA may be required more frequently (i.e., less than 5 years) when an existing facility is modified such that the modification is significant enough to require a change in the process safety information (See Section 1910.119(d)), to assure that the PHA is consistent with the current process. Tolley LoI 01/11/1996
2. Hydrocarbon - an organic compound consisting exclusively of carbon and hydrogen. Wilkins LoI 02/04/2013
3. New facility – "A facility constructed on a work site where there are no other facilities," or a facility constructed on an existing work site such that it is not co-located or interconnected with the existing facilities. Tolley LoI 01/11/1996
4. Modified facility - equipment that contains a process constructed on an existing worksite where the equipment or the processes it contains is interconnected or colocated to an existing facility or process. Tolley LoI 01/11/1996

SQ&R A-06 for QA-06

Additional Examples:

For a chemical with a listed concentration, the same formula applies. For example, if a process involves a 10,000-pound mixture of 70% diacetyl peroxide and a solvent, the calculation is as follows:

Weight x [concentration] = amount of HHC

10,000 pounds x 70% = 7,000 pounds of diacetyl peroxide

7,000 pounds exceeds the 5000-pound threshold quantity.

But, in contrast, 5000 pounds of 70% diacetyl peroxide is not PSM-covered:

Weight x [concentration] = amount of highly hazardous chemical

5,000 pounds x 70% = 3,500 pounds of diacetyl peroxide

3,500 pounds is less than the 5,000-pound threshold quantity.

For a process containing 11,000 pounds of a 3% HHC solution, the HHC makes up less than 0.9 mole % of the vapor at a pressure 760 mmHg. The TQ of the HHC is 100 pounds.

To calculate this, the employer must measure the vapor space pressure at 760 mmHg and determine if the partial pressure of HHC in the vapor space is less than 10 mmHg. The employer shall document this partial pressure determination.

The HHC partial pressure is 760 mmHg x 0.009 = 7 mmHg which is less than 10 mmHg. Therefore, the process is not PSM-covered.

SQ&R A-48 for QA-48

The criterion "making a large release unlikely" does not refer to the frequency with which large release events might occur. Rather, the criterion is meant to help evaluate whether, if a release occurs the result is likely to be or lead to a large release.

SQ&R A-71 for QA-71

The manufacture of explosives and pyrotechnics for government agencies is regulated by the Department of Defense (DoD). In addition, ATF is responsible for licensing persons including DoD contractors servicing the U.S. Government engaged in manufacturing, importing, and dealing in firearms and explosives.

ATF has storage regulations for explosives that may preempt OSHA standards. ATF covers the import, manufacture, distribution, and storage of explosives (27 CFR Part 555). Its regulations require all manufacturers, importers, and dealers of explosives to obtain a federal license from ATF. In addition, employers transporting and/or receiving explosives must obtain a federal permit from ATF. ATF also regulates the storage of explosives. Because ATF's regulations at 27 CFR Part 555 specifically address working conditions associated with the storage of explosives, OSHA's storage requirements for explosives at Section 1910.109(c) are preempted under Section 4(b)(1) of the OSH Act by ATF's regulations at 27 CFR 555 Subpart K.

SQ&R B-05 for QB-05

Mixing, blending, and agitation can create hazards. During the process of gas-liquid mixing in agitators, the materials involved in an air-gas mixture can form an explosive mixture (due to the simple process of evaporation), and due care must be exercised to eliminate sources of ignition. In addition, hazards of combustion could be expected during liquid-liquid mixing.

OSHA reviewed an incident involving a blender. No chemical reaction was intended in this process. This blend, however, resulted in a major explosion including several fatalities. In this event, a leaking line resulted in the formation of a reaction between the water and the water reactive chemicals in the blender. This process was designed as a simple blending process, but due to the inadvertent leak, a massive explosion occurred. Therefore, the applicability of PSM is determined by the scope of Section 1910.119 which is under paragraph (a) and not by the method utilized to mix or blend chemicals. See AIChE CCPS Equipment Filling and Mixing – Incidents for examples of additional mixing incidents.

SQ&R B-23 for QB-23

- NFPA 1 - 2012, *Fire Code*, including Chapter 60, *Hazardous Materials;*
- NFPA 5000 - 2012, *Building Construction and Safety Code*, including Chapter 34 *High Hazard Contents;*
- NFPA 400 - 2012, *Hazardous Materials Code*, including Chapter 21, Storage, Use, and *Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks,* see Section 21.3.9, *Toxic and Highly Toxic Gases;* and
- NFPA 55 - 2010, *Compressed Gases and Cryogenic Fluids Code,* including Chapter 7, *Compressed Gases* which contains Section 7.9, *Toxic and Highly Toxic Gases*.

SQ&R E-08 for QE-08

With respect to the PHA team composition requirements, the standard requires that the team include at least one employee who has experience and knowledge specific to the process being evaluated. This provision is in addition to the requirement that the PHA team consist of individuals with knowledge in engineering and process operations.

For incident investigation team composition, Section 1910.119(m)(3) requires that the team include at least one person knowledgeable in the process involved. In this case a person knowledgeable could be, for example: 1) an employee that has in depth awareness of how the process functions, such as an operator or maintenance person; or 2) a person, such as a process engineer or operations supervisor, with knowledge related to how the process being investigated is designed or is supposed to work.

With respect to team composition requirements for compliance audits required by Section 1910.119(o)(2), a team approach (although recommended in Section 1910.119 Appendix C, Compliance Guidelines and Recommendations for Process Safety Management (Nonmandatory)) is not required when conducting audits to verify compliance with the PSM standard. Section 1910.119(o)(2) states, "The compliance audit shall be conducted by at least one person knowledgeable in the process."

Note that the phrase, "knowledgeable in the process," contained in Section 1910.119(o)(2) means the same as discussed in the above paragraphs relating to requirements of having a person knowledgeable of the process for an incident investigation team. For compliance audits, at least one person must have knowledge of the process being audited.

SQ&R E-09 for QE-09

CCPS Guidelines for Hazard Evaluation Procedures, 3rd Edition, emphasizes that the PHA team performing a PHA is essential to the success of the study. In general, the PHA team should have members with practical experience in operations, maintenance, and engineering. Depending on the complexity of the process, team members may consist of persons knowledgeable in process chemistry, equipment design, operating procedures, control strategy, or maintenance practices. In addition, other knowledgeable persons may be required to provide specific input to the team such as a metallurgical, controls, or civil engineers with knowledge in their perspective fields.

SQ&R K-01 for QK-01

AIChE/CCPS has developed safe work practice guidance materials. One of these guidance materials is *Hot Work*. This guidance provides examples of Hot Work that is listed as either open flame activities:

- Gas cutting and welding
- Electric arc welding
- Open flame boilers / space heaters
- Brazing
- Soldering
- Stress relief and heat treatment
- Use of explosives
- Exposure of pyrophoric scale or "Spark Potential" activities:
    - Cutting and grinding
    - Needle guns
    - Sand blasting / abrasive blasting
    - Internal combustion engines (e.g., trucks, forklifts, etc.)
    - Use of non-intrinsically safe electrical equipment
    - Stress relief and heat treatment
    - Opening sealed and/or pressurized electrical equipment (e.g., junction boxes, switches, light fixtures, etc.)
    - Electrostatic discharge / static electricity
    - Jackhammers / chippers
    - Hammering / impact tools
    - Opening/operating equipment that could create a flammable source in the presence of existing ignition sources (e.g., process heater fireboxes)

SQ&R L-04 for QL-04

For more information on management of change see CCPS, *Guidelines for the Management of Change for Process Safety* and *Appendix A: Examples of Replacements-In-Kind and Changes for Various Classes of Change*.

APPENDIX C

References: Standard Interpretations, CPLs, and MoUs in the Q&A and sorted by date.

Schulte MoU 08/08/1974	https://www.osha.gov/laws-regs/mou/1974-08-08
FR 57:6356 02/24/1992	https://www.osha.gov/laws-regs/federalregister/1992-02-24
Grumbles LoI 03/25/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-03-25-2
Gerard LoI 06/04/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-06-04
Ludlow LoI 06/15/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-06-15-0
Reamv LoI 06/24/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-06-24-0
Samartinov LoI 06/24/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-06-24-2
Franklin LoI 06/28/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-06-28
Marvin LoI 08/28/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-08-28-1
Atwood LoI 09/01/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-09-01-1
Trinkl LoI 09/16/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-09-16
Stubblefield LoI 09/21/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-09-21
(NAME WITHHELD) LoI 10/09/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-10-09
Cole LoI 10/22/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-10-22-0
Schieli LoI 10/28/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-10-28
Walker LoI 12/21/1992	https://www.osha.gov/laws-regs/standardinterpretations/1992-12-21-0
Woody LoI 01/21/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-01-21

(NAME WITHHELD) LoI 01/26/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-01-26-6
(NAME WITHHELD) LoI 02/02/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-02-02-0
Townley LoI 02/03/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-02-03-0
Zoll LoI 04/14/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-14
Miller LoI 04/28/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-28
Lee LoI 05/03/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-05-03
LaRue LoI 06/24/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-06-24-0
Collins LoI 07/09/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-07-09-1
Orth LoI 08/19/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-08-19-0
Bierlein LoI 09/08/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-09-08
Tappan LoI 09/09/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-09-09-0
Zoll LoI 09/20/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-09-20
Plaisance LoI 12/14/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-12-14
Roberts LoI 12/30/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-12-30-2
Lancour LoI 12/30/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-12-30-1
McLean LoI 12/30/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-12-30
Dzwierzynski LoI 12/30/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-12-30-0
Hamsayeh LoI 01/26/1994	https://www.osha.gov/laws-regs/standardinterpretations/1994-01-26

Lancour LoI 01/28/1994	https://www.osha.gov/laws-regs/standardinterpretations/1994-01-28
McLean LoI 01/31/1994	https://www.osha.gov/laws-regs/standardinterpretations/1994-01-31
Zoll LoI 04/14/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-14
Miller LoI 04/28/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-28
Lee LoI 05/03/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-05-03
Zoll LoI 04/14/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-14
Miller LoI 04/28/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-04-28
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LaRue LoI 06/24/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-06-24-0
Collins LoI 07/09/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-07-09-1
Orth LoI 08/19/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-08-19-0
Bierlein LoI 09/08/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-09-08
Tappan LoI 09/09/1993	https://www.osha.gov/laws-regs/standardinterpretations/1993-09-09-0
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APPENDIX D

ACRONYMS AND ABBREVIATIONS

AHF - Anhydrous hydrogen fluoride
ATF - Bureau of Alcohol, Tobacco, and Firearms
CFR - Code of Federal Regulations
CPL - OSHA Compliance Directives
CTMV - Cargo tank motor vehicle
DOT - US Department of Transportation
EAP - Emergency action plan
EPA - US Environmental Protection Agency
EPP - Employee participation plan
ERP - Emergency response plan
FCCU - Fluid catalytic cracking unit
FRC - Flame-resistant clothing
HHC - Highly Hazardous Chemical
LNG - Liquefied natural gas
LoI - Letter of Interpretation
LPG - Liquefied petroleum gas
MI - Mechanical integrity
MOC - Management of change
MoU - Memorandum of Understanding
NAICS - North American Industry Classification System
NGL - Natural gas liquid
NURF - Normally unoccupied remote facility
OSHA - Occupational Safety and Health Administration
P&ID - Piping and instrumentation diagram
PHA - Process hazard analysis
PHMSA - Pipeline and Hazardous Material Safety Administration
PPE - Personal protective equipment
PPU - Positive pressure unit
PSI - Process safety information
psia - Pounds per square inch absolute
psig - Pounds per square inch gauge
PSM - Process Safety Management of Highly Hazardous Chemicals 29 CFR § 1910.119
PSSR - Pre-startup safety review
PQV - Program-Quality-Verification
OCPSEI - Office of Chemical Process Safety and Enforcement Initiatives
RA - Regional Administrator
RAGAGEP - Recognized and generally accepted good engineering practices
SCBA - Self-contained breathing apparatus
SDS – Safety datasheet
SIS - Safety instrumented system
SWP - Safe work practice
TQ - Threshold quantity
UPS - Uninterruptible power supply
SQ&R - Supplemental Question and Response

APPENDIX E

ADDITIONAL REFERENCES

Additional references for compliance with the PSM Standard

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No. 4 "Do's and Don'ts" Instructions and Warnings

No. 12 Glossary of Industry Terms

No. 17 Safety in the Transportation, Storage, Handling and Use of Explosives

No. 20 Safety Guide for the Prevention of Radio Frequency Radiation Hazards in the Use of Electrical Blasting Caps

No. 22 IME Standard for the Safe Transportation of Class C Detonators (Blasting Caps) In a Vehicle with Certain Other Explosives

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