

Pre-Startup Safety Review

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In this section, we will

- ▶ Spirit of PSSR
- ▶ Review of 1910.119(i)
- ▶ Linkage with other elements of the standard
- ▶ Review of OSHA-issued interpretations related to PSSRs
- ▶ Recommendations from CCPS & others

Pre-Startup Safety Review

- ▶ *A comprehensive, documented review of the design & construction of new and modifications to covered processes to verify that they are acceptable and the PSM requirements are in place prior to using the process.*



PSSR

- ▶ It is a quality assurance process intended to
 - assure no unintended hazards are introduced
 - assure risks are properly evaluated & minimized
 - be exercised during the life of the project & completed before changes are implemented



Motivation for PSSR

- ▶ Regulatory [1910.119(i)]
- ▶ New construction & process expansion is part of the life of most plants
- ▶ We cannot overlook the value of a functioning PSSR program
 - Quality assurance check of MOC
 - Easily is short changed in the rush of getting the project up-and-running to make & store product

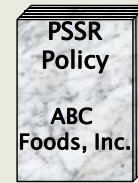
PSM Standard Preamble Excerpt

- ▶ *“OSHA believes that one of the most important and necessary aspects of a process safety management program is appropriately managing changes to the process.”*
 - *So important that PSSR is built around monitoring the quality of the MOC process*



PSSR

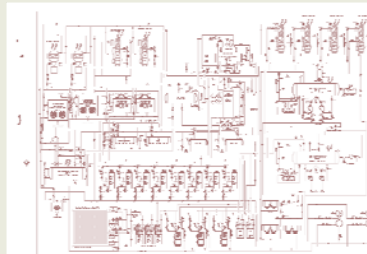
Reference: 1910.119(i)



- (1) The employer shall perform a 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

PSSR

Reference: 1910.119(i)



- (2) The pre-startup safety review shall confirm that prior to the introduction of highly hazardous chemicals to a process:
 - (i) Construction and equipment is in accordance with design specifications;
 - (ii) Safety, operating, maintenance, and emergency procedures are in place and are adequate;

PSSR

Reference: 1910.119(i)(2) cont.

- (iii) For new facilities, a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and modified facilities meet the requirements contained in management of change, 1910.119(l).
- (iv) Training of each employee involved in operating a process has been completed.

PSSR

- ▶ Note references these other sections of the PSM Standard
 - Process safety information (d)
 - Operating procedures (f)
 - PHA (e)
 - MOC (l)
 - Training (g)

PSSR

Reference: 1910.119(i)

- (1) The employer shall perform a 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**

What triggers a PSSR?

- ▶ It seems pretty straight forward...do we even need a definition of “significant?”
 - “...require a change in process safety information”
 - Pretty broad definition. What constitutes a “change”?
 - Is any addition to PSI a change?
- ▶ MOC process
 - Does your MOC form have a checkbox to indicate whether or not the change requires PSSR?

PSI Changes

- ▶ **Chemical information**
- ▶ **Technology information**
 - Block flow & P&IDs
 - Inventory
 - Safe limits (pressures, temperatures, flows, ...)
 - Consequences of deviation
- ▶ **Equipment information**
 - Materials of construction
 - Electrical classification
 - Safety system designs (relief, ventilation, interlocks, detection systems, emergency shutdowns, etc.)
 - Material and energy balances

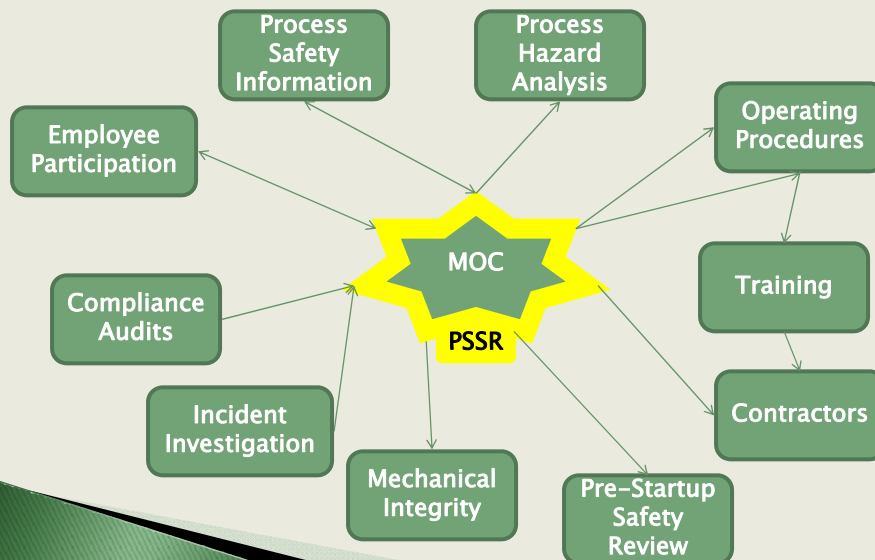
Is PSSR Required When?

Description	Yes	No
Plant expansion in a facility that will raise inventory of chemical above TQ		
Adding an additional identical evaporator to an existing cold space		
Adding plate pairs to a plate-frame evaporator		
Replacing a Hansen HA4A regulator with an R/S A4A		
Bringing an evaporator back online after cleaning a strainer		

Definition of “significant”

- ▶ **Recommendation:** Include a number of examples of changes that are considered “significant” (i.e. trigger events) as-defined in your program and consistent with the requirements of 1910.119

Linkage with other elements



Who authorizes a PSSR

- ▶ Appropriate personnel should be included

Personnel	Verifies & signs off on
PSM coordinator	None
Maintenance supervisor	Operating procedures
Engineering manager	PSI, MOC, Design/construction specifications
Safety director/representative	Training
Purchasing representative	Receipt of specified materials
Plant manager	MOC
Corporate engineer	PHA

Note: whomever signs off is the person verifying the appropriate changes have been made

Who is Responsible for PSSR?

- ▶ Corporate or plant personnel?
- ▶ Do you have anyone within your plant utility department's hierarchy that:
 - Is independent of the work being done,
 - Is knowledgeable of the process, and
 - Sees value in QA'ing the project?

Common PSSR Problems

- ▶ **OSHA-Identified Common PSSR Problems**
 - Not done before introduction of ammonia
 - Not done by competent personnel
 - Construction documents not used as the basis of the Pre-Startup Safety Review
 - P&ID's not current when the Pre-Startup Safety review is performed

OSHA Interpretations

- ▶ Tolley - 1996
 - *What changes are significant enough to be called a "new" facility?*
 - ...a "facility" means buildings, containers and equipment which contain a process. A facility constructed on a work site where there are no other facilities is considered a new facility.
 - ...PSSR standard would be applicable to "new facilities and to modified facilities which contain a covered process", that is, a process in which (at any one point in time) there is a threshold quantity or great amount of a HHC.

CCPS Recommendations

- ▶ Identify events that should trigger PSSR
- ▶ Have multiple level of PSSRs (simple → complex)
- ▶ Audit PSSR process to streamline future PSSRs
- ▶ PSSR team
 - Broad involvement to steep PSSR into plant “culture” & insure employee participation
 - Independent of specific project or subproject

PSSR for RIK?

- ▶ Could an RIK that involves the shutdown of the system or a portion of the system be subject to a PSSR?
- ▶ Said another way, could a PSSR be utilized for an RIK requiring shutdown?
 - Simplified checklist to insure that maintenance procedure is followed



PSSR Conclusions/Thoughts

- ▶ Review the use of PSSR within your facilities during a compliance audit
- ▶ If PSSR is not consistently used, investigate why undone & propose changes to the process to increase use
- ▶ Consider additional, simple PSSRs that provide quality assurance of maintenance & operating procedures