



**MARY KAY O'CONNOR
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BEST PRACTICES FOR MANAGEMENT OF CHANGE (MOC) AND PRE START-UP SAFETY REVIEWS (PSSR)

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ABSTRACT

Situation/Problem

Since the Occupational Safety & Health Administration (OSHA) implemented its Process Safety Management Program (PSM) in 1992, two elements; Management of Change (MOC) and Pre Start-up Safety Reviews (PSSR) continue to be two of the more challenging elements for companies to implement and maintain. These two elements alert and inform personnel that a process change is taking place, and that change has been looked at and reviewed by the relevant facility personnel. Pre Start-up Safety Review also ensures that the change, once completed but before startup or operation;

- has been properly implemented,
- with necessary documentation, including P&IDs and SOPs, updated,
- and that affected personnel have been properly informed and trained on the changes.

It takes diligent efforts of many working in concert to ensure that change is properly identified, analyzed, and executed in a quality and complete way. Conditions including large employee turnover, ever changing rules and regulations, overly worked or insufficiently trained personnel may hinder or make it hard to manage change and conduct Pre Start-up Safety Reviews efficiently and effectively. “We are not a PSM covered process,” “It’s an emergency situation,” and “We are so far behind in our documentation, that it would take years to get caught up and complete” are some of the excuses given for why MOCs and PSSRs are not performed or completed. When skipped or not comprehensively managed, deficient MOCs and PSSRs, two of

the very important elements in the PSM program, have led to catastrophic results and some of the biggest incidents at process facilities.

Resolution/Problem

MOCs and PSSRs are not just documentation and paperwork burdens performed for regulatory compliance. They are essential safety processes that require personnel and management to know and understand the chemical or manufacturing process and the hazards and risks involved in operating that process. They require knowledgeable and trained personnel to think through the process and be attentive on the job when a change needs to occur for production or safety reasons. As added bonuses, MOC and PSSRs are both excellent cost-effective process safety and business loss prevention tools for almost any business.

Results

This presentation will examine the rules for MOC and PSSR according to the OSHA 29 CFR 1910.119(l)(1) and OSHA 29 CFR 1910.119(i)(1) and (2) standards respectively and will also discuss some best practices and examples of appropriate documentation and forms for MOC and PSSRs, including a risk-based approach.

Lessons Learned

Improperly conducted or ignored MOCs and PSSRs have led to catastrophic events in industry. This presentation examines the elements of effective MOC and PSSR elements, their requirements according to the OSHA standard, best practices and examples of good documentation and forms. When properly conducted and applied, MOC and PSSR programs will help take both personnel and their companies from a hopefully compliant process safety management program to one of Process Safety Excellence.

Introduction:

Recent major disasters, which occurred prior to 1992, include;

- the Flixborough, England incident at Nypro Corp in June 1, 1974 killed 28 people and seriously injured 36 (Flixborough disaster, 2017) ;
- the Dec 2-3,1984 Bhopal, India, incident resulting in 2,259 immediate and now 3,787 deaths (Bhopal disaster, 2017);
- the October 1989 Phillips Petroleum Company, Pasadena, TX, incident resulting in 23 deaths and 132 injuries (Phillips disaster of 1989, 2017);
- the July 1990 BASF, Cincinnati, OH, incident resulting in 2 deaths and injured 70 others (AP, 1992) ; and
- the May 1991 IMC, Sterlington, LA, incident resulting in 8 deaths and 128 injuries (Death Toll Reaches 8 in Louisiana Blast, 1991). (Alexis M. Herman, Reprinted 2000)

In response, the Occupational Safety & Health Administration (OSHA) implemented its Process Safety Management Program (PSM) in 1992. Since then, some more major incidents have still occurred, including:

- the Morton chemical incident on April 8, 1998 in Paterson, NJ – nine people injured; The BP incident March 23, 2005 which killed 15 and injured 180 others.
- (Texas City Refinery explosion, 2017).

- I can also give two other more recent incidents, which I personally investigated, where luckily, no one was injured, but resulted in explosion propagation causing major equipment damage with delayed process startup for a newly installed process and equipment damage and loss of production and profits for eight weeks on an existing process.

These later incidents are directly related to inappropriate management of two key elements in PSM, Management of Change (MOC) and Pre Start-up Safety Reviews (PSSR).

Presentation:

These two elements, Management of Change (MOC) and Pre Start-up Safety Reviews (PSSR) continue to be two of the more challenging elements for companies to implement and maintain. These two elements are meant to ensure that process changes, modifications and newly designed processes for hazardous or even normal non-hazardous processes:

- Have a purpose and are done for the right reason
- Have the right personnel (engineering, maintenance, electrical safety, management) involved in and review the process and proposed changes
- Approved to proceed
- Accurately tracked from inception to complete
- Ensure the process is installed or modified per the proposed changes and/or design and that all documentation, including PHAs with recommendations, P&IDs, operating procedures and associated personnel training are completed before introducing highly hazardous chemicals into and starting the process.

According to OSHA PSM program 29 CFR 1910.119 (US Department of Labor , 1992-), these two elements PSSR and MOC should at minimum contain and document the following:

PSSR (US Department of Labor , 1992-)

1910.119(i)

Pre-startup safety review.

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.

1910.119(i)(2)

The pre-startup safety review shall confirm that prior to the introduction of highly hazardous chemicals to a process:

1910.119(i)(2)(i)

Construction and equipment is in accordance with design specifications;

1910.119(i)(2)(ii)

Safety, operating, maintenance, and emergency procedures are in place and are adequate;

1910.119(i)(2)(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, paragraph (l).

1910.119(i)(2)(iv)

Training of each employee involved in operating a process has been completed.

MOC

1910.119(l)

Management of change.

1910.119(l)(1)

The employer shall establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process.

1910.119(l)(2)

The procedures shall assure that the following considerations are addressed prior to any change:

1910.119(l)(2)(i)

The technical basis for the proposed change;

1910.119(l)(2)(ii)

Impact of change on safety and health;

1910.119(l)(2)(iii)

Modifications to operating procedures;

1910.119(l)(2)(iv)

Necessary time period for the change; and,

1910.119(l)(2)(v)

Authorization requirements for the proposed change.

1910.119(l)(3)

Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

1910.119(l)(4)

If a change covered by this paragraph results in a change in the process safety information required by paragraph (d) of this section, such information shall be updated accordingly.

1910.119(l)(5)

If a change covered by this paragraph results in a change in the operating procedures or practices required by paragraph (f) of this section, such procedures or practices shall be updated accordingly.

Some recurring reasons or excuses that have been used, some that I have personally heard for not properly completing these two critical elements are:

- Lack of actual Process Design and Safety information

- P&IDs out of date – not complete and updated for current process and it would take too much time to complete
- Lack of good operating procedures
- Testing critical process safety parameters takes too much time which we do not have
- Lack of competent personnel onsite to lead, carry out and manage these programs
- Equipment, including valves and piping, not identified or properly labeled and again we do not have the time or resources to do it

This presentation will provide details on best and recommended practices for MOC and PSSR that I have put together from literature research and specific experience at numerous client sites over the past 3.5 years. It will include actual documented examples of PSSR and MOC that have been done well and that I personally have implemented and also submitted to OSHA for sites to assist with regulatory compliance and get them back up and running safely and effectively.

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