Assuring Safe Operation in Fulfilling Action Item Requirements

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Executive Summary

The purpose of this paper is to clarify the requirements of a tracking system for the resolution of action items as laid out in the PSM standard. The intent is to assist employers at facilities covered by the OSHA Process Safety Management (PSM) standard, 29CFR1910.119, in ensuring their systems comply with both the requirements and spirit of the regulation. PSM related action items require tracking and documentation in a system that ensures the timely resolution of these items.

Abstract

The intent of the OSHA PSM Standard is to ensure that a facility can operate in the safest possible manner. This includes the time between the identification of a deficiency and the resolution of the deficiency. The tracking system as required by the standard is intended to make sure the necessary safety precautions are in place to ensure the safest possible condition until the modifications can be made. One of the most common mistakes in action item tracking systems is the lack of documentation for how the facility will operate safely until the change. In some cases, no change in operations may be required, but in either case the standard required documentation to that affect.

Introduction

All facilities covered by OSHA's PSM standard will develop action items. These items may be termed: action items, findings, recommendations, and/or concerns, depending on the nomenclature used in each element of the standard at the facility. An individual facility may use any combination of these terms throughout their PSM implementation; no matter what the nomenclature, categorized by at least one of the following in common:

- They are generated as part of collecting the required PSI as part of the PSM process
- They require additional engineering/management work and potentially modifications to the facility
- Generally the individual or group that generates the finding is not responsible for resolving the finding

For the purposes of consistency, all items meeting the above criteria will be termed "action items", and "action plan" to describe the resolution to the item. The following examples along with the specific PSM element that may generate them:

- **Process Hazard Analysis' (PHA's**) generate concerns or recommendations that require additional investigation or work outside the PHA's charter or scope. For example, a PHA may identify that further analysis needs to be performed to ensure the crude charge heater is sufficiently protected and identify the following recommendation: "Consider further investigation to ensure that the crude charge heater shutdown system is designed as a SIL-I system per industry standard ISA S.84."
- **Incident investigations** generate recommendations or follow-up items that require either additional study or modifications to the facility or procedures. For example, after an employee was injured due to a spill the incident investigation team may make the following recommendation: "Ensure that the analyzer shack and the nearby

equipment does not impede access to the eyewash and shower station near the main crude pipe still."

- **Compliance audits** uncover concerns that require additional verification or modifications to procedures used to implement the PSM standard. For example, an audit team may develop the following action item: "Verify that the operating procedures certification system ensures all operating procedures are certified annually."
- **Mechanical Integrity (MI)** programs perform routine inspection of equipment that may identify potential equipment deficiencies. For example after inspections the following action item may be generated: "Perform a fitness for service evaluation on the condensate drum for the amine regenerator tower reboiler to ensure that it is fit for service per API RP 579."
- **Process Safety Information (PSI)** requires that a facility document information that touches all aspects of the facility's operations. The generation and revalidation of this information can result in concerns. Particularly potential concerns associated with equipment deficiencies from the required engineering or data gathering studies. For example, during a facility wide overpressure protection system revalidate a relief device was found not to provide adequate relief capacity in the event of a power failure, the action item was generated: "Consider the increasing relief capacity on the Debutanizer Tower."

Intent of the Standard

The intent of the PSM standard that action items be addressed and resolved in a timely manner. Note that while the PSM standard also requires certain on-going tasks: refresher training for operators (including the input from employee participation), routine inspection of equipment, annual certification of the operating procedures, auditing of contract employers/employees, management of change, etc, these actions are not considered to be action items or action plans. The scope of this document is to review the requirements of the action items generated as part of these processes, not the implementation of these processes. Implementing a system to track and resolve action items is critical; there may not be a single individual accountable for the resolution of the action item and therefore may slip through the cracks.

Summary of requirements for action items

What OSHA requires for these action items:

1. The employer shall establish a system to promptly address these action items (develop a plan for resolving the item and assign responsibilities)
2. Assure that the action items are resolved in a timely manner
3. Document the resolution of the action item (update process safety info etc,)
4. Develop a written schedule of when corrective action is to be taken
5. Communicate the resolution to affected employees
6. For deficiencies requiring change at a later date (upcoming turnaround), develop means are taken to assure safe operation until the final corrective action is taken

Based on experience, most action item' resolutions lack a written schedule and the documentation of interim steps required to ensure safe operation until the modifications.

Having a system to accurately document the process and set the schedule for the implementation of the action items is very important. So what does all of this mean in practical terms to an operating facility?

The employer shall establish a system to promptly address these action items

There is very little detail given in OSHA's PSM Standard, the Compliance Guidelines and Enforcement Procedures, and the Process Safety Management Booklet as to what is expected of the program. This is a performance-based requirement; so as long as everything is addressed for each action item and recommendation, the system is adequate.

Assure that the action items are resolved in a timely manner

From the *Preambles to Final Rules for the Process Safety Management Standard* (Section 3 - III. Summary and Explanation of the Final Rule) it is documented that in most cases, OSHA expects that most PHA actions be completed within a year or two.

> 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.

However, it must be noted, the "resolution" standard, 1910.119(e)(5) states that the employer must, "…complete actions as soon as possible,…". Therefore, the employer needs to address each particular action item and completion schedules on a case-by-case basis. There are action items that cannot justifiably be scheduled for completion one or two years after their identification. A good example of this case: leaks, mal-operating equipment, safety equipment missing or in disrepair, etc. For items involving equipment deficiencies, the interpretation of timely manner needs to be developed in conjunction with the last item in the summary of requirements list (item 6).

If an employer chooses to continue to operate with equipment deficiencies, they must take other necessary means to assure safe operation until the next opportunity to bring the deficient equipment within acceptable limits of operation. Part of the evaluation to determine whether the "necessary means" for continued safe operation are adequate is the need to conduct an MOC (Management of Change) as required by the standard. Depending on the complexity of this change in operation, a company may need to conduct a PHA (this is required if the change modifies the input information used in the existing PHA, feed composition, operating conditions, materials of construction, etc.) to determine the safety and health impacts of the change. For example: replacement of a product pump and product cooler may only require an MOC and the effects on the process are confined and relatively easily understood. While the replacement of a separate heating and cooling system into a heat-integrated system may require a PHA as all the effects of the modifications are not obvious and a team may be required to ensure the safety of the facility.

Document the resolution of the action item

The system must document the action that will correct the action item. Based on OSHA's enforcement guideline, CPL 02-02.45A CH-1, there are four reasons for not implementing an action item as listed; three "no change" resolutions for a PHA 1910.119(e)(6) or incident investigation 1910.119(m)(5) action item (1, 2, & 4) and one way to do something other than the recommendation (3):

1. The analysis upon which the recommendation is based contains material factual errors;

2. The recommendation is not necessary to protect the health and safety of the employer's own employees, or the employees of contractors;
3. An alternative measure would provide a sufficient level of protection; or
4. The recommendation is infeasible.

While it is not explicitly stated anywhere else in the OSHA documentation reviewed by the author, it is the author's belief that these guidelines can be extrapolated to any action items generated by the PSM process. Thus, either the action item needs to be documented with an actionable resolution (action plan) or one of the above criteria needs to be documented. If alternative measures are used, the documentation must state what is going to occur and why this is equivalent to or better than the original plan. For example, if an action item was generated using material containing factual errors, documentation should include the corrected analysis, not simply stating the information was incorrect.

Develop a written schedule of when the action is to be taken

The interpretation of a "timely manner" is very important in developing a written schedule for the execution of an action plan. The objective of this process is to ensure the highest possible level of safety for employees, contractors, and the facility. For this reason, some actions are dangerous to perform than the risk of waiting to perform the action. Very simple action items can be performed almost immediately such as, "Verify that the isolation valve on the inlet of relief device PSV-001 is car-sealed open, if not, apply a car-seal to the valve". It would be appropriate to establish a schedule for this action item for competition within 1 month. Some more complicated actions cannot be performed safely until all or part of the facility is shut down, in such cases scheduling completion for the next scheduled outage would be acceptable. There are many action plans that would fall in between these levels of complexity, and it should be ensured that the interest of safety is the primary goal in establishing schedules for these items. Therefore the efforts to ensure safe operation until the change has been executed must be taken.

Communicate the resolution to affected employees

There are two cases for informing affected employees: where no action is required and those that require action.

No change required—a clean, simple way to communicate the logic and resolution for these action items is to circulate the approved documentation to the team that developed the concern as well as those potentially affected.

Change required—since this will be a change, the implementation process will require an MOC. Therefore, the team that developed the action item should be notified of the resolution as well as the affected personnel via the same method as requireed for an MOC. The provisions for MOCs 1910.119(l)(3) and 1910.119(l)(4) require notification of affected personnel through the update of the following prior to start-up:

- Process safety information (PSI)
- Operating procedures
- Mechanical integrity programs
- Training and training material

Ensure means are taken to assure safe operation until the final action is taken

Each action item that is associated with equipment being outside of acceptable limits must have documentation that states continued operation is safe. According to the PSM standard, 1910.119(j)(5):

> …The employer shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in paragraph (d) of this section) before further use or in a safe and timely manner when necessary means are taken to assure safe operation…

This can be extremely tricky, as hindsight is 20/20. Almost by definition this item deals with instances where equipment or the installation does not meet internal standards or those for the industry (a physical change is required). From the *Preambles to Final Rules for the Process Safety Management Standard* for this paragraph, there was a lot of input from industry that helped change the rule from "before further use" to "before further use or in a safe and timely manner." The arguments cited by the rulemaking participants that changed their views were:

- Not all deficiencies result in unsafe conditions
- The correction of a deficiency (outside of a normal turnaround cycle) could actually increase site risk

The consensus of the rulemaking participants was that the deficiency *needed* to be fixed. Thus, in the opinion of the authors, all deficiencies need to be addressed in a timely manner and the owner of the facility can determine the timeframe based on balancing the risk associated with the deficient equipment versus the risk associated with the corrective action; but documentation to that affect needs to be included in the action plan. Care needs to be given to ensure that the reduction in risk (assuming the deviation is fixed) provides a material increase to the facility's safety. Depending on the deficiency, it may be fixed during the next turnaround, or possibly the next planned or unplanned shutdown. If the risk of operating with the deficiency is too great and should not wait until the next scheduled shutdown, then the company would need to immediately shutdown the process and fix the condition which is outside acceptable limits. In some cases operations modifications may be made to ensure safe operation until the modifications can be performed. This usually involves temporarily modifying the safe operating limits for a unit, most often throughput. For example, it was found that the relief device on the Distillate Hydrotreater Feed Surge Drum does not provide adequate relief capacity in the event of a blocked liquid outlet. The action plan is to replace the relief device at the next shutdown (planned or unplanned), however in the interim, it was determined that the unit should be turned down to 90% of normal throughput to ensure the proper protections are in place until the change can be made.

Conclusion

If your system tracks all of the above items and your team is putting effort into the system to document and resolve items in a timely manner, you are on your way to PSM compliance. However, the experience indicates that rarely does a system document what means are in place to assure safe operation until the modifications can be performed. The primarily goal is to improve safety, and all steps needs to be included for the system to be a stand alone demonstration of this.

Cited Works

The following works are cited throughout the paper and listed below for convenience. Each citing has a hyperlink to the OSHA website, which contains the entire text of the document.

I. U.S. Occupational Health and Safety Administration, "Standard for Hazardous Materials — Process Safety Management of Highly Hazardous Chemicals," 29 CFR 1910.119.

II. U.S. Occupational Health and Safety Administration, "Compliance guidelines and enforcement procedures," CPL 02-02.45A CH-1.

III. U.S. Occupational Health and Safety Administration, "Process Safety Management Booklet," OSHA Publication 3132.

IV. U.S. Occupational Health and Safety Administration, "Preambles to Final Rules for the Process Safety Management Standard," Section 3 - III. Summary and Explanation of the Final Rule.