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Ensuring safe operations when fulfilling action item requirements

Consider implementing this criteria to accurately document the process

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The intent of the Occupational Safety and Health Administration (OSHA) process safety management (PSM) standard is to ensure that facilities operate in the safest possible manner. This includes the time between identifying a deficiency and resolving that deficiency. The tracking system required by the standard is intended to make sure necessary safety precautions are in place to ensure that the safest possible conditions exist until modifications can be made. A common mistake in action item tracking systems is the lack of documentation for how the facility will operate safely until the change is implemented. In some cases, no change in operations may be required; but, in either case, there is standard required documentation to that effect.

Background. All facilities covered by OSHA's PSM standard 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 the PSM implementation; no matter what the nomenclature, action items are categorized by at least one of the following:

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

For consistency purposes, all items meeting the previously described criteria will be termed "action items" and "action plan" to describe the resolution to the item. Fol-

lowing are examples along with the specific PSM element that may be generated:

- **Process hazard analyses (PHAs)** 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 that the crude charge heater is sufficiently protected with the following recommendation to be identified: "Consider further investigation to ensure that the crude charge heater shutdown system is designed as a safety integrity level 1 (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 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 that all operating procedures are certified annually."

- **Mechanical integrity** 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 revalidation a relief device was found not to provide adequate relief capacity in the event of power failures, so the following action item was generated: "Consider the increasing relief capacity on the debutanizer tower."

Standard's intent. The PSM standard's intention is that action items should be addressed and resolved in a timely manner. Keep in mind that, while the PSM standard also requires certain ongoing tasks (refresher training for operators including the input from employee participation; routine equipment inspection, annual certifying of operating procedures, auditing contract employers/employees, management of change, etc.) are not considered to be action items or action plans. The article's scope is to review action item requirements generated as part of these processes, not the process implementation. 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. OSHA requires that employers:^{1,3}

1. 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 each action item (update process safety information, etc.)

4. Develop a written schedule of when corrective action is to be taken

5. Communicate the resolution to affected employees

6. Deficiencies requiring change at a later date (upcoming turnaround), develop the means to be 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 are complete. 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 this mean in practical terms to an operating facility? An employer shall establish a system to address action items. There is very little detail given in OSHA's PSM standard, compliance guidelines and enforcement procedures and the PSM booklet as to what is expected of the program. This is a performance-based requirement; as long as everything is addressed for each action item and recommendation, the system is adequate.

Resolve action items in a timely manner. OSHA expects that PHA actions be completed within a year or two.⁴ In most cases, OSHA believes those employers will be able to complete these actions within that 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 schedule on a case-by-case basis. There are action items that cannot justifiably be scheduled for completion one or two years after their identification. Some examples include leaks, maloperation of equipment, safety equipment missing or in disrepair, etc. For items involving equipment deficiencies, the interpretation of "in a timely manner" needs to be developed in conjunction with item No. 6 in the summary of requirements list.

If employers choose 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 operation limits. Part of the evaluation to determine whether the "necessary means" for continued safe operation are adequate is the need to conduct a management of change (MOC) 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, replacing a product pump and product cooler may only require an MOC. 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. A team may be required to ensure the facility's safety.

Document the resolution of the action item. The system must document what course of action will be taken to correct the action item, even if no physical changes are required. There are four reasons for not implementing an action item³—three "no change" resolutions for a PHA 1910.119(e)(6) or incident investigation 1910.119(m)(5) action item (items 1, 2 and 4 below) and one way to do something other than the recommendation (item 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 protection level

4. The recommendation is infeasible.

While it is not explicitly stated anywhere else in the OSHA documentation reviewed by the authors, the authors believe that these guidelines can be extrapolated to any action item generated by the PSM process. Thus, either the action item needs to be documented with an actionable resolution (action plan), or one of the criteria listed previously 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 that the information was incorrect.

Develop a written schedule. 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 more dangerous to perform than the risk of waiting to perform the action. Very simple action items can be performed almost immediately, such as to "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 completion within one 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, efforts to ensure safe operation until the change has been executed must be taken.

Communicate the resolutions. 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 to 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 required for an MOC. The provisions for MOCs, 1910.119(l)(3) and 1910.119(l)(4), require notification of affected personnel through updating the following prior to start up:¹

- PSI
- Operating procedures
- Mechanical integrity programs
- Training procedures and material.

Take measures to assure safe operation. Each action item that is associated with equipment being outside of acceptable limits must have documentation stating that continued operation is safe.

SAFETY/LOSS PREVENTION

According to the PSM standard, 1910.119(j) (5), "... The employer shall correct deficiencies in equipment that are outside acceptable limits (defined by PSI paragraph (d) of this section) before further use or in a safe and timely manner when necessary means are taken to assure safe operation."¹

This can be extremely tricky, since 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). Input from industry helped change the rule from "before further use" to "before further use or in a safe and timely manner."⁴ The arguments cited by the rule-making 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 rule-making participants all agreed that the deficiency needed to be fixed. The authors also agree—all deficiencies need to be addressed in a timely manner and the facility owner can determine the timeframe based on balancing the risk associated with the deficient equipment versus the risk associated with the corrective action; however, 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 immediately shut down the process and fix the condition that is outside acceptable limits. In some cases, operational 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. An example is a relief device on the distillate hydrotreater feed surge drum that 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 is determined that the unit should be turned down to 90% of normal throughput to ensure that the proper protections are in place until the change can be made.

Conclusion. If your system tracks all the previously mentioned items and your team is putting effort into the system to document and resolve items in a timely manner, then you're well on your way to PSM compliance. However, experience indicates that rarely does a system document what measures are in place to assure safe operation until the modifications can be performed. The primary goal is to improve safety and all of these steps need to be included for the system to be a stand-alone demonstration. **HP**

LITERATURE CITED

- ¹ US Occupational Health and Safety Administration, "Standard for Hazardous Materials—Process Safety Management of Highly Hazardous Chemicals," 29 CFR 1910.119.
- ² US Occupational Health and Safety Administration, "Compliance guidelines and enforcement procedures," CPL 02-02.45A CH-1.
- ³ US Occupational Health and Safety Administration, "Process Safety Management Booklet," OSHA Publication 3132.
- ⁴ US 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.



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