LIFE CYCLE OF A RECOMMENDATION

White Paper
RETA National Conference
November 14-17, 2023, Jacksonville, Florida

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Presented at RETA 2023 National Conference
November 14-17, 2023 – Jacksonville, Florida

EXECUTIVE SUMMARY

Recommendations are a necessary component of a refrigeration system's life cycle. They strive to push forward developments of safety and improve prevention program elements. It can be often overlooked just how drastic an effect a recommendation may have on developed Risk Management Plans (RMP) and Process Safety Management (PSM) Programs. The task of recommendations is to ensure compliance and improve the safety of a refrigeration system. By providing insight into how a recommendation may develop and connect into other sections of the RMP or PSM Program, such as necessary updates to equipment or documentation associated with the refrigeration system, the implications that the recommendation may have can be scaled for importance. By collecting insight from refrigeration contractors, end-users, and consultants, this paper seeks to fortify the importance of ensuring the closure of recommendations and display the intricate relationships that a recommendation maintains with sections of the RMP or PSM Program otherwise known as the life cycle of a recommendation.

Upon providing a deeper understanding of the ripple effect and relationships that a recommendation has within a RMP or PSM Program, this paper aims to provide guidance on appropriate steps to ensure that recommendations developed, as a result of a deficiency found during a Process Hazard Analysis or Compliance Audit, are effectively approached and closed out. Utilizing the experiences of individuals involved in the refrigeration industry, guidance for recommendation closure will be provided. The discussion will follow the process of how recommendations are assessed, suggested actions taken towards closing recommendations, and insightful suggestions for recommendation closure. Finally, the discussion of how to effectively document the changes of the recommendation and how to note the closure of a recommendation will be provided as guidance for readers to implement in their own practice. The aim is to provide not only guidance on appropriate steps towards recommendation closure but also emphasize the implications that recommendations may have within an RMP or PSM Program supported by knowledge of experienced individuals involved in recommendation closure and established regulatory requirements. Recommendations are an essential aspect of safety for refrigeration systems and fortifying or assisting in their implementation is a necessity.

INTRODUCTION

Risk Management Plan (RMP) and Process Safety Management Plan (PSM) Programs should be viewed as living Programs that aim to improve in both efficiency and safety. One of the largest drivers for the safety of these systems is the development of recommendations that can be the result of a finding from either a Process Hazard Analysis, as required by Code of Federal Regulations (CFR) Title 40 §68.67 (e) and CFR Title 29 §1910.119(e)(5), or a Compliance Audit, as required by CFR Title 40 §68.79 (d) and CFR Title 29 §1910.119(o)(4). The challenge of recommendations can lie in establishing an effective method to ensure that recommendations are effectively closed out and that documentation has been updated accordingly. Failure to act upon or document the closure of recommendations can have major impacts on the safety of the individuals involved in the system as well as the general public. Lack of effective recommendation closure can even result in financial upset as a result of action taken upon by the government agencies, such as the Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), or local Administering Agency (AA) where applicable, requiring both the payment of fines and eventual recommendation closure regardless. By providing insight from experienced individuals within the refrigeration industry both responsible for recommendation development and closure as well as by displaying the intricate connections between Program elements that may be affected for recommendation closure, guidance for effective recommendation closure will be presented. The aim is to provide an understanding of the manner recommendations should be established, guiding steps to follow to ensure that all elements involved with recommendation closure are addressed, and methods in which to document recommendation closure. By improving the actions taken toward recommendations, improvements toward system safety can be facilitated.

Recommendation Development

The purpose of conducting a qualitative risk analysis such as a Process Hazard Analysis (PHA) is to identify potential safety concerns and their causes surrounding a system. The aim of the analysis is to improve the safety of the system and introduce potential safeguards where they

are currently considered inadequate. The result of the discovered deficiency is a recommendation that will seek to implement changes to the system as a response to the safety concerns identified. This may be considered as the initial step towards successful recommendation closure. The aim is to develop the recommendations in such a manner that allows the owner/operator to successfully address and close a recommendation. If a recommendation is not developed in this manner, it may be difficult to identify potential alternatives, lock the owner/operator into a restricted recommendation that may not be feasibly implemented, or determine whether a recommendation may not be needed. Recommendations should follow a particular structure to allow the owner/operator of a process to venture the life cycle of a recommendation in a successful manner.

Recommendation structure should implement the following key guidance to allow for an efficient method of implementing recommendations.

- Determine the source of the recommendation and develop a strategy to implement the solution for the recommendation.
    - Solutions developed should be both feasible and aim to mitigate the likelihood of a hazardous scenario developing.
    - Recommendations should attempt to avoid using a minimalist approach as it concerns the safety of the individuals involved with a system or process. The recommendation should instead be developed to provide the owner/operator with an alternative means of closing the recommendation and mitigating hazards.
    - Language for development of a recommendation should aim to avoid definite statements to avoid potential recommendation closure lock-out if a recommendation is determined to be infeasible or not required.
    - As part of the strategy developed, assign responsibility of the recommendation implementation to an individual or division. This is primarily to increase effectiveness for implementation and documentation for closure. Assigning

responsibility may also allow you to note who to contact for progress of the recommendation.

Recommendation Action

The following section will demonstrate the suggested steps to consider towards recommendation closure based on regulatory requirements and industry experience amongst end users as well as facilitators, who assist in the recommendation process. The aim is to demonstrate the intricate relationship between required Program elements and how regulatory requirements provide a sequential process which can be followed in order to safely implement recommendations and effectively document changes to remail complaint with regulatory requirements.

Management of Change

The initial step towards recommendation closure is to determine whether the recommended change will require a Management of Change (MOC). MOC as defined by EPA's CFR Title 40 §68.75 and OSHA's CFR Title 29 §1910.119(l) is a written procedure to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to stationary sources that affect a covered process. It is important to note that not all changes will require an MOC, but it is critical to determine this issue initially in order to understand what elements of your Program will be reviewed as part of recommendation closure.

Program Documentation Update

An MOC may require that multiple changes be reflected within your RMP/PSM Program. The aim is to identify which elements are needed and document the required changes. Exhibit 7-7 within the General Guidance on Risk Management Programs for Chemical Accident Prevention Program notes the following requirements to verify as part of the MOC process.

EXHIBIT 7-7
MANAGEMENT OF CHANGE REQUIREMENTS

MOC procedures must address:	Employees affected by the change must:	Update process safety information if:	Update operating procedures if:
✔Technical basis for the change ✔Impact on safety and health ✔Modifications to operating procedures ✔Necessary time period for the change ✔ Authorization requirements for proposed change	✔Be informed of the change before startup ✔Trained in the change before startup	✔A change covered by MOC procedures results in a change in any PSI required under EPA's rule (see § 67.65)	✔A change covered by MOC procedures results in a change in any operating procedure required under EPA's rule (see § 67.69)

As determined by EPA CFR Title 40 §68.75 (d) and OSHA CFR Title 29 §1910.119(l)(4),

> *If a change covered by this paragraph results in a change in the process safety information required by MOC, such information shall be updated accordingly.*

Additionally, EPA's CFR Title 40 §68.75 (e) and OSHA's CFR Title 29 §1910.119(l)(5) notes,

> *If a change covered by this paragraph results in a change in the operating procedures or practices required by MOC, such procedures or practices shall be updated accordingly.*

Additional elements encompassed within an MOC include EPA's CFR Title 40 §68.75(b)(2) and OSHA's CFR Title 29 §1910.119(l)(2)(ii) which requires that the changes of safety and health be reviewed. A typical method of verifying whether the change may have effects on the safety and health of personnel is to conduct a PHA on the MOC. There may be instances in which the change, although requiring an MOC, would not require a PHA as the preferred method to certify the effects on safety and health of personnel. Changes such as procedural and/or administrative changes may not result in changes to the process, therefore a PHA may not be applicable. Alternative methods to verify the effects of safety and health must adequately assess the effects of safety and health resulting from the change to demonstrate compliance

with this requirement. This instance must be clearly reflected and documented but may leave the facility may face regulatory scrutiny and potential fines if it is found that the alternative method was not adequate for the required for the change.

If it is found that a recommendation does not meet the criteria to initiate the MOC process, the appropriate Program documentation must be updated in accordance with the recommendation. If the recommendation requires the implementation or development of facility policies to conduct specific actions, adequate documentation must be updated or developed to reflect recommendation implementation. As a best practice, control over documents can be practiced ensuring that documentation is updated accordingly and all previous versions are no longer implemented. Control over documents can include a list of official document numbers and titles with tracked revision dates.

Training / Personnel Communication

Once the change from the recommendation has been implemented, as required by EPA's CFR Title 40 §68.75(c) and OSHA's CFR Title 29 §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.*

This communication should both focus on the elements that were changed as the result of the MOC or recommendation and be documented to reflect completion of communication. Documentation, as suggested by experienced individuals involved in recommendation closure process, should include a description of the meeting/communication, date and time of the meeting/communication, supervisor involved in communication including a method of verification, and method for verifying employee communication and understanding. Additional

suggested items such as keeping minutes of the meeting may be beneficial to further demonstrate what items were discussed and possible concerns from personnel.

Pre-Startup Safety Review/Checklist

As required by EPA's CFR Title 40 §68.77 and OSHA's CFR Title 29 §1910.119(i), a change requiring an update to the PSI section also requires that a Pre-Startup Safety Review (PSSR) be completed prior to the introduction of regulated substance to the modified process. A PSSR can commonly be completed in the form of a checklist and can at times be combined in the documentation developed for the MOC Process. The purpose of the PSSR is to document and verify that the required changes were considered and implemented appropriately to allow the system to be operated safely upon startup. Items that are reviewed as part of the PSSR include the following:

- verification that equipment and construction was completed in accordance with design specifications,
- operating, maintenance, emergency, and safety procedures are developed for the process and adequate for the change,
- a PHA was completed and recommendations implemented for new stationary sources,
- all MOC requirements are met for modified stationary sources, and
- training for employees involved in the process has been completed.

The PSSR review must include employees with expertise in the process. Implementing administrative controls/responsibility to verify the completion of the PSSR checklist provides additional support to verify that recommendations are safely implemented.

For facilities or recommendations that do not require a change leading to changes in the PSI, it may be helpful to develop or adopt a checklist which implements a review similar to that of a PSSR. The purpose is to verify that no additional changes are required by implementation recommendation and that corresponding changes are marked as completed to assist in tracking recommendation closure. The EPA's General Guidance Document provides the following image for PSSR guidance for implementation as part of the Risk Management Program (RMP).

EXHIBIT 7-8
PRE-STARTUP REVIEW REQUIREMENTS

Design Specifications	Adequate Procedures	PHA/MOC	Training
✔Confirm that new or modified construction and equipment meet design specifications.	✔Ensure that procedures for safety, operating, maintenance, and emergencies are adequate and in place.	Perform a PHA and resolve or implement any recommendations for new process. Meet management of change requirements for modified process.	✔Confirm that each employee involved in the process has been trained completely.

Recommendation Closure

Upon completing the necessary tasks for recommendation implementation or determining that a recommendation meets the grounds for rejection, supporting documentation of the closure is required. CFR Title 40 §68.67 (e) requires that recommendations are resolved in a timely manner and that the recommendations are documented. It is crucial that recommendations be documented adequately as to allow for verification of closure during future updates to Program elements. Establishing a system or mechanism to track recommendations becomes beneficial to the owner or operator as it allows for easier tracking of recommendations to verify compliance. It is recommended to clearly label and document the location of supporting documentation used for recommendation closure. If a recommendation has been determined to be invalid for implementation, it must be based on one of the requirements established by the EPA and OSHA. Failure to document closure or reject the recommendation based on the

EPA approved basis can result in regulatory enforcement by local AA or federal representative such as EPA or OSHA.

Recommendation Rejection

Recommendations developed from a PHA or Compliance Audit may be rejected, however the basis of rejection must coincide with the established guidelines set forth by the EPA and OSHA. Guidance provided for management of the RMP within the *General Guidance on Risk Management Programs for Chemical Accidental* Chapter 7 Section 7.3 references OSHA's compliance directive, CPL 2-2.45A, for determining adamant reasons for recommendation rejection. Guidance provided by the EPA and OSHA note that basis for rejection of a recommendation must fall under one of the following:

- basis for recommendation development contains relevant factual errors,
- the recommendation is not necessary to protect the health of employees or contractors,
- an alternative measure would provide a sufficient level of protection, or
- the recommendation is infeasible.

If it is determined that a recommendation will not be implemented for the reasons stated above, sufficient documentation should be referenced and included within the closure of the recommendation.

Short-Cycle Recommendation

A recommendation that is improperly assessed through its "life cycle" can have many implications on a facility, personnel, and the general public. Failure to act upon or adequately address a recommendation can result in serious safety and health concerns. Recommendations and the failure to adequately implement them can also have financial impacts on the owner/operator of the refrigeration system. OSHA and EPA maintain jurisdiction to fine the owner or operator for failure to implement or adequately document the reason for deferment

of a recommendation. The resulting fines will be analyzed and assessed on a case-by-case basis and will depend on the severity that the recommendation may result in. Even if the facility is assessed a fine, the recommendation will still require proper closure as part of the fining process.

Figure 1: Life Cycle of a Recommendation

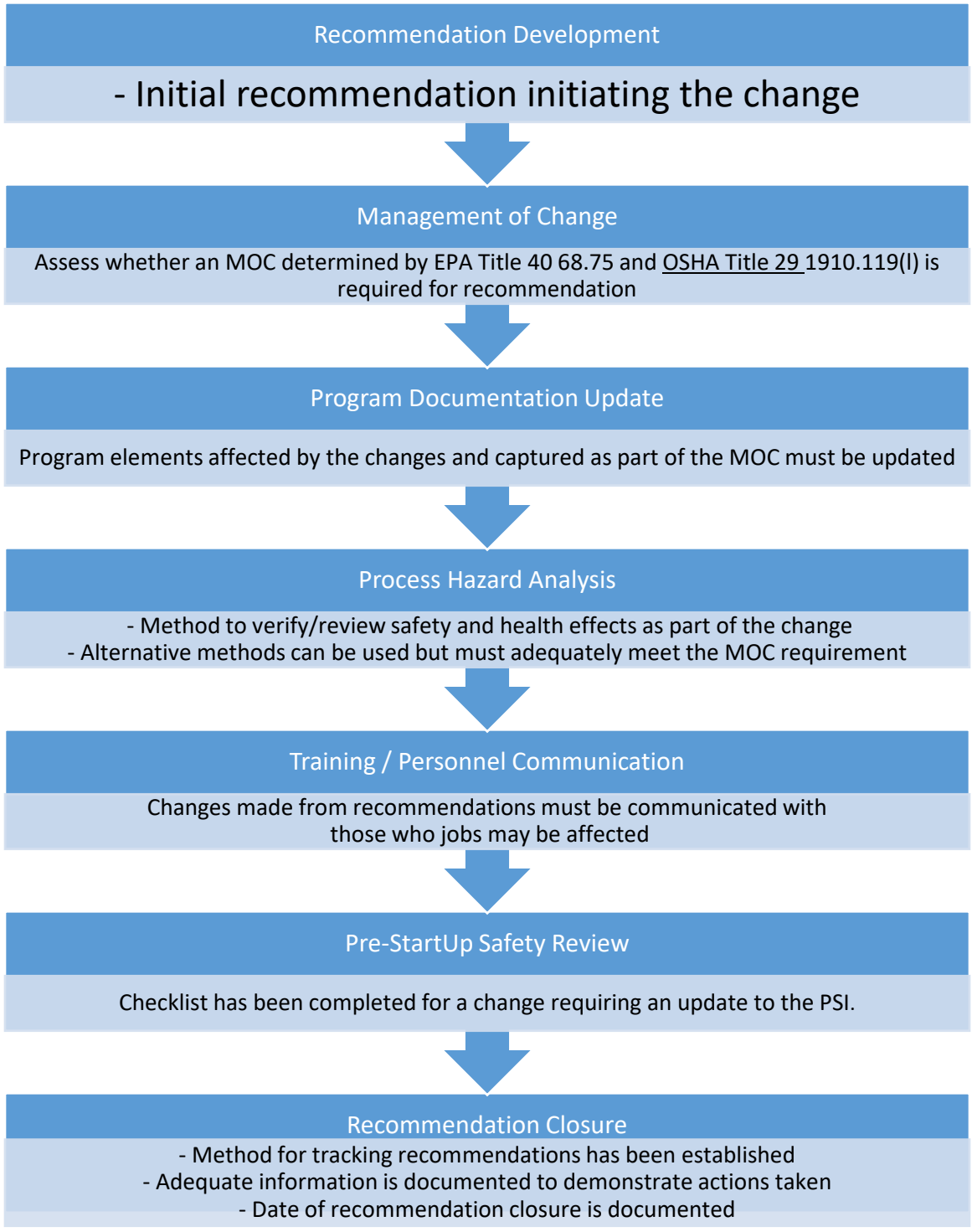

Figure 1: A step-by-step flow diagram of the suggested actions that should be considered for recommendation closure.

REFERENCES

Jara Cardoza, K., Bray, R., & Smith, S. (2023, May 5). Recommendation Assessment and Closure Insight. personal.

Code of Federal Regulations, Title 40, Chapter 1, Subchapter C, Part 68, Subpart D, Section 68.67, “Process Hazard Analysis”.

Code of Federal Regulations, Title 29, Subtitle B, Chapter Xvii, Part 1910, Section 119(e); “Process Hazard Analysis”.

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