

**U.S. Chemical Safety and  
Hazard Investigation Board**

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Board Member

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Board Member



May 11, 2018

Ms. Tari Enos, Administrative Regulations Analyst  
Department of Labor and Industries  
Division of Occupational Safety and Health (DOSH)  
P.O. Box 44620  
Olympia, WA 98504

Dear Ms. Enos:

Thank you for the opportunity to provide comments on the State of Washington Department of Labor and Industries (L&I) Division of Occupational Safety and Health (DOSH) proposed rulemaking to amend Chapter 296-67 WAC, *Safety Standards for Process Safety Management of Highly Hazardous Chemicals*. The proposed regulation has the potential to serve as a model for process safety management (PSM) modernization nationally, and, like the newly adopted California PSM regulation, can help prevent accidents and protect workers in petroleum refineries.

Following the U.S. Chemical Safety and Hazard Investigation Board's (CSB) investigation of the April 2, 2010, Tesoro Anacortes Refinery catastrophic heat exchanger rupture that caused seven fatalities, the CSB issued three recommendations to the Governor and Legislature of the State of Washington, which focus on strengthening Washington's PSM program.<sup>1</sup> Those recommendations are provided in Appendix A.

The CSB reviewed Washington's proposed PSM regulation draft dated January 9, 2018, and provides the following comments. In general, the CSB strongly supports the draft rule. We submit the comments below for your consideration which we believe will strengthen the proposed regulation.

### **Scope and Purpose of the Regulation**

The current Purpose/Scope of Washington's proposed PSM regulation is to "prevent [] and minimize[e] the consequences of releases..." The CSB encourages the focus to be on major accident prevention and the elimination of hazards. As the CSB emphasized in recent investigation

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<sup>1</sup> USCSB. 2014. Investigation Report: Catastrophic Rupture of Heat Exchanger, Tesoro Anacortes Refinery. <https://www.csb.gov/file.aspx?DocumentId=5851> (accessed April 12, 2018).

## **U.S. Chemical Safety and Hazard Investigation Board**

reports, good practice process safety guidance provides that the goal of PSM is to prevent incidents through targeted risk reduction to a level such as “the greatest extent feasible.” The prevention of accidents is a higher-level goal than minimizing the consequences of releases. The CSB suggested more preventive language to California, and suggests the same to Washington: “This Section contains requirements for petroleum refineries to reduce risks by preventing major incidents and applying a hierarchical approach to eliminate and control process safety hazards to which employees may be exposed.”<sup>2</sup>

### **Definition of “Turnaround”**

The definition of “Turnaround” does not include unplanned shutdowns or other routine maintenance matters. Under this definition, an employer could mask a turnaround as an unplanned shutdown to avoid triggering regulatory requirements. The CSB encourages L&I to revise this language to address this potential issue.

### **Employee Collaboration**

Under the section entitled Employee Collaboration, (4)(b) reads, “the employer must prioritize and promptly respond to and correct hazards that present the potential for death or serious physical harm.” The CSB urges L&I to remove the words “...prioritize and...” because a hazard that could cause death or serious physical harm is an urgent matter that should not be subject to a prioritization process.

### **Preventive Role of the Regulator**

The CSB noted in its investigation reports, as well as previous comments made to the state of California, that a well-funded, well-staffed, technically qualified regulator plays a critical role in reducing the risk of major accidents by ensuring that petroleum refineries are adequately identifying hazards and reducing risk. The CSB encourages L&I to include more robust language that outlines the role of the regulator including: the regulator’s review of the written Process Hazard Analysis (PHA), Hierarchy of Control Analysis (HCA), and Safeguard Protection Analysis (SPA); requirements for preventive inspections by the regulator to verify the effective implementation of the PHA, HCA and SPA; the regulator’s collection and review of key process safety indicators; and establishing mechanisms for the regulator, refinery management, workers and their representatives to play essential roles in accident prevention.

### **Process Safety Indicators**

Regarding process safety indicators, the draft PSM regulation only states: “The employer must develop, implement and maintain an effective program to track, document, and assess process safety performance indicators against best practices, as well as leading and lagging indicators.” The CSB finds that process safety indicators that drive performance are a key feature of a robust PSM program. Through the collection and assessment of process safety indicators, a regulator

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<sup>2</sup> See CSB Public Comments to California Department of Industrial Relations (DIR), dated September 2, 2016, at [https://www.csb.gov/assets/1/6/us\\_csb\\_comments\\_ohsb\\_ca\\_psm\\_9.2.20161.pdf](https://www.csb.gov/assets/1/6/us_csb_comments_ohsb_ca_psm_9.2.20161.pdf) (accessed May 7, 2018).



## U.S. Chemical Safety and Hazard Investigation Board

may identify issues and shortcomings that, if corrected, may help prevent future incidents. Indicator data could also conserve government resources by helping state regulators focus resources and attention on priority safety areas where employers or industry are struggling, while deferring inspection or audit activities where data suggest problems or negative trends are less likely.

The CSB encourages L&I to add greater detail to the process safety indicators section of the draft PSM regulations by including specific indicators to track and document metrics that are measurable and actionable. The CSB also encourages L&I to include a mechanism for the regulator to collect and analyze this data on a regular basis to use for continuous process safety improvement and accident prevention, to identify trends and deficiencies, and to make publicly available, including publishing such data in real time, or in an annual report

Recently, the Contra Costa County Industrial Safety Ordinance (ISO) and the California Accidental Release Prevention (CalARP) program regulations revised their language to require the reporting of leading and lagging indicators. The language adopted by the ISO and CalARP regulations would be an appropriate model to replicate in the current draft regulation.

The CalARP regulations will require all California petroleum refineries to report indicator data annually beginning in 2019 to the California Governor's Office of Emergency Services (Cal OES) and the local Unified Program Agency (UPA), or the local agency responsible for implementing the CalARP Program. Cal OES will then make these public by posting them on their website. The indicators listed as required are:

- 1) past due inspections for piping and pressure vessels;
- 2) past due PHA corrective actions and seismic corrective actions;
- 3) past due incident investigation corrective actions for major incidents;
- 4) the number of major incidents that have occurred since the updated regulations were passed;
- 5) the number of temporary piping and equipment repairs installed on hydrocarbon and high energy utility systems that are past their date of replacement with a permanent repair and the total number of temporary piping and equipment repairs installed on hydrocarbon and high energy utility systems; and
- 6) site-specific indicators, consisting of activities and other events that are measured in order to evaluate the performance of process safety systems for the purpose of continuous improvement.<sup>3</sup>

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<sup>3</sup> See Section 2762.16(h) of the CalARP Program Regulations at <http://www.caloes.ca.gov/FireRescueSite/Documents/CalARP%20Regs%20Title%2019%20Division%202%20Chapter%204.5.pdf> (accessed March 30, 2018).

## **U.S. Chemical Safety and Hazard Investigation Board**

### **RAGAGEP**

The definition of “Recognized and Generally Accepted Good Engineering Practices,” or RAGAGEP, does not currently include safety guidance and reports published by the Center for Chemical Process Safety (CCPS), for example. The CSB notes that the U.S. Occupational Safety and Health Administration (OSHA) consistently references CCPS publications as “compliance guidelines” and RAGAGEP. To be consistent with modern PSM good practice and OSHA compliance guidelines,<sup>4</sup> the CSB urges L&I to include reference to CCPS in the definition of RAGAGEP. In addition, the CSB believes that the RAGAGEP definition should not permit industry to consider standards, guidelines or practices developed for internal use unless they are demonstrated to be more protective than existing RAGAGEP. Otherwise RAGAGEP becomes more of a self-regulatory provision, where satisfying the requirement is determined by the employer.

### **Compliance Audits**

The draft language currently does not require that the audit report include documentation of all deficiencies and corrective actions taken. The CSB urges L&I to require documenting all deficiencies identified, in addition to recommendations and corrective actions needed, which is necessary to help inform the regulator that facility management is continually working to identify hazards and reduce risks. There is no reason not to include such vital information in audits, and the benefit that this enhanced type of documentation offers greatly outweighs the de minimus effort needed to capture well understood data. Combined with enhanced indicator data, employers will be better positioned to broaden their focus on prevention efforts, and a richer, documented factual matrix will exist for the benefit of the regulator. Additionally, to be consistent with other provisions, language should be added for employee collaboration in compliance audits.

### **Implementation**

As compared to the text of the California regulation, the Washington draft language concerning employer implementation of recommendations that derive from Process Hazards Analyses, Incident Investigations, Compliance Audits, and Hierarchy of Controls Analyses by PSM teams has been deleted. These deletions vary from the Washington draft’s employer implementation language specified in the sections on Hierarchy of Controls Analysis and Damage Mechanism Reviews. Thus, the draft is internally inconsistent and may introduce uncertainties concerning team recommendations and employer implementation. The CSB urges L&I to reconsider this issue.

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<sup>4</sup> Federal OSHA has used CCPS guidance as compliance guidance, and hence RAGAGEP, for some time. For example, see OSHA Directive CPL 03-00-010, *Petroleum Refinery Process Safety Management National Emphasis Program*. August 18, 2009. [https://www.osha.gov/OshDoc/Directive\\_pdf/CPL\\_03-00-010.pdf](https://www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-010.pdf) (accessed April 13, 2018).



# U.S. Chemical Safety and Hazard Investigation Board

## Public Reporting and Transparency

The CSB urges the state of Washington to include provisions for reporting of information to the public to the greatest extent feasible. The CSB noted in its Chevron Interim Investigation Report the important role of transparency between industry and the public in improving health and safety for the facility and the surrounding community. And according to CCPS, governments and advocacy organizations have been successful in driving safety performance improvement by requiring public disclosure of safety information.<sup>5</sup>

In California, the newly adopted California Accidental Release Prevention Program (CalARP) Regulations will require all California petroleum refineries to annually report indicator data beginning in 2019 to the California Governor's Office of Emergency Services (Cal OES) and the local Unified Program Agency (UPA), or the local agency responsible for implementing the CalARP Program. Cal OES will make these public by posting them on their website. The indicators listed as required are:

- 1) past due inspections for piping and pressure vessels;
- 2) past due PHA corrective actions and seismic corrective actions;
- 3) past due incident investigation corrective actions for major incidents;
- 4) the number of major incidents that have occurred since the updated regulations were passed;
- 5) the number of temporary piping and equipment repairs installed on hydrocarbon and high energy utility systems that are past their date of replacement with a permanent repair and the total number of temporary piping and equipment repairs installed on hydrocarbon and high energy utility systems; and
- 6) site-specific indicators, consisting of activities and other events that are measured in order to evaluate the performance of process safety systems for the purpose of continuous improvement.<sup>6</sup>

## Conclusion

To ensure a robust Washington petroleum refinery PSM program that meets the intent of the CSB recommendations and helps prevent future accidents, we strongly encourage the inclusion of the CSB's comments in the current proposal. We appreciate the opportunity to comment and look forward to reviewing the next draft. If you have any questions, please contact Mr. Charles B.

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<sup>5</sup> USCSB. 2013. Interim Investigation Report: Chevron Richmond Refinery Fire. Page 50. Available at [file:///C:/Users/johnsona/Downloads/Chevron\\_Interim\\_Report\\_Final\\_2013-04-17%20\(10\).pdf](file:///C:/Users/johnsona/Downloads/Chevron_Interim_Report_Final_2013-04-17%20(10).pdf) (accessed May 7, 2018). Also see CCPS, *Guidelines for Process Safety Metrics*, Page 103, 2010.

<sup>6</sup> See Section 2762.16 (h) of the CalARP Program Regulations at <http://www.caloes.ca.gov/FireRescueSite/Documents/CalARP%20Regs%20Title%2019%20Division%202%20Chapter%204.5.pdf> (accessed March 30, 2018).

**U.S. Chemical Safety and  
Hazard Investigation Board**

Barbee, the CSB's Director of Recommendations, at (202) 261-7621 or via email at:  
Charles.Barbee@csb.gov.

Sincerely,



Vanessa Allen Sutherland  
Chairperson and CEO

Enclosure: Appendix A

cc: Manny Ehrlich, Jr., Board Member  
Rick Engler, Board Member  
Kristen Kulinowski, Board Member  
Stephen Klejst, Executive Director of Investigations and Recommendations

## U.S. Chemical Safety and Hazard Investigation Board

**Appendix A:** CSB's Tesoro Anacortes recommendations to the Washington State Governor and Legislature.

### CSB Recommendation No. 2010-08-I-WA-R5

*Based on the findings in this report, augment your existing process safety management regulations for petroleum refineries in the state of Washington with the following more rigorous goal-setting attributes:*

- a. *A comprehensive process hazard analysis written by the company that includes:*
  - i. *Systematic analysis and documentation of all major hazards and safeguards, using the hierarchy of controls to reduce those risks to as low as reasonably practicable (ALARP);*
  - ii. *Documentation of the recognized methodologies, rationale and conclusions used to claim that safeguards intended to control hazards will be effective;*
  - iii. *Documented damage mechanism hazard review conducted by a diverse team of qualified personnel. This review shall be an integral part of the Process Hazard Analysis cycle and shall be conducted on all PSM-covered process piping circuits and process equipment. The damage mechanism hazard review shall identify potential process damage mechanisms and consequences of failure, and shall ensure effective safeguards are in place to control hazards presented by those damage mechanisms. Require the analysis and incorporation of applicable industry best practices and inherently safer design to the greatest extent feasible into this review, and*
  - iv. *Documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible in establishing safeguards for identified process hazards. The goal shall be to drive the risk of major accidents to As Low As Reasonably Practicable (ALARP). Include requirements for inherently safer systems analysis to be automatically triggered for all Management of Change and Process Hazard Analysis reviews, prior to the construction of new processes, process unit rebuilds, significant process repairs, and in the development of corrective actions from incident investigation recommendations.*
- b. *A thorough review of the comprehensive process hazard analysis by technically competent regulatory personnel;*
- c. *Required preventative audits and preventative inspections by the regulator;*
- d. *Require that all safety codes, standards, employer internal procedures and recognized and generally accepted good engineering practices (RAGAGEP) used in the implementation of the regulations contain adequate minimum requirements;*
- e. *Require an increased role for workers in management of process safety by establishing the rights and responsibilities of workers and their representatives*

## **U.S. Chemical Safety and Hazard Investigation Board**

- f. on health and safety-related matters and the election of safety representatives and establishment of safety committees (with equal representation between management and labor) to serve health and safety-related functions. The elected representatives should have a legally recognized role that goes beyond consultation in activities such as the development of the comprehensive process hazard analysis, management of change, incident investigation, audits, and identification and effective control of hazards. The representatives should also have the authority to stop work that is perceived to be unsafe or that presents a serious hazard until the regulator intervenes to resolve the safety concern. Workforce participation practices should be documented by the company to the regulator; and*
- g. Requires reporting of information to the public to the greatest extent feasible such as a summary of the comprehensive process hazard analysis which includes a list of safeguards implemented and standards utilized to reduce risk, and process safety indicators that demonstrate the effectiveness of the safeguard and management systems.*

### **CSB Recommendation No. 2010-08-I-WA-R6**

*Establish a well-funded, well-staffed, technically qualified regulator with a compensation system to ensure the Washington Department of Labor and Industries regulator has the ability to attract and retain a sufficient number of employees with the necessary skills and experience to ensure regulator technical qualifications. Periodically conduct a market analysis and benchmarking review to ensure the compensation system remains competitive with Washington petroleum refineries.*

### **CSB Recommendation No. 2010-08-I-WA-R7**

*Work with the regulator, the petroleum refining industry, labor, and other relevant stakeholders in the state of Washington to develop and implement a system that collects, tracks, and analyzes process safety leading and lagging indicators from operators and contractors to promote continuous process safety improvements. At a minimum the program shall:*

- a. Require the use of leading and lagging process safety indicators to actively monitor the effectiveness of process safety management systems and safeguards for major accident prevention. Include leading and lagging indicators that are measureable, actionable, and standardized. Include indicators that measure safety culture, such as incident reporting and action item implementation culture. Require that the reported data be used for continuous process safety improvement and accident prevention;*
- b. Analyze data to identify trends and poor performers and publish annual reports with the data at facility and corporate levels;*
- c. Require companies to publicly report required indicators annually at facility and corporate levels;*
- d. Use process safety indicators (1) to drive continuous improvement for major accident prevention by using the data to identify industry and facility safety trends and deficiencies and (2) to determine appropriate allocation of regulator resources and inspections; and*



**U.S. Chemical Safety and  
Hazard Investigation Board**

- e. Be periodically updated to incorporate new learning from world-wide industry improvements in order to drive continuous major accident process safety improvements in Washington.*