

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

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July 19, 2023

Tari Enos
Washington State Department of Labor and Industries
Division of Occupational Safety and Health
PO Box 44620
Olympia, WA, 98504-4620
Tari.Enos@Lni.wa.gov

Dear Ms. Enos:

The U.S. Chemical Safety and Hazard Investigation Board (CSB) appreciates 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 create a new Part B in Chapter 296-67 WAC, *Safety Standards for Process Safety Management of Highly Hazardous Chemicals*, which pertains specifically to process safety management (PSM) in petroleum refineries. Like California’s 2019 PSM regulation for petroleum refineries, this proposed regulation will reduce risk, increase the prevention of chemical incidents, and protect workers in petroleum refineries.

Following the CSB’s 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.¹ Those recommendations are provided in the enclosure.

The CSB reviewed Washington’s proposed PSM regulation draft dated June 21, 2023, and we strongly support the draft rule. We submit the comments below, which we believe will help strengthen the proposed regulation.

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.

¹ CSB. 2014. Investigation Report: Catastrophic Rupture of Heat Exchanger, Tesoro Anacortes Refinery. <https://www.csb.gov/tesoro-anacortes-refinery-fatal-explosion-and-fire/> (accessed July 6, 2023).

U.S. Chemical Safety and Hazard Investigation Board

Employee Collaboration

Under the section entitled Employee Collaboration, (5)(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 and the current proposed language can be read to suggest instead it could/should be subject to a prioritization process.

Vital 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 catastrophic incidents by ensuring that petroleum refineries are effectively 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’ 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 the prevention of incidents. It is also extremely important that L&I receive adequate funding to attract and retain technically qualified staff to implement and enforce a more robust regulatory framework for petroleum refineries in the State of Washington.

Process Safety Indicators

Regarding process safety indicators, the draft rule follows the California PSM rule and states: “The employer must develop, implement and maintain an effective program to track, document, and assess leading and lagging process safety performance indicators.” The CSB has noted in previous comments to L&I and to California 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 may identify issues and shortcomings that, if correlated, 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 urges L&I to add greater detail to the process safety indicators section of the draft PSM rule by including specific indicators to track and document, and metrics that are measurable and actionable. The CSB also urges L&I to include a mechanism for the regulator to collect and analyze this data on a regular basis to ensure continuous process safety improvement and the prevention of incidents, to identify trends and deficiencies,

U.S. Chemical Safety and Hazard Investigation Board

and to make the information publicly available, including publishing such data in real time, or in an annual report.

Although California did not thoroughly address indicators in its PSM rule for petroleum refineries, 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.^{2, 3}

The CalARP regulations require all California petroleum refineries to report indicator data annually to both CalEPA's CalARP Unit and the local Unified Program Agency (UPA), or the local agency responsible for implementing the CalARP regulations. CalEPA publishes this information on its website annually. The required indicators 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 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.⁴

RAGAGEP

The definition of "Recognized and Generally Accepted Good Engineering Practices," or RAGAGEP, does not currently include safety guidance and reports published by the

² Information on the Contra Costa ISO is available at <https://cchealth.org/hazmat/iso/> (accessed July 6, 2023).

³ Program 4 of the CalARP regulations was adopted following the 2012 Chevron Refinery Fire. Its purpose is to prevent major incidents at petroleum refineries in order to protect the health and safety of communities and the environment. Program 4 expands the prevention program requirements for refineries and requires annual process safety performance indicators to be submitted to the CUPA. For additional information visit <https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-4-for-refineries/> (accessed July 6, 2023).

⁴ See Section 2762.16(h) of the CalARP Program Regulations at [https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I2BA9A7E05BE511EC98C8000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextIData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I2BA9A7E05BE511EC98C8000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextIData=(sc.Default)&bhcp=1) (accessed July 6, 2023). The completed CalARP Process Safety Indicator Form must be submitted every year on June 30 for the period from January 1 to December 31 of the prior year to both CalEPA's CalARP Unit and the local UPA. For more information visit <https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-4-for-refineries/> (accessed July 6, 2023).

U.S. Chemical Safety and Hazard Investigation Board

Center for Chemical Process Safety (CCPS), for example. The CSB notes that the Occupational Safety and Health Administration (OSHA) consistently references CCPS publications as “compliance guidelines”⁵ and RAGAGEP. To be consistent with modern PSM good practice and OSHA compliance guidelines, the CSB urges L&I to include CCPS guidance and reports in the definition of RAGAGEP.

Compliance Audits

The proposed rule 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, to help inform the regulator that facility management is continually working to identify hazards and reduce risks. This information combined with enhanced indicator data would help the prevention of catastrophic incidents for both employers and the regulator.

Conclusion

Thank you for this opportunity to provide comments on the proposed rule. If you have any questions regarding our comments, or if we may be of further assistance, please contact Charles. B. Barbee, Director of Recommendations, at 202-261-7621 or via email at charles.barbee@csb.gov.

Sincerely,



Steve Owens
Chairperson



Sylvia E. Johnson, Ph.D.
Board Member



Catherine J.K. Sandoval
Board Member

Enclosure

cc: Stephen J. Klejst, Executive Director - Investigations & Recommendations, CSB

⁵ For an example, see OSHA Directive CPL 03-00-201, *PSM Covered Facilities National Emphasis Program*, January 17, 2017. https://www.osha.gov/sites/default/files/enforcement/directives/CPL_03-00-021.pdf (accessed July 6, 2023).

U.S. Chemical Safety and Hazard Investigation Board

CSB Recommendations to the Governor and Legislature of the State of Washington

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[s] 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[s] an increased role for workers in management of process safety by establishing the rights and responsibilities of workers and their representatives on health and safety-related matters, and the election of safety representatives and establishment of safety committees (with equal representation between*

U.S. Chemical Safety and Hazard Investigation Board

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. Work force participation practices should be documented by the company to the regulator; and

- f. 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 safeguards 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 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 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 measurable, 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 performer and public 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*

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

- and deficiencies and (2) to determine appropriate allocation of regulator resources and inspections; and*
- e. Be periodically updated to incorporate new learning[s] from world-wide industry improvements in order to drive continuous major accident process safety improvements in Washington.*