

Public Comments by the U.S. Chemical Safety Board (CSB) before the California Department of Industrial Relations Occupational Safety and Health Standards Board on the Proposed Safety Order for Adoption: *Process Safety Management for Petroleum Refineries* Public Meeting – Oakland, California, May 18, 2017
Rick Engler, Board Member, CSB

Thank you for the opportunity to offer comments on behalf of the United States Chemical Safety and Hazard Investigation Board (CSB) on the proposed California safety order, *Process Safety Management for Petroleum Refineries*, and to request that you approve the rule being considered today.

The CSB mission is to drive chemical safety change through independent investigations to protect people and the environment. CSB was created by Congress, under the Clean Air Act Amendments of 1990, “to investigate accidents to determine the conditions and circumstances which led up to the event and to identify the cause or causes so that similar events might be prevented.” CSB is a unique, independent, non-regulatory agency, modeled on the U.S. National Transportation Safety Board. CSB investigations identify the root causes of chemical incidents and we share these findings broadly across industries to prevent future incidents. No other Federal agency or private entity performs, or is able to perform, this type of comprehensive investigation.¹

During our 19-year history, CSB has conducted 13 investigations of incidents at petroleum refineries, including at four refineries in California.²

An incident at the Chevron refinery in Richmond, California, clearly illustrated the need for stronger safeguards for workers and the public. On August 6, 2012, a severely corroded pipe ruptured, releasing hydrocarbons and forming a large flammable vapor cloud, which engulfed 19 workers. Minutes later it ignited, creating a wall of flames. Luckily, the workers escaped and there were no fatalities. The fire burned for hours. A dense plume of black smoke formed and drifted from the refinery. In the days following, more than 15,000 community residents sought medical attention, many complaining of respiratory symptoms. CSB launched an investigation and found that the ruptured pipe – which was nearly 40 years-old and made of carbon steel – became dangerously thin because of a known hazard within

¹ More information about the CSB can be found at www.csb.gov.

² The four California refineries were: Tosco Avon, Martinez Petroleum Naphtha Fire (Final Report released March 21, 2001); Chevron, Richmond Refinery Fire (Final Report released January 28, 2015); Tesoro, Martinez Sulfuric Acid Spill (Final Report released August 2, 2016); and ExxonMobil, Torrance Refinery Explosion (Final Report released May 3, 2017).

the refining industry called sulfidation corrosion. CSB learned that management missed opportunities to recognize this hazard and prevent the fire.

For example, management did not identify or evaluate potential ways the ruptured pipe could have been damaged over time – a process known as a “damage mechanism hazard review”. Such actions would have likely detected the possibility of sulfidation corrosion. Currently there are inadequate state and federal regulatory requirements to address this hazard.

CSB also found a failure to apply safer design principles, that is, a failure to replace the aging carbon steel pipes with new piping made with inherently safer alloys. Such replacement, while recommended by voluntary industry guidance, is not required by California or federal rules.

Our investigation also identified other weaknesses in how refineries are regulated. Regulatory gaps that contributed to the Richmond refinery incident included the absence of rules requiring: implementation of internal corporate recommendations; careful evaluation of the effectiveness of safeguards; and thorough incident investigations to help manage changes to processes.

As a result of the Chevron investigation, CSB issued recommendations to strengthen state regulatory safeguards for refineries.³

Those recommendations urged adoption of requirements to:

- Use an approach known as the “hierarchy of controls” to identify hazards and reduce risks to a level of “as low as reasonably practicable”.
- Review potential ways process equipment may fail to identify issues such as corrosion.
- Expand the safety role for workers and their representatives, by establishing a right to stop unsafe work, with intervention by the regulator if there is a disagreement.
- Report measurements of process safety progress.
- Ensure preventive audits and inspections by a well-funded and proficient regulator.

CSB has a formal review process for assessing the progress of the recipients of our safety recommendations in implementing those recommendations.⁴ This assessment process is conducted by the staff of our Recommendations Department, which then may make a proposal to the CSB Board to update the status of the recommendations through a vote.

³ U.S. Chemical Safety and Hazard Investigation Board (CSB), Final Investigation Report (January 2015) Chevron Richmond Refinery Pipe Rupture and Fire, CSB Report No. 2012-03-I-CA.
http://www.csb.gov/assets/1/19/Chevron_Final_Investigation_Report_2015-01-28.pdf

⁴ See CSB Board Order 22 at http://www.csb.gov/assets/Record/CSB_Board_Order_022_FINAL_20161.pdf

CSB's preliminary review of the version of the proposed rule being considered today⁵ indicates that California, building on many of the best refinery management practices already in place, can make significant progress in refinery safety by adopting the proposed rule.

Safety advances in the proposal before you include:

- Enhancing requirements for conducting a Process Hazard Analysis (PHA). A PHA is a systematic effort to identify and analyze the potential hazards in the processing or handling of highly hazardous substances. It is one of the most important elements of the PSM program.

These enhancements include considering previous incidents experienced by the industry, damage mechanism reviews, hierarchy of controls analysis, and safeguard protection analysis.

- Requiring process safety culture assessments. There are no requirements in the existing federal Process Safety Management (PSM) standard for assessing whether there is a collective commitment by leaders and individuals to emphasize process safety over competing goals.
- Requiring Management of *Organizational* Changes. The text of the existing PSM standard does not specifically require assessing proposed organizational changes, such as reduced staffing, on processing units, for their potential to compromise to safety.
- Expanding opportunity for employee participation, including authorizing qualified operators to shut down a process in an emergency.

The proposal before you today can have an important impact in California, in other states, and nationally.

California hosts 14 oil refineries and is the second largest refining state in the nation. California refinery workers, contract employees, managers, and the residents of many communities nearby can all be safer through effective implementation and enforcement of this standard. Moreover, these safeguards will help sustain the state's industrial infrastructure. After all, when refineries incur major damage from chemical releases, fires, and explosions, they are more likely to shut down, thereby increasing gasoline prices and threatening employee job security and community economic stability.⁶

⁵ <http://www.dir.ca.gov/OSHSB/documents/Process-Safety-Management-for-Petroleum-Refineries-txtbrdconsider.pdf>

⁶ Cost Benefit Analysis of Proposed California Oil and Gas Refinery Regulations, by Dan Gonzales, Timothy Gulden, Aaron Strong, and William Hoyle; RAND Corporation, 2016.

The State of Washington is now considering updating its own PSM refinery standard and can look to California for guidance.

The federal Occupational Safety and Health Administration (OSHA) PSM standard has not been significantly revised since it was issued in 1992. While a proposal for a revised OSHA PSM standard underwent a small business review process last year⁷, modernization of the standard does not appear imminent. The lessons learned from implementation of a new California refinery PSM rule can, however, help inform national reforms in the future.⁸

Modernization of the federal standard is long overdue. The U.S. Environmental Protection Agency found that from 2004-2013, oil refineries had a higher frequency of serious incidents involving high hazard chemicals than any other industrial sector covered by its Risk Management Plan rule. According to OSHA, since the PSM standard was issued in 1992, no other industry sector has had as many fatal or catastrophic incidents nationwide as the oil refining industry.

CSB thanks those who have worked tirelessly for almost five years to develop the significant safeguards being considered today, including Department of Industrial Relations (DIR) Director Christine Baker, DIR Director of Occupational Safety and Health Juliann Sum, and Manager of the Process Safety Management Unit Clyde Trombetta and his team. We commend the leadership of Governor Jerry Brown on this issue and his initiation of the Interagency Task Force on Refinery Safety, as well as the extensive involvement of stakeholders from the refining industry, and labor and environmental organizations.

Modernization of process safety standards is an ongoing CSB priority and this issue is one of five on our *Critical Drivers List*. CSB is pleased to have contributed to the development of this much needed rule through our investigation findings, recommendations to the State, and our comments on draft versions.⁹

In conclusion, we urge the Standards Board to approve this ground-breaking proposal for worker and community protection. Thank you, again, for the opportunity to present comments from the CSB.

⁷ Report of the Small Business Advocacy Review Panel on OSHA's Potential Revisions to the Process Safety Management Standard, August 1, 2016.

⁸ For CSB comments in 2014 and 2016 on recommended revisions to the OSHA PSM Standard and/or the U.S. Environmental Protection Agency Risk Management Program rule, see <http://www.csb.gov/about-the-csb/public-comments/>

⁹ CSB submitted comments dated June 22, 2015 and Oct 7, 2015 to DIR and September 2, 2016 to OSH Standards Board. Available at <http://www.csb.gov/about-the-csb/public-comments/>