

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

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Christine Baker, Director  
Office of the Director  
Department of Industrial Relations  
1515 Clay Street, 17th Floor  
Oakland, CA 94612

October 7, 2015

Dear Director Baker:

Thank you for the opportunity to provide comments on the State of California Department of Industrial Relations (DIR) Division of Occupational Safety and Health Proposed GISO §5189.1 Version 5.0 – September 14, 2015, *Process Safety Management (PSM) for Petroleum Refineries*. The U.S. Chemical Safety Board (CSB) has previously reviewed Version 1.0, 2.0 and 4.5 and provided written and oral comments on Version 4.5<sup>1</sup> at the DIR’s public meeting in Los Angeles on June 22, 2015.

The CSB appreciates that DIR further revised the draft regulations to incorporate feedback provided by stakeholders at the June meeting. There are several aspects of the draft that the CSB considers to be improved. Version 5.0 restores and adds timelines for completion of various requirements. In addition, the definition of “infeasible” in Implementation Section (x) now specifies that cost alone cannot be a basis for infeasibility. The CSB noted in its oral comments, that many of the performance measures in Version 4.5 were inconsistent and the most current draft has worked to standardize the varying performance measures included in Version 4.5, which will result in clearer performance targets for employers.<sup>2</sup>

While the CSB believes that Version 5.0 is an improved version of the draft and incorporates feedback from stakeholders, we have remaining comments whether the regulations as currently written allow DIR to provide oversight and ensure that employers are sufficiently reducing risk at refineries. Below are our comments regarding the most recent draft regulation.

**Implementation of Report Recommendations:**

The CSB’s comments on Version 4.5 expressed concern regarding the removal of “greatest extent feasible” language from numerous sections of the draft, which were removed between Versions 2.0 and 4.5. The CSB understands now all existing processes require that a Hierarchy of Controls Analysis (HCA) be conducted, which does include greatest extent feasible language. For other processes, such as PHA, resulting from an incident investigation, as part of a Management of Change (MOC) review and during the design of new processes, “greatest extent feasible” as a performance measure is applied to these analyses through their requirement to include a HCA.

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<sup>1</sup> Available at: [http://www.csb.gov/assets/1/7/Final\\_Comments\\_CSB\\_CA\\_Refinery\\_PSM\\_Draft\\_Proposed\\_Rule\\_6\\_22\\_2015.pdf](http://www.csb.gov/assets/1/7/Final_Comments_CSB_CA_Refinery_PSM_Draft_Proposed_Rule_6_22_2015.pdf)

<sup>2</sup> CSB identified ten varying performance measures in Version 4.5, and counts six in Version 5.0.

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While the CSB finds this interpretation sufficient to address the CSB's recommendations for targeted risk reduction, we have remaining concerns regarding implementation section (x). For example, while employers are required, for each process safety hazard identified in a HCA, to eliminate hazards to the greatest extent feasible, Section (x) regarding implementation, states that the employer may reject a team recommendation from a Process Hazard Analysis (PHA), Safeguard Protection Analysis (SPA), Damage Mechanism Review (DMR), HCA, Incident Investigation, Process Safety Culture Assessment (PSCA), Human Factors Analysis, and Compliance Audit if:

(C) The recommendation is infeasible; however a determination of infeasibility shall not be based solely on cost.

(4) The employer may change a team recommendation if the employer can demonstrate in writing that an alternative measure would provide an equivalent or more effective level of protection...

This language effectively requires employers to determine what safeguards are most protective in conducting their reports, but gives the option to not act upon the recommendations of these reports if they determine they are infeasible or provide alternative measures. Regarding Section (4) for alternative measures, there is no language requiring employers to use the same criteria for their alternative measures as are required to be applied in the above report recommendations.

In addition to the above, the CSB also notes that the requirement to consider recommendations has also been removed from Section (e) regarding PHAs. Language in Version 4.5 states that a PHA must consider the HCA "and recommendations" and the DMR "and recommendations", whereas Version 5.0 requires only review of the HCA and DMR reports, not necessarily the resulting recommendations. The CSB encourages DIR to restore this language to ensure that subjective determinations are not made to include reports but not the resulting recommendations.

### **Role of the regulator:**

The option to use alternative measures without specified equivalent criteria leads us to our second major concern, in that Version 5.0 still does not contain any language requiring DIR to review and evaluate analyses conducted by the employer. The use of alternative safeguards may be permissible, should it be evaluated by an experienced regulator who can ensure that the employer is using the same level of risk reduction as described by the requirements hazard analyses in the regulation.

As noted in our previous comments, between Version 2.0 and Version 4.5, in Section (l)(10) pertaining to the regulator review of HCAs was eliminated. In Version 2.0, Section (l)(1) allowed the Division to review submitted HCAs and where the Division identified deficiencies, the Division could require the employer to submit further information, perform a reanalysis and submit a revised HCA and modify the HCA to incorporate changes to proposed inherent safety measures.

The need for review and evaluation by the regulator can also be seen in Section (e) in Version 5.0 relating to PHA and a resulting SPA. Section (e)(5)(B) states that: "The risk reduction obtainable for each safeguard [in a SPA] shall be based on site-specific failure rate data, or in the absence of such data, industry failure rate data for each device, system or human factor." While the use of site-specific failure rate data is in itself not the issue, there is no evaluation of the employer's selection of appropriate risk reduction. Evaluation by an experienced regulator is preferred to ensure that there is consistent determination as to the effectiveness of a particular safeguard.

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Pursuant to its recommendations,<sup>3</sup> the CSB encourages DIR to include language that outlines the role of the regulator including: the regulator's review the written PHA, HCA, and SPA; authority for preventative inspections by the regulator to verify the effective implementation of the PHA, HCA and SPA.

The CSB's intent of these recommendations is not that DIR review every report conducted by every refinery employer in California, but rather, that DIR be given the authority and ability to evaluate the strength of chosen safeguards and require further safeguards when deemed appropriate, according to DIR's inspection strategy. The CSB believes that if DIR includes language in the draft that allows employers to bypass the criteria outlined in the regulation by deeming it infeasible or employing an alternative safeguard, then it also needs to have the ability to evaluate the appropriateness of these safeguards.

An alternative to ensuring this level of review by DIR may be incorporation into a compliance directive similar to that of federal OSHA's PSM standard compliance directive and its implementation of the Program Quality Verification (PQV) inspection regime. The CSB encourages DIR to either incorporate this review into the regulation or seek alternative methods of implementation, such as a through a compliance directive.

### **“Major Change” language:**

CSB's prior comments discussed our concern with the “major change” as opposed to “change” language in Version 4.5. CSB finds that this language is unchanged in Version 5.0. Language throughout Version 5.0 uses the definition of a “major change” as opposed to “change” including in triggering a DMR Section (k), and trigger of a HCA for an Management of Change (MOC) review.

The CSB is concerned that only applying hazard reviews to major changes is not sufficiently protective, as even smaller changes made without an HCA can potentially result in an incident. For example, in the 2010 Tesoro Anacortes incident with seven fatalities, the CSB found that the MOC for an apparent minor change of installing steam lance stations near the heat exchangers that ruptured failed to examine the need for more operators to be present during startup. Requiring operators to use steam lances rather than fixing leaks subjected them to serious hazards. In the 2005 BP Texas City refinery incident, the MOC for siting occupied trailers where all 15 workers were killed did not examine the hazards of placing workers next to a hazardous process. Even though these were the two most serious refinery incidents in the last 10 years, neither of these changes would be considered “major” under the definition of the current Version 5.0 draft.

### **“Major Incident” Language**

Similar to our concern above regarding the “major change” language, the CSB is concerned that “major incident” is too specific to trigger hazard reviews in the regulation. For example, a PHA requires that where it identifies a major incident, as opposed whenever it identifies a hazard, the employer shall conduct an HCA. In Version 4.5, a SPA was to be conducted as part of all PHA recommendations. In Version 5.0, a SPA is only required where a PHA identifies the potential for a major incident instead of all PHA recommendations. As the goal of PSM is to reduce the potential for a major incident, it should be assumed that all activities within PSM are conducted to reduce the potential for a major incident.<sup>4</sup>

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<sup>3</sup> The CSB issued nine recommendations to the Governor and Legislature of the State of California which relate to the restructuring and enhancing of California's PSM program as a result of the August 6, 2012, Chevron Richmond refinery fire. USCSB. 2013. Interim Investigation Report: Chevron Richmond Refinery Fire. Pages 56-7. Available at: [http://www.csb.gov/assets/1/19/Chevron\\_Interim\\_Report\\_Final\\_2013-04-17.pdf](http://www.csb.gov/assets/1/19/Chevron_Interim_Report_Final_2013-04-17.pdf) and USCSB. 2014. Regulatory Report: Chevron Richmond Refinery Pipe Rupture and Fire. REPORT NO. 2012-03-I-CA. Pages 96-8. Available at: [http://www.csb.gov/assets/1/19/Chevron\\_Regulatory\\_Report\\_11102014\\_FINAL\\_-\\_post.pdf](http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_11102014_FINAL_-_post.pdf).

<sup>4</sup> Section (a) Scope and Purpose: This Section contains requirements for petroleum refineries to reduce risks by preventing major incidents and eliminating or minimizing process safety hazards to which employees may be exposed.

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Therefore, a SPA and other hazard analyses should address all identified hazards as it understood through its inclusion in PSM that the goal is to reduce the risk of a major incident. This also ensures that varying levels of severity are not assigned to hazards identified.

The definition of “major incident” and “major change” also highlight the need for regulator review. As discussed, currently the draft states that a HCA is triggered when a PHA identifies the potential for a major incident. The definitions of both “major incident” and “major change” are limited in scope and preclude and may preclude the use of an HCA as a risk reduction tool. The consistent application of these key terms by a competent regulator is the key to their effective use.

**Process Safety Indicators**

The CSB notes that the majority of Section (v)<sup>5</sup> Process Safety Management Program, has been removed from Version 5.0. The CSB is concerned about the resulting lack of specificity required when establishing safety performance indicators. Section (v)(4) only states: “The employer shall develop, implement and maintain an effective program to track and document process safety performance indicators.”

In Version 4.5, a much greater level of detail is given throughout the entire section, and with regards to process safety indicators, it stated that employers must track and document:

- (A) Past due inspections of process piping and components;
- (B) Past due inspections for pressure vessels;
- (C) Past due recommended actions required by this Section;
- (D) Each leak seal repair installed on hydrocarbon and hazardous utility systems and the date(s) it was installed; the projected date(s) for implementing a permanent correction for each leak seal; and the total number of days each leak seal repair was in place, and,
- (E) The number of major incidents that have occurred each calendar year.

The CSB encourages DIR to restore some level of specificity to this section to ensure that all refineries collect some standard indicators. The use of common indicators particularly the use of leading indicators that can identify PSM issues prior to a negative outcome will more effectively allow DIR to determine overall trends in safety and risks at California refineries. Contra Costa County and the City of Richmond, which regulates four of California’s refineries, have already revised their Industrial Safety Ordinances to require reporting of leading and lagging indicators.

The CSB understands the substantial effort involved in the development of the draft Proposed Rule and implementing our recommendations. The CSB looks forward to further dialogue with DIR on how to improve refinery safety in California. Thank you for your efforts to ensure the protection of worker safety and health at California’s refineries.

If you have any questions, please contact me at (202) 261-7617 or Mr. Don Holmstrom, Director, Western Regional Office, at (303) 236-8701 or via email at: Don.Holmstrom@csb.gov.

Sincerely,



Vanessa Allen Sutherland  
Chairperson and Member

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<sup>5</sup> In Version 4.5, Section (w) PSM Management System.