U.S. Chemical Safety and Hazard Investigation Board

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Honorable Manny Ehrlich, Jr.
Board Member

Honorable Rick Engler
Board Member

Honorable Kristen M. Kulinowski
Board Member

U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Attention: Mathy Stanislaus, Office of Land and Emergency Management
Washington, District of Columbia 20004

May 10, 2016

Attention: Docket No. EPA-HQ-OEM-2015-0725, Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Action, Section 112(r)(7).

Dear Mr. Stanislaus:

Please find attached the U.S. Chemical Safety and Hazard Investigation Board's (CSB's) response to the U.S. Environmental Protection Agency's (EPA's) March 14, 2016, Proposed Rule, "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Action, Section 112(r)(7)."

The CSB appreciates the EPA's work to advance chemical safety, and we thank you for the opportunity to provide comments on this Proposed Rule. If you have any questions about our comments, or if we may be of further assistance, please contact Donald Holmstrom, Director Western Regional Office, at 202-261-7682 or via email at don.holmstrom@csb.gov.

Sincerely,

Vanessa Allen Sutherland, Chairperson and Member

Manny Ehrlich, Jr., Member

Rick Engler, Member

Kristen Kulinowski, Member

Introduction

The U.S. Chemical Safety and Hazard Investigation Board (CSB) is an independent federal agency charged with investigating industrial chemical accidents. The Clean Air Act (CAA) directs the CSB to make recommendations on U.S. Environmental Protection Agency (EPA) rulemaking (Section 112(r)(6)(I)), and on Risk Management rulemaking specifically (Section 112(r)(6)(K)). To that end, the CSB has long supported modernization of process safety regulations through formal recommendations to the EPA and has identified this issue for its "Most Wanted Safety Improvements" program. The CSB is encouraged that the EPA is making progress towards much needed change to better prevent chemical incidents. The CSB has reviewed the EPA's Proposed Rule, "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7)" and believes the EPA has made a number of improvements to help advance chemical safety and prevention of accidental releases. At the same time, the CSB encourages the EPA to work to enhance some of the proposed requirements. The CSB also notes that the EPA cites numerous CSB investigation reports, findings, and recommendations throughout the Proposed Rule. Safety is a shared responsibility between our agencies, and we are pleased to know that the EPA is incorporating lessons learned from CSB investigations into the Proposed Rule.

The CSB submitted comments on the EPA's Request for Information (RFI) issued on July 31, 2014.[1] Many of the changes in this Proposed Rule are responsive to those comments. There are several changes, however, that were not included in the Proposed Rule that remain important issues for the EPA to consider in subsequent rulemaking.

The following comments address the following aspects of the Proposed Rule including: Incident Investigation and Accident History; Third-Party Compliance Audits; Safer Technology and Alternatives Analysis (STAA); Emergency Response Preparedness; and Information Availability.

Incident Investigation and Accident History

Overall, the CSB agrees with the EPA that investigating the root causes of incidents is an important tool for using lessons learned to prevent future incidents and agrees with the information the EPA outlines for inclusion in the incident investigation report. The CSB believes that the requirement to investigate beyond causal factors will result in more robust incident investigations. The CSB believes a strong incident investigation program includes not only the requirement for root cause analysis, but also the identification and implementation of corrective actions. The CSB found as part of its August 6, 2012, Chevron Richmond, Ca. refinery fire investigation,[2] that previous recommendations stemming from incident investigations at the refinery identified the need for corrosive-resistant piping in the crude unit. Chevron, however, did not implement these recommendations. The CSB identified this as causal to the accident. The CSB believes that the EPA has addressed this issue by requiring that owners/operators address findings from incident investigations, and the CSB believes the requirement to implement corrective actions is important for the Final Rule. The CSB agrees that inclusion of the requirement to address incident investigation findings as part of the hazard review requirement within a Process Hazard Analysis (PHA) is an appropriate way to incorporate this requirement.

The CSB also strongly agrees with the proposed requirement to include at least one person with appropriate knowledge of the facility process and experience in incident investigation techniques to be

[1] U.S. Chemical Safety and Hazard Investigation Board's (CSB's) response to the EPA's July 31, 2014 Request for Information (at 79 FR 44604) on potential revisions to its Risk Management Program regulations and related program. (Docket No. EPA-HQ-OEM-2014-0328; October 29, 2014). Available at: http://www.csb.gov/assets/1/7/EPA_RFI.pdf.

[2] CSB. Interim Investigation Report: Chevron Richmond Refinery Fire. Report No. 2012-03-I-CA. April 2013; p 28. Available at: http://www.csb.gov/chevron-refinery-fire/.

part of the incident investigation team. The CSB found as part of its Chevron Richmond refinery fire investigation that personnel familiar with common damage mechanisms, such as the one that occurred at this refinery, were not included as part of the PHA team. The CSB agrees with the EPA that implementation and dissemination of lessons learned are necessary for an impactful incident investigation program.

In addition, the CSB agrees that the requirement should be expanded to include the investigation of near-misses. The CSB is currently investigating the February 18, 2015 explosion at the ExxonMobil refinery in Torrance, California. The CSB's interim findings have shown that a series of events led to the presence of hydrocarbons in the electrostatic precipitator (ESP), which then found an ignition source and caused an explosion. An approximately 80,000 pound piece of the ESP was propelled onto scaffolding several feet away from alkylation settlers storing hydrofluoric acid, the release of which could have been fatal to workers and members of the nearby community. A cement pillar used to hold a hydrofluoric acid perimeter detection system was also damaged by the debris. Without the requirement to investigate such near-misses, and in the absence of a nationally recognized definition of the term "near-miss," ExxonMobil maintains that this incident was not a near-miss, despite the obvious narrowly avoided contact of debris with the alkylation unit, and the fact that this incident would qualify as a near-miss using its own corporate definition.[3]

The CSB therefore encourages the EPA to include the requirement to investigate near-misses for Program 2 and 3 facilities. CSB also recommends that the EPA should not defer to owners/operators in relying on their own definitions of a near-miss. The incident investigation section of the Proposed Rule is strengthened by defining "root cause" and "catastrophic release," and "near-miss" should also be defined. Concerning the definition of near-miss, the CSB believes, as the EPA has pointed out, that the Center for Chemical Process Safety (CCPS) has a robust definition which could be proposed for adoption.[4]

Third-Party Compliance Audits

As mentioned in our RFI response, CSB investigations found that internal audits often fail to identify systemic process safety deficiencies and therefore, the CSB generally supports the use of third-party audits. The CSB also pointed out in its response that the EPA should have requirements for ensuring and maintaining auditor independence, and we believe the EPA has achieved this through the various requirements proposed. We also believe that the EPA has outlined sufficient standards for ensuring auditor competence. The CSB also suggests that the EPA develop detailed guidelines, or identify industry best practices, for performing such audits concerning scope and content to ensure that auditing is standardized across facilities. The CSB also recommends in an effort to make the auditing process as inclusive as possible, that third party auditors must consult with facility employees and their representatives when conducting their audits. This would be consistent with the language of the Clean Air Act at 29 U.S.C. 651 et seq and EPA guidance on worker participation during EPA audits and inspections.[5]

[3] An example of ExxonMobil Corporate near miss incident is: "Dropping loads or other falling objects within damage range of equipment containing flammable or toxic material."

[4] The Center for Chemical Process Safety (CCPS) defines a near miss as "an occurrence in which an accident (that is, property damage, environmental impact, or human loss) or an operational interruption could have plausibly resulted if circumstances had been slightly different." Center for Chemical Process Safety. (2003). Guidelines for Investigating Chemical Process Incidents (2nd Edition). Reporting and Investigation Near Misses. Center for Chemical Process Safety/AIChE.

[5] Guidance for Conducting Risk Management Program Inspections Under Clean Air Act Section 112(r), EPA 550-K-11-001, January 2011, pages 14-21.

As proposed, two conditions would trigger third-party audits: an accident occurs, or the implementing agency determines that an audit is necessary. The EPA also explored an alternative option which would require third-party compliance audits for Program 2 and 3 facilities every three years. The CSB finds this to be a more preventative option than that in the Proposed Rule. Ideally, preventative inspections and audits by the regulator, the EPA (and delegated state and local agencies), are the best option for ensuring compliance. Third party preventative audits should not be a substitute for sufficiently resourced staff who regularly inspect and audit facilities. The Proposed Rule addresses this in part by requiring that owners/operators provide their audit reports to the implementing agency, along with timelines for implementation of corrective actions. The CSB would encourage the EPA to ensure that this provision remain in the Proposed Rule, and that, if the alternative option of every three years is not included, the triggering circumstances for third party audits remain in the Final Rule.

Safer Technology and Alternatives Analysis (STAA)

The CSB has repeatedly stated in its investigation reports that effectively implementing inherently safer technology provides an opportunity for preventing major chemical incidents. While the EPA's proposed modification to the process hazard analysis (PHA) provisions in section §68.67 regarding analysis of potential safer technology and alternatives (STAA) is a step in the right direction, the CSB encourages the EPA to adopt more robust requirements regarding the use of inherently safer systems analysis and the hierarchy of controls.

The EPA's current proposed language requires owners or operators to *"consider"* inherently safer technology (IST) or design during the PHA process only (emphasis added). The CSB believes this permissive language results in an activity-based requirement; meaning, the company can poorly perform the analysis and still satisfy the requirement. The CSB found this to be the case in its investigation of the August 6, 2012 accident at the Chevron Richmond refinery in Richmond, California, where the refinery repeatedly implemented inherently safer systems inadequately, ultimately contributing to the pipe rupture and fire. Despite these deficiencies, however, Chevron still satisfied the regulatory requirements to "consider" inherent safety.

At the time of the August 6, 2012 incident, the Contra Costa County (CCC) Industrial Safety Ordinance (ISO) required covered facilities to "consider" the use of inherently safer systems in the analysis and development of mitigation items resulting from a PHA and in the design and review of new processes and facilities."[6] Leading up to the accident, Chevron ineffectively implemented inherently safer design in a number of ways. The CSB found that Chevron employees, including Chevron's own engineering and technical group, recommended implementing inherently safer designs through the management of change (MOC) process, incident investigations, technical reports, and employee recommendations. Yet, Chevron repeatedly failed to implement proposed inherently safer recommendations. A 2006 MOC limited the application of more corrosion resistant metallurgy in crude unit high temperature service. As a result, the portion of the piping that failed on August 6, 2012, had remained in service. Finally, Chevron used the CCC ISO IST checklist (intended to aid identification of opportunities to implement inherently safer design) during the 2009 crude unit PHA but failed to adequately consider inherently safer systems like improved metallurgy. The CSB found this checklist was essentially a "check-the-box" exercise and was not an effective means of driving the implementation of inherent safety. Despite these many missed opportunities, CCC auditors noted in 2011 that Chevron's PHAs "follow[ed] the requirements specified by…ISS [inherent safety systems] guidelines."[7]

[6] County Ordinance Chapter 450-8.016(d)(3) (2006). Emphasis added.

[7] CSB. Interim Investigation Report. Chevron Richmond Refinery Fire. April 2013; p 44. Available at: http://www.csb.gov/assets/1/19/Chevron_Interim_Report_Final_2013-04-17.pdf.

The EPA's proposed regulatory language also limits application of STAA to the PHA process, which the CSB believes is too narrow in scope. The application of IST and the hierarchy of controls is a key opportunity for preventing major chemical incidents, and thus should apply to other key safety management elements as well. The CSB noted in the Chevron Interim Report, for example, that it is "essential that MOCs incorporate hazard analyses and the assessment of opportunities to implement inherently safer systems."[8] As stated above, the CSB found multiple opportunities prior to the August 6, 2012, accident for the Chevron Richmond refinery to implement IST through the MOC process, incident investigations, technical reports, and employee recommendations which would have ultimately helped prevent the accident. Following completion of the investigation of the August 6, 2012, Chevron Richmond refinery incident, the CSB made recommendations to the state of California and CCC to "require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible in establishing safeguards for identified process hazards." CCC updated the ISO to require covered facilities to conduct an inherently safer systems analysis (ISSA) in the development and analysis of PHAs, as part of a MOC review, and during incident investigations.[9] Each facility must then prepare a report detailing the inherently safer system(s) analyzed, the conclusions and rationale, and an action plan.[10] The CSB encourages the EPA to require analysis of potential STAA for the MOC process and incident investigations in addition to the PHA process.

The CSB notes that the CCC ISO recently adopted goal-setting language regarding IST and the hierarchy of controls and the ISO now requires covered facilities to "select and implement each inherently safer system identified in an ISSA report to the *greatest extent feasible* and as soon as administratively practicable"[11] (emphasis added). As the CSB explained in its response to the RFI dated October 29, 2014, while the Clean Air Act directed the EPA to promulgate regulations "to provide, *to the greatest extent practicable,* for the prevention and detection of accidental releases of regulated substances," [12] (emphasis added) the RMP rule has no goal-setting, risk-reduction component. There is no RMP requirement to reduce risks to "as low as reasonably practicable," or ALARP. The CSB found in both the Chevron Richmond and Tesoro Anacortes refinery investigations that the lack of a goal-setting requirement means that a PHA or MOC can satisfy the regulatory requirements even though it might inadequately identify or control major hazards.

Finally, similar to New Jersey's IST program, the EPA's proposed rule is focused on the activity of production of the IST report and lacks rigorous goal setting elements such as requiring facilities to reduce risks as low as reasonably practicable, or ALARP. In contrast, CCC's ISO requires facilities to select and implement ISS to the greatest extent feasible and as soon as administratively practicable.

In addition, the EPA is proposing to include only NAICS codes 322, 325, and 324 in Program 3 to conduct a STAA analysis. CSB recognizes that the EPA used RMP incident data to determine which industries experienced the highest rates of accidents. The CSB suggests that other data might be useful in determining other industries that could pose major risks to the public in the event of a release. For example, the EPA could analyze owner/operator submitted offsite consequence data submitted to the agency to determine which facilities could have the largest impact should a release occur.

The CSB encourages the EPA to adopt stronger language similar to that contained in the most recent CCC ISO requiring robust STAA analysis, implementation, and documentation. The CSB also requests the EPA adopt a goal-setting requirement similar to the CCC ISO, such as "greatest extent feasible" or

[8] *Ibid* at 45.
[9] County Ordinance Chapter 450-8.106(i)(1)(A) through (F). (2014).
[10] County Ordinance Chapter 450-8.106(i)(2) (A) through (E).
[11] Country Ordinance Chapter 450-8.106(i)(3) (2014).
[12] 42 U.S.C. § 7412(r)(7)(B)(i) (1990).

ALARP, to help emphasize the implementation of inherently safer designs and the hierarchy of controls. The CSB also notes that facilities are not required to submit the full STAA analysis to the EPA. The CSB suggests that facilities be required to submit the full STAA review as part of their RMP submission to the EPA, rather than only a summary and implemented IST.

The EPA also requested comment on the utility of an online clearinghouse for safer alternatives, and the CSB agrees that this would be a useful tool to assist facilities in implementing safer alternatives. Such a database would also be a useful resource for insurers, chemical process vendors, emergency responders, academic researchers, and other government agencies, such as OSHA.

Emergency Response Preparedness Requirements

The CSB agrees with the EPA that adequate emergency response preparedness is essential for mitigating the consequences of accidental releases. Concerning applicability issues surrounding "responding" and "non-responding" facilities, EPA considered an alternative option which would require Program 2 and 3 facilities to comply with the full emergency response program requirements of § 68.95, thereby designating all Program 2 and 3 facilities as "responding" facilities. This option designates the responsibility of emergency response planning to facilities by default, rather than allowing often under-resourced local emergency planning committees (LEPCs) or local emergency response officials to be responsible for such planning. However, the EPA's proposed revision of § 68.90(a) does clarify the applicability and definition of the term "non-responding stationary source."[13] The EPA recognizes that owners/operators of Program 2 and 3 facilities often claim to be "non-responding" and therefore exempt from the emergency response program requirements specified at § 68.95 and that these facilities often fail to properly coordinate with local emergency response authorities on whom they would rely in the event of a significant release. The CSB supports the EPA's consideration of revisions to § 68.90(b) that would state explicitly that this exemption may only be used where local emergency responders are both capable (i.e., have sufficient equipment, expertise, and staffing) and willing to respond to accidental releases. The CSB believes that the EPA's proposed revision of § 68.90(a), in addition to the new requirements for annual coordination and review of emergency response plans in § 68.93, achieves this goal.

In addition to annual coordination, the CSB notes that the EPA has proposed field exercises occur every five years and that table top exercises occur annually. The CSB suggests that the EPA maintain language that requires field exercises every five years, unless the facility is subject to another federal, state, or local regulation with a more frequent schedule. The CSB questions the basis for the proposed frequency of emergency response activities though, and the information that was used to determine if the five-year field exercises frequency is sufficient.[14] Regarding tabletop exercises, the CSB recommends that the EPA develop guidance on conducting effective tabletop exercises to ensure that, when conducted, they are of sufficient quality to prepare responders in the intervening years between field exercises.

Information Availability Requirements

The CSB agrees with the EPA regarding the need for information sharing among facilities, emergency responders, LEPCs, and the community. It is also an improvement that the outlined information sharing

[13] As revised, § 68.90(a) reads, "The owner or operator of a stationary source need not comply with § 68.95 of this part provided that: (1) the coordination activities required under § 68.93 indicate that adequate local public emergency response capabilities are available to appropriately respond to any accidental release of the regulated substances at the stationary source; (2) appropriate mechanisms are in place to notify emergency responders when there is a need for a response; and (3) the LEPC or equivalent has not requested in writing that the owner or operator comply with the requirements of § 68.95."

[14] The New Jersey Toxic Catastrophe Prevention Act regulations specify that *annual* field exercises must occur. See N.J. A.C. 7:31-5.2(b)2.

requirements apply to facilities in Programs 1 through 3. Yet, the CSB is concerned about how information sharing is presented in the Proposed Rule. Although the CSB believes that it is a step forward to provide LEPCs or local emergency response officials with the information outlined in the Proposed Rule, the additional step requiring LEPCs to request the information is burdensome as LEPCs are often under-resourced. The responsibility for providing information should be on the facility. The CSB believes that the information listed in the Proposed Rule is important to be shared with the LEPC, regardless of whether an LEPC request is made. If this were to remain in the Final Rule, the CSB would suggest that the EPA distribute guidance to LEPCs on an annual basis to ensure that LEPCs understand they have the authority to request facility information as described.

Despite these concerns, the information that the LEPC is authorized to request is comprehensive and necessary for emergency responders to adequately prepare for accidental releases. The CSB would suggest that though summaries of compliance audits, incident investigation reports, and inherently safer technologies analysis are beneficial for providing understandable versions of complex documents, facilities should still be required to provide original documents to LEPCs or local emergency response officials. The CSB also supports the EPA's proposal to require meetings 30 days following a reportable incident. In the CSB's experience, such meetings conducted shortly after an incident have the greatest level of public participation.

Considerations for Subsequent Rulemaking

The CSB provided information in its response to the EPA's RFI in several areas that were not ultimately included in the Proposed Rule. The CSB believes that the issue of Stationary Source Location remains of importance and should be considered in subsequent rulemaking. The CSB also notes that the EPA has decided not to update the List of Regulated Substances to include ammonium nitrate or other reactive hazards. The CSB made a 2002 recommendation to the EPA as a result of its Improving Reactive Hazard Management investigative study, which recommended that the EPA revise the RMP rule to include reactive hazards.[15] This recommendation has been designated with the status, "Open – Unacceptable Response/No Response Received" as the EPA has not included reactive chemicals in its RMP rule since the recommendation was issued. Reactive incidents continue, as evidenced by the West Fertilizer explosion, and the CSB maintains that addressing this issue is a critical component for RMP revision. The CSB sees including ammonium nitrate and other reactive hazards as critical and urges the EPA to accomplish this in a future rulemaking.

Conclusion

The EPA's Proposed Rule includes new and important provisions to help prevent chemical incidents and to enhance emergency planning and response. Although the Proposed Rule has several laudable provisions, the CSB encourages the EPA to further emphasize the prevention of chemical incidents. The CSB also encourages the EPA to ensure that compliance with RMP provisions are predominantly the responsibility of facilities, rather than under-resourced LEPCs. The CSB appreciates the opportunity to provide comments and looks forward to reviewing the Final Rule.

[15] CSB Recommendation No. 2001-01-H-3: *Revise the Accidental Release Prevention Requirements, 40 CFR 68, to explicitly cover catastrophic reactive hazards that have the potential to seriously impact the public, including those resulting from self-reactive chemicals and combinations of chemicals and process-specific conditions. Take into account the recommendations of this report to OSHA on reactive hazard coverage. Seek congressional authority if necessary to amend the regulation.* The CSB also made a similar recommendation to the Occupational Safety and Health Administration (OSHA), CSB Recommendation No. 2001-01-H-1.