U.S. Chemical Safety and Hazard Investigation Board

1750 Pennsylvania Avenue NW, Suite 910 | Washington, DC 20006
Phone: (202) 261-7600 | Fax: (202) 261-7650
www.csb.gov

Steve Owens
Interim Executive Authority

Sylvia E. Johnson, Ph.D.
Board Member

October 26, 2022

U.S. Environmental Protection Agency
EPA Docket Center
EPA-HQ-OLEM-2022-0174 Docket
Mail Code 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460
(and via Federal eRulemaking Portal: https://www.regulations.gov/)

Dear Sir or Madam:

Enclosed are the U.S. Chemical Safety and Hazard Investigation Board's (CSB) comments on the Environmental Protection Agency's (EPA's) proposed rule, "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act; Safer Communities by Chemical Accident Prevention" (RMP rule). The comments address some new issues as well as supplement previous comments by the CSB in connection with prior EPA proposals and actions relating to the RMP rule and applicable recommendations made by the CSB to the EPA and other recipients.

We thank you for this additional opportunity to provide comments. 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
Interim Executive Authority

Sylvia E. Johnson, Ph.D.
Board Member

Enclosure

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

Introduction:

The U.S. Chemical Safety and Hazard Investigation Board (CSB) is an independent federal agency charged with investigating, determining, and reporting to the public in writing the facts, conditions, and circumstances and the cause or probable cause of any accidental chemical release resulting in a fatality, serious injury, or substantial property damages. The CSB issues safety recommendations based on data and analysis from investigations and safety studies and advocates for these changes to prevent the likelihood or minimize the consequences of accidental chemical releases.

The comments below are numbered in the order requested in the NPRM.

1. Natural Hazards

The CSB is concerned with facility preparedness in the face of extreme weather and the frequency of such, as these events provide limited advance warning and are challenging to predict in terms of intensity and specific locations. Rigorous advanced planning is critical to react successfully to emergency situations, and requires both equipment and process design, as well as training and routine practice.

The CSB identified the August 2017 Arkema Inc. chemical plant fire in Crosby, Texas, as a significant incident caused by natural hazards (extreme weather). As the EPA points out in their proposal, the part of the Arkema facility that experienced the incident was not an RMP-regulated process. However, the increased occurrence of events caused by extreme weather like the Arkema incident highlight the importance of evaluating the potential effects of extreme weather and other natural hazards on process operations. This includes both site-specific and regional impacts on emergency management and other local aid providers.

The EPA proposed rule addresses natural hazards in the following locations:

- Definitions - § 68.3
- Hazard Review - § 68.50(a)(5)
- Process Hazard Analysis - § 68.67(c)(8)

The CSB concurs with the EPA's proposal that natural hazards should be defined and included in the hazards evaluated in the hazard review and PHA processes. Additionally, the CSB has no concerns or additional comment with the proposed language addressing natural hazards. In response to the EPA's request for comment, the CSB proposes that natural hazard information be provided by Regions or States as to what specific natural hazards should be included in a stationary source's plan. Potential sources of that information could be State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), and Local Emergency Planning Committees (LEPCs), as well as the Federal Emergency Management Agency (FEMA).

2. Power Loss

The CSB investigated the August 23, 2010, anhydrous ammonia release at the Millard Refrigerated Services in Theodore, Alabama. Hydraulic shock caused a roof-mounted pipe to catastrophically fail, leading to the release of more than 32,000 pounds of anhydrous ammonia. The hydraulic shock occurred during the restart of the plant's ammonia refrigeration system following a 7-hour power outage. Additionally, the CSB's Arkema Inc. Chemical Plant Fire investigation in Crosby, Texas, highlighted the hazards of power loss.

The EPA proposes to emphasize loss of power in hazard reviews and PHAs for Program 2 and Program 3 RMP-regulated processes to prevent or mitigate releases of RMP-regulated substances at covered facilities.

The EPA proposed rule addresses power loss in the following locations:

- Hazard Review - § 68.50(a)(3)
- Process Hazard Analysis - § 68.67(c)(3)
- Prevention program/Program 2 - § 68.170(e)(7)
- Prevention program/Program 3 - § 68.175(e)(8)

The CSB concurs with the EPA's specific inclusion of standby or emergency power systems in hazard reviews and PHA's as well as the requirement to document when recommendations are declined specific to power loss in Program 2 and 3 Prevention Programs. Additionally, the CSB has no concerns or additional comment with the proposed language addressing power loss.

3. Stationary Source Siting

The lack of sufficient distance between the source boundary and neighboring residential areas was a significant factor in the severity of several chemical incidents investigated by the CSB, such as:

- NDK Crystal Inc. Explosion with Offsite Facility investigation: In this incident, the rupture of a pressure vessel resulted in one public fatality and one public injury. A building fragment propelled by the force of the blast traveled nearly 650 feet and killed a member of the public at a highway rest stop parking lot. An 8,600-pound vessel fragment traveled 435 feet and impacted a neighboring business, injuring one offsite worker and causing significant property damage.
- West Fertilizer Explosion and Fire investigation: An explosion involving Fertilizer Grade Ammonium Nitrate (FGAN) damaged an apartment complex and a nursing home located approximately 450 feet and 600 feet, respectively, from the source of the explosion, resulting in 3 public fatalities (out of a total of 15

people killed in the explosion). The explosion also caused over 260 injuries, as well as damage to over 350 homes and 3 schools located near the plant.

- Husky Energy Refinery Explosion and Fire investigation (Pending): An explosion and subsequent fire in the refinery's fluid catalytic cracking unit resulted in 36 people seeking medical attention. In addition, a portion of Superior, Wisconsin, had to be evacuated.
- Philadelphia Energy Solutions: As the result of a pipe elbow rupture in the Philadelphia Energy Solutions (PES) hydrofluoric acid (HF) alkylation unit, an accidental release of flammable vapor in the PES refinery alkylation unit found an ignition source, causing a fire and multiple explosions. Several large equipment fragments were propelled; one weighing approximately 38,000 pounds flew across the Schuylkill River, and two other fragments, one weighing about 23,000 pounds and the other 15,500 pounds, landed in the PES refinery. In addition, more than 5,000 pounds of highly toxic HF were released. Had the fragments taken different trajectories and directions or had the HF traveled beyond the refinery boundary, there could have been significant offsite impacts to the surrounding community.
- Watson Grinding and Manufacturing (Pending): An explosion fueled by propylene that had accidentally been released inside an enclosed workshop fatally injured two employees and injured two other employees at the Watson Grinding and Manufacturing Co. facility in Houston, Texas. A third individual, a nearby resident, died a week later, reportedly from injuries caused by the explosion. The explosion also injured other local residents and damaged hundreds of nearby structures, including homes and several businesses.

The EPA is proposing to amend regulatory text for Program 2 and Program 3, respectively, to define stationary source siting evaluation as inclusive of the placement of processes, equipment, buildings, and hazards posed by proximate facilities, and accidental release consequences posed by proximity to the public and public receptors. The CSB supports that local land use and zoning resources be included in the evaluation for new projects and upgrades to existing facilities. The proposed amendments would make more explicit the requirement that hazard evaluations for processes under both Program 2 (hazard review) and Program 3 (PHA) include matters in the siting evaluation. The CSB also supports the EPA's efforts to assess environmental justice as it applies to the RMP proposed rule. According to EPA data, communities where chemical facilities are located are more likely to be in or near neighborhoods with minority and disadvantaged individuals. These same groups tend to be at higher risk for a range of other adverse health conditions.[1]

[1] Health Status in Fence-Line Communities: The Impact of Air Pollution
Published: International Journal of Family Medicine and Primary Care; 2021, Volume 2, Issue 3, Article 1040; 09 Sep 2021 https://sph.lsuhsc.edu/health-status-in-fence-line-communities-the-impact-of-air-pollution/

The EPA proposed rule addresses stationary source siting in the following locations:

- Hazard Review - § 68.50(a)(6)
- Process Hazard Analysis - § 68.67(c)(5)
- Prevention program/Program 2 - § 68.170(e)(7)
- Prevention program/Program 3 - § 68.175(e)(8)

The CSB concurs with the EPA's specific inclusion of stationary source siting in hazard reviews and PHA's as well as the requirement to document when recommendations are declined specific to siting hazard evaluations and justifications in Program 2 and 3 Prevention Programs. Additionally, the CSB has no concerns or additional comment with the proposed language addressing stationary source siting.

5. Safer Technologies and Alternatives Analysis (STAA)

The next issue is the requirement to use inherently safer systems analysis and the hierarchy of controls to establish safeguards for identified process hazards. The CSB has made recommendations from various investigations supporting this concept over the years to various recipients to include: Xcel Energy Company Hydroelectric Tunnel Fire (Recommendation Nos. 2008-1-I-CO-R2, R16, and R17), Tesoro Refinery Fatal Explosion and Fire (Recommendation Nos. 2010-8-I-WA-R1, R2, R3, R5, and R14), Macondo Blowout and Explosion (Recommendation Nos. 2010-10-I-OS-R5 and R11), Chevron Refinery Fire (Recommendation Nos. 2012-3-I-CA-R4, R7, R13, and R21) Kleen Energy Natural Gas Explosion (Recommendation No. 2010-7-I-CT-R10, R11, R12, R13, R14, and R15), Bayer CropScience Pesticide Waste Tank Explosion (Recommendation Nos. 2008-8-I-WV-R6, R7A, and R7B) DuPont La Porte Facility Toxic Chemical Release (Recommendation Nos. 2015-1-I-TX-R1, R2, R3, and R4) and Philadelphia Energy Solutions (PES) Refinery Fire and Explosions (Recommendation No. 2019-04-I-PA-R2).

Within the STAA topic area, in addition to defining inherently safer technology or design, the EPA has two proposals:

- The first is to limit the applicability of the STAA (safer technology and alternatives analysis) provisions to sources in the petroleum and coal products manufacturing (NAICS 324) and chemical manufacturing (NAICS 325) sectors, located within 1 mile of another RMP-regulated 324 or 325 facilities.
- The second is the proposal that all facilities in NAICS 324 using HF in an alkylation unit (approximately 45 facilities) conduct an STAA for the use of safer alternatives compared to HF alkylation.

HF has been the subject of recent potentially catastrophic near-miss incidents investigated by the CSB, including: (1) an explosion at the Husky Refinery in Superior, Wisconsin, wherein debris impacted processes and storage vessels at a further distance

from the explosion than the refinery's HF storage tank and causing a significant asphalt fueled fire; (2) a near-miss incident in Torrance, California, where the explosion of ExxonMobil's electrostatic precipitator resulted in debris landing near the refinery's modified HF tanks; and (3) a fire and explosions at the Philadelphia Energy Solutions (PES) refinery in Philadelphia, PA, during which more than 5,000 thousand pounds of HF were released.

The CSB supports the EPA's defining and use of inherently safer technology or design. As the EPA pointed out, there is no explicit requirement for owners and operators to address inherent safety—the first tier of the hierarchy of controls. The EPA proposes to expand upon these requirements by requiring the owners or operators to consider safer technology and alternative risk management measures that could eliminate or reduce risk from process hazards. In addition to engineering and administrative controls, owners and operators of facilities with Program 3 processes covered under this provision would have to consider the application of the following safer technology measures, in the following order: inherently safer technology (IST) or inherently safer design (ISD), passive safeguards, active safeguards, and procedural safeguards.

The CSB also supports the EPA's proposal to reinstate the 2017 RMP rule provisions requiring STAA for NAICS 324 and 325 with the possibility to add more NAICS codes based upon risk (increase in accident rate, off site risk, etc.) However, the CSB urges the EPA not to limit the STAA requirements to RMP-regulated NAICS 324 or NAICS 325 facilities located within 1 mile of another, but, instead, to require the STAA from **all** applicable facilities regardless of proximity. Additionally, the CSB encourages the EPA to adopt stronger language similar to that implemented as a result of the CSB's Chevron Refinery Fire investigation (Recommendation No. 2012-03-I-CA-R7), in the most recent Contra Costa County (CCC) Industrial Safety Ordinance (ISO) requiring robust STAA analysis, implementation, and documentation as well as the inclusion of goal-setting requirement such as "greatest extent feasible" or As Low As Reasonably Practicable (ALARP), to help emphasize the implementation of inherently safer designs and the hierarchy of controls.

The CSB also supports a requirement that all facilities in NAICS 324 using HF in an alkylation unit conduct an STAA for the use of safer alternatives due to the severity of the potential consequences of HF exposure. In fact, as a result of the HF release addressed in the CSB's Philadelphia Energy Solutions (PES) Refinery Fire and Explosions investigation, the CSB issued a recommendation (Recommendation No. 2019-04-I-PA-R2) to the EPA to revise the RMP regulations to require new and existing petroleum refineries with HF alkylation units to conduct a safer technology and alternatives analysis (STAA) and to evaluate the practicability of any inherently safer technology (IST) identified and require that these evaluations be performed every 5 years as a part of an initial PHA as well as PHA revalidations. Additionally, as a separate issue, the CSB urged the EPA in a letter dated April 23, 2019, to review and update their 1993 study on the potential hazards to public health and the environment by the use and production of HF.

The EPA proposed rule addresses safer technology and alternatives analysis in the following locations:

- Definitions - § 68.3
- Program 2 Compliance Audits (third party) - § 68.58(f)(2)
- Process Hazard Analysis § 68.67(c)(9) and § 68.67(c)(9)(i)
- Program 3 Compliance Audits (third party) - § 68.79(f)(2)
- Prevention program/Program 3 - § 68.175(e)(7)

*The CSB urges EPA to go farther and not limit the STAA requirements to RMP-regulated NAICS 324 or NAICS 325 facilities located within 1 mile of another; specifically, the CSB urges the EPA to require the STAA from **all** applicable facilities regardless of proximity. The CSB concurs with the EPA's proposal to require all facilities in NAICS 324 using HF in an alkylation unit to conduct a STAA for the use of safer alternatives compared to HF alkylation. That said, the CSB urges the EPA to adopt stronger language requiring robust STAA analysis, implementation, and documentation as well as the inclusion of goal-setting requirements to help emphasize the implementation of inherently safer designs and the hierarchy of controls. Additionally, the CSB thinks the 1 mile proximity limitation language regarding RMP-regulated NAICS 324 or NAICS 325 facilities should be removed.*

6. Root Cause Analysis

The CSB's Formosa Plastic Vinyl Chloride Explosion investigation, the BP America (Texas City) Refinery investigation, and the Millard Refrigerated Services Ammonia Release investigation found that root causes of prior, similar incidents were not identified, the lack of which contributed to subsequent incidents.

The EPA is proposing to define "root cause" as a "fundamental, underlying, system-related reason why an incident occurred." For incidents that meet the accident history reporting requirements under **§ 68.42**, the EPA is also proposing to amend 40 CFR 68.81 and 68.60 to require the owner or operator to investigate the factors that contributed to an incident which will include root causes which shall be determined by conducting an analysis for each incident using a recognized method. Lastly, the EPA is proposing to amend both 40 CFR 68.81 and 68.60 to require that a report be prepared at the conclusion of the investigation and completed within 12 months of the incident (though it will allow for facility owners or operators to request an extension from the implementing agency).

The EPA proposed rule addresses root cause analysis in the following locations:

- Definitions - § 68.3
- Program 2 - Incident Investigations - § 68.60(h)(2)
- Program 3 – Incident Investigations - § 68.81(h)(2)

The CSB concurs with the EPA's proposal addressing root cause analysis. Other than providing extension approval guidance/limitations for implementing agencies, the CSB has no concerns or additional comment with the proposed language addressing root cause analysis.

The CSB also approves of the current regulatory language in § 68.42 referred to above. *However,* ***the CSB has significant issues with the restrictive language found in the EPA's General RMP Guidance – Chapter 3: Five-Year Accident History****. Specifically, instead of including* ***all*** *accidental releases from covered processes as specified in § 68.42, the guidance limits inclusion to just releases from a covered process that involve a regulated substance held above its threshold quantity in the process. Details provided in section* **15. OTHER** *at the end of this comment document.*

"Near-Miss" Definition

While the EPA is not proposing a definition of "near miss" as part of this rulemaking, it is soliciting comments on a potential definition of "near miss" that would "address difficulties in identifying the variety of incidents that may occur at RMP facilities that could be near misses that should be investigated." The EPA points out that the Center for Chemical Process Safety (CCPS) defines a "near miss," as "an incident in which an adverse consequence could potentially have resulted if circumstances (weather conditions, process safeguard response, adherence to procedure, etc.) had been slightly different." The EPA also notes that the New Jersey Department of Environmental Protection (NJDEP) previously proposed a definition of "near miss" to mean "an unplanned, unforeseen, or unintended incident, situation, condition, or set of circumstances which does not directly or indirectly result in a regulated substance release", in addition to other language.

In addition to the CCPS and NJDEP definitions, the National Safety Council[2] defines "near-miss" as "an unplanned event that did not result in injury, illness, or damage – but had the potential to do so.[3]" The CSB suggests that the EPA may also want to include the word "unwanted" or "undesired" or similar language in this definition (e.g., "an unplanned, undesired event"). Additionally, the CSB encourages the EPA to propose a definition of "near miss" in this or a future rulemaking. As discussed herein, and as the EPA has observed, a number of CSB investigations have involved "near-miss" incidents that could have had resulted in serious consequences. The CSB encourages a broader review of near-miss incidents at RMP facilities would provide greater protection to public health and the environment.

[2] The National Safety Council is a nonprofit safety advocate. They focus on eliminating the leading causes of preventable injuries and deaths. www.nsc.org
[3] https://nsccdn.azureedge.net/nsc.org/media/site-media/docs/workplace/near-miss-reporting-systems.pdf?

The CSB encourages the EPA to continue soliciting comments on a potential definition for "near-miss" and urges the EPA to develop a regulatory definition with actions to take with regard to near-miss information.

7. Third-Party Compliance Audits

Poor compliance audits have been cited by the CSB as a contributing factor to the severity of past chemical incident investigations, such as the First Chemical Corp. Reactive Chemical Explosion investigation, the BP America (Texas City) Refinery Explosion investigation and the Valero (McKee) Refinery Propane Fire investigation. The CSB has also required third party compliance audits to be conducted to satisfy some of its recommendations, such as in the CITGO Refinery Hydrofluoric Acid Release and Fire investigation, DPC Enterprises Glendale Chlorine Release investigation, Xcel Energy Company Hydroelectric Tunnel Fire investigation, and Williams Olefins Plant Explosion and Fire investigation.

The EPA is proposing to use the same definition of "third-party audit" as in the 2017 amendments rule. A third-party auditor is led by an entity that must meet competency and independence requirements included in the proposed regulations. Regarding when a third-party audit must be performed, the 2017 rule required that a third-party audit must be conducted after one accidental release meeting the criteria in **§ 68.42**. In this proposed rule, however, the EPA is requiring a third-party audit after two accidental releases within a 5-year period. The CSB urges EPA to follow the 2017 requirement. Additionally, the EPA is proposing to require third-party audits of facilities with a covered process at a stationary source in NAICS code 324 or 325 that has an accidental released and is located within 1 mile of another stationary source having a process in NAICS code 324 or 325. The CSB urges the EPA not to limit the third-party audit requirements to stationary sources with NAICS 324 or NAICS 325 that have an accidental release and are located within 1 mile of another, but, instead, to require the third-party audit regardless of proximity with another stationary source with NAICS 324 or NAICS 325 as these facilities pose the highest risk by themselves.

The EPA proposed rule addresses third-party compliance audits in the following locations:

- Definitions - § 68.3
- Program 2 – Compliance Audits - § 68.58(a) and (f) through (h)
- Program 2 – Third-Party Audits - § 68.59
- Program 3 – Compliance Audits - § 68.79(a) and (f) through (2)
- Program 3 – Third-Party Audits - § 68.80
- Prevention Program/Program 2 - § 68.170(e)(7)(i)

The CSB urges the EPA to go farther and not limit the third-party audit requirements to facilities with a covered process at a stationary source in NAICS code 324 or 325 that

have an accidental release and are located within 1 mile of another stationary source having a process in NAICS code 324 or 325; specifically, the CSB urges the EPA to eliminate the proximity requirement. The CSB also urges the EPA to require that a third-party audit must be performed after one accidental release meeting the criteria in § 68.42, rather than two accidental releases.

As previously stated, the CSB approves of the current regulatory language in § 68.42 referred to above. *However,* ***the CSB has significant issues with the restrictive language found in the EPA's General RMP Guidance – Chapter 3: Five-Year Accident History****. Specifically, instead of including* ***all*** *accidental releases from covered processes as specified in § 68.42, the EPA's guidance limits inclusion to just releases from a covered process that involve a regulated substance held above its threshold quantity in the process. Details provided in section* **15. OTHER** *at the end of this comment document.*

Employee Participation

CSB has identified the lack of worker participation in process operations as a contributing factor to certain catastrophic incidents. Historically, workers and their representatives have not been properly engaged in the process operations to help identify and mitigate hazards and reduce risks. To highlight this issue, in September 2019, CSB published "Safety Digest: The Importance of Worker Participation." The digest discusses four catastrophic incidents that led to 13 employee deaths, 179 employee injuries, and, in one case, 15,000 residents living near the facility having to seek medical evaluation. The incidents took place at an explosives manufacturing site in Nevada, a chemical production facility in Louisiana, and oil refineries in Washington and California.

The EPA is proposing to require in 40 CFR 68.83(c) that the written plan of action include consultation of employees and their representatives on addressing, correcting, resolving, documenting, and implementing recommendations of PHAs, incident investigations, and compliance audits, at a minimum. It offers the opportunity to provide suggestions and concerns about why a recommendation should be adopted or declined or whether other alternatives should be taken.

The EPA proposed rule addresses employee participation in the following locations:

- Program 2 - Employee Participation - § 68.62
- Program 3 - Employee Participation - § 68.83

The CSB concurs with the EPA's proposal addressing employee participation in Program 2 and 3. Additionally, the CSB has no concerns or additional comment with the proposed language addressing employee participation.

Stop Work Authority

After the 2012 Chevron Refinery fire in Richmond, California, the CSB recommended that the California State Legislature/Governor of California, in its PSM regulations, should provide workers and their representatives with the authority to stop work that is perceived to be unsafe until the employer resolves the matter or the regulator intervenes. As a result, the newly implemented California PSM regulations include stop work procedures. The CSB also made a similar recommendation to the state of Washington to address related issues after the fatal explosion and fire at Tesoro Refinery. The state of Washington is currently considering changes to its PSM regulations for refineries.

The EPA is proposing to require that the written plan of action regarding the implementation of employee participation for Program 3 processes include and ensure effective methods are in place so that employees and their representatives have authority to:

- Refuse to perform a task when doing so could reasonably result in a catastrophic release.
- Recommend to the operator in charge of a unit that an operation or process be partially or completely shut down, in accordance with procedures established in 40 CFR 68.69(a), based on the potential for a catastrophic release.
- Allow a qualified operator in charge of a unit to partially or completely shut down an operation or process, in accordance with procedures established in 40 CFR 68.69(a), based on the potential for a catastrophic release.

Additionally, the EPA is proposing to require that stop work authority processes within employee participation plans outline how employers should document and respond, in writing and within 30 days, to employee reports of hazards or employee recommendations to shut down or partially shut down a process.

In general, the CSB supports the EPA's proposal for stop work authority. The CSB has always stated that facilities must also have effective measures in place for incident prevention that will foster a "culture of safety" wherein workers are encouraged and empowered to advocate for their safety on the job. The CSB believes that any program that does not appropriately enable workers to feel free to exercise stop work authority in necessary circumstances would allow risks to occur and accumulate. As such, the CSB urges the EPA to go farther, specifically, that stop work authority should not be limited to Program 3 processes. Employees should be able to exercise stop work authority to prevent catastrophic releases to any and all RMP covered processes.

The EPA proposed rule addresses stop work authority in the following locations:

- Program 3 - Employee Participation - § 68.83(d)

The CSB concurs with the EPA's proposal addressing stop work authority; however, the CSB urges the EPA to go farther and apply the same employee authority to all RMP

covered processes. Otherwise, the CSB has no concerns or additional comment with the proposed language addressing employee participation.

11. Information Availability (previously "Availability of Information to the Public")

Under this topic, the EPA is proposing to restore the 2017 RMP rule. The EPA is also proposing to require the owner or operator of an RMP facility to make certain chemical hazard information available to any member of the public residing within 6 miles of the facility. The CSB supports the EPA's proposal to make such information publicly available and believes that transparency and public availability of such information is critical to the safety of nearby communities. That said, the CSB also believes that such information should be made available to an even greater number of nearby residents and urges the EPA to the make the information available to any member of the public residing farther from the facility, as practicable. The CSB encourages the EPA to assess the site security issues associated with the disclosure of the information and better balance that with the community's statutory right for this information. The EPA should also consider requiring the information to be presented in terms of local impact.

12. Other Areas of Technical Clarification

Storage Incident to Transportation

As the EPA notes, currently, under 40 CFR 68.3, the term "stationary source" does not apply to "storage incident to transportation" for any regulated substance or any other extremely hazardous substance. The EPA states: "A stationary source does include transportation containers connected to loading/unloading equipment or used for storage not incident to transportation, but the term 'storage not incident to transportation' is not defined in the RMP regulations." The EPA is proposing to modify the definition of "stationary source" by adding the following: "A transportation container is in storage incident to transportation as long as it is attached to the motive power that delivered it to the site (e.g., a truck or locomotive); however, railyards and other stationary sources actively engaged in transloading activities may store regulated substances up to 48 hours total in a disconnected transportation container without counting the regulated substances contained in that transportation container toward the regulatory threshold."

While the CSB generally supports the EPA's effort to clarify the parameters of "storage incident to transportation", the CSB believes that the 48-hour exemption period is too long. The CSB urges the EPA to make the period much shorter. The CSB has investigated incidents involving uncontrolled releases of hazardous substances (such as chlorine) from railcars and believes that a shorter exemption period would provide more protection from potential hazards under the RMP rule.

15. OTHER

Additional CSB Recommendations to multiple recommendation recipients that apply to the EPA's RMP rule.

The CSB investigations have identified gaps in the PSM parts of the RMP as well as potential RMP information that would be beneficial to submit. The investigations elaborate on the specific reasoning for why the following recommendations were issued:

- Tesoro Refinery Fatal Explosion and Fire: 2010-8-I-WA-R1, 2010-08-I-WA-R5, 2010-08-I-WA-R7,
- BP America Refinery Explosion (BP TX City): 2005-4-I-TX-R9
- Chevron Richmond Refinery Fire: 2012-03-I-CA-R9, 2012-03-I-CA-R10, 2012-03-I-CA-R12, 2012-03-I-CA-R13, 2012-03-I-CA-R23

Consider the following proposed language which are intended to address information found the CSB Recommendations above:

In § 68.67(c), require that the process hazard analysis shall address, in addition to current requirements, a damage mechanism hazard review. (and add the information below to describe the damage mechanism hazard review requirements)

i. The damage mechanism hazard review shall include:
   a. Identification of all potential applicable damage mechanisms;
   b. A determination that the materials of construction are appropriate for their application and are resistant to potential damage mechanisms;
   c. Methods to prevent or mitigate damage; and,
   d. A review of operating parameters to identify operating conditions that could accelerate or otherwise worsen damage, or that could minimize or eliminate damage.

ii. Damage mechanisms to be evaluated include, but are not limited to:
   a. Mechanical loading failures, such as ductile fracture, brittle fracture, mechanical fatigue and buckling;
   b. Erosion, such as abrasive wear, adhesive wear and fretting;
   c. Corrosion, such as uniform corrosion, localized corrosion and pitting;
   d. Thermal-related failures, such as creep, metallurgical transformation and thermal fatigue;
   e. Cracking, such as stress-corrosion cracking; and,
   f. Embrittlement, such as high-temperature hydrogen attack.

iii. Damage mechanism hazard reviews shall include an assessment of previous experience with the process, including the inspection history and all damage mechanism data; a review of industry-wide experience with the process; and all applicable standards, codes and practices.

Add to § 68.67(d) "*The team shall use recognized methodologies, rationale and conclusions used to establish that the safeguards intended to control hazards will be*

effective. This process shall use established qualitative, quantitative, and/or semi-quantitative methods such as Layers of Protection Analysis (LOPA)."

Add to § 68.73(d)(2) "*and incorporate the findings from the damage mechanism hazard review in § 68.67(c) to detect and prevent potential damage mechanisms*."

Add to § 68.73(d)(3) "*or the damage mechanism hazard review*."

Replace the language in § 68.75(a) with…"The owner or operator shall establish and implement written procedures using, *in the following order of preference, inherently safer technology or design, passive measures, active measures, and procedural measures,* to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to stationary sources that affect a covered process. *Include major organizational changes, staffing levels, policy changes (such as budget cuts) that may have an impact on process safety*"

Replace § 68.81(e) with…"The owner or operator shall establish a system to promptly address and resolve the incident report findings and recommendations. *In the following order of preference, inherently safer technology or design, passive measures, active measures, and procedural measures should be used to develop resolutions and corrective actions which shall be documented*."

Revise § 68.155(c) to specifically require inclusion of leading and lagging process safety indicators. Proposed language: "The general accidental release prevention program, *including leading and lagging process safety indicators*, and chemical-specific prevention steps;

Update the List of RMP-regulated substances

The EPA acknowledges the need for reviewing the list of RMP-regulated substances, to include a priority on ammonium nitrate and other reactive substances. Section 112(r)(3) requires periodic review of the RMP regulated substance list.

The CSB's oldest open recommendation to the EPA from our Improving Reactive Hazard Management study (Recommendation No. 2001-01-H-R3), recommends covering 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. From the CSB's West Fertilizer Explosion and Fire investigation (Recommendation No. 2013-02-I-TX-R3), the CSB recommends adding ammonium nitrate to the list of RMP-regulated substances. Lastly, from the CSB's Caribbean Petroleum Refining Tank Explosion and Fire investigation (Recommendation No. 2010-02-I-PR-R1), the CSB recommends revising the list to prevent impacts to the environment and/or public from spills, releases, fires, and explosions that can occur at bulk aboveground storage facilities storing gasoline, jet fuels, blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or higher.

Also, from the CSB's West Fertilizer Explosion and Fire investigation (Recommendation No. 2013-02-I-TX-R2), the CSB recommends clarification of the definition of "retail exemption."

The CSB strongly encourages that the EPA issue a rulemaking proposal updating the list of RMP-regulated substances to address the issues above as soon as possible.

Amend 40 CFR 68.115(b)(2)(i) Threshold Determination

Remove everything after, "if the concentration of the substance is one percent or greater by weight of the mixture, then, for purposes of determining whether a threshold quantity is present at the stationary source, the entire weight of the mixture shall be treated as the regulated substance."

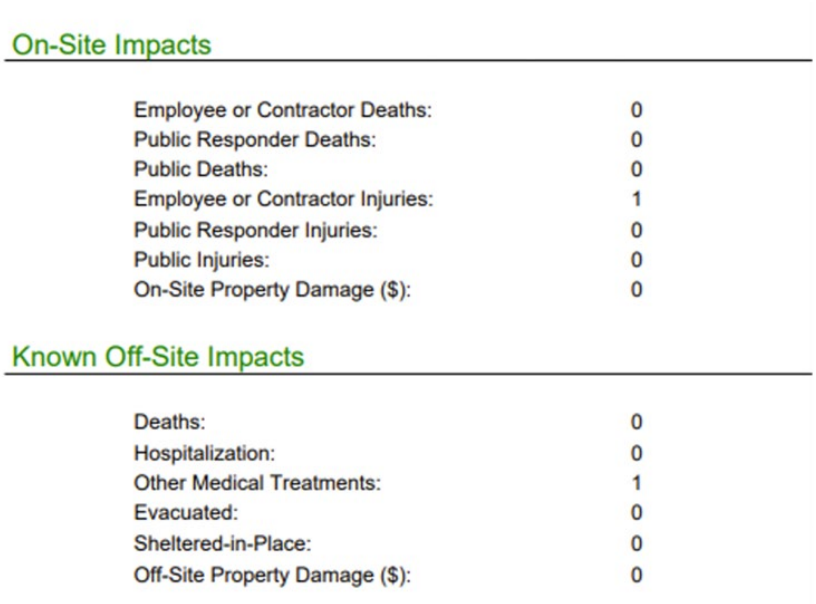
Specifically remove, "unless the owner or operator can demonstrate that the mixture itself does not have a National Fire Protection Association flammability hazard rating of 4. The demonstration shall be in accordance with the definition of flammability hazard rating 4 in the NFPA 704, Standard System for the Identification of the Hazards of Materials for Emergency Response, National Fire Protection Association, Quincy, MA, 1996. Available from the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269-9101. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be inspected at the Environmental Protection Agency Air Docket (6102), Attn: Docket No. A-96-O8, Waterside Mall, 401 M. St. SW., Washington DC; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Boiling point and flash point shall be defined and determined in accordance with NFPA 30, Flammable and Combustible Liquids Code, National Fire Protection Association, Quincy, MA, 1996. Available from the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269-9101. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be inspected at the Environmental Protection Agency Air Docket (6102), Attn: Docket No. A-96-O8, Waterside Mall, 401 M. St. SW., Washington DC; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. The owner or operator shall document the National Fire Protection Association flammability hazard rating."

Reasoning: NFPA flammability hazard ratings change from time to time causing confusion regarding applicability of the EPA's Risk Management Plan. Additionally, the exclusion is based upon the operator's ability to demonstrate that the mixture itself does

not have a National Fire Protection Association (NFPA) flammability hazard rating of 4. Despite NFPA guidance, determining operator compliance with NFPA 704 is challenging at best. "The RMP rule requires that facilities that use extremely hazardous substances develop an RMP which identifies potential side effects of a chemical accident, identifies steps the facility is taking to prevent the accident, and spells out emergency response procedures should an accident occur. RMPs provide valuable information to local, fire, police, and emergency response personnel to prepare for and respond to chemical emergencies in their communities."[4] In addition to the previously mentioned confusion and compliance issues, the inclusion of the NFPA flammability hazard rating has the likelihood of decreasing the safety factors and emergency information sharing that the RMP is intended to address.

EPA RMP Data

Lastly, there are some issues with how the EPA collects/displays RMP information pursuant to the data requirements in 40 CFR 68.42(b) specific to the 5-year accident history. The graphic below shows current categories provided from the EPA's Central Data Exchange (CDX) system in "Section 6. Accident History" from the RMP, specifically, *On-Site Impacts* and *Known Off-Site Impacts* (also found in Table 3 [of the NPRM]—Summary of Quantified Damages).



In order to ensure data reliability, the EPA should ensure that there is more consistency and provide some clarification in the two sets of categories. At an absolute minimum,

[4] https://www.epa.gov/rmp/risk-management-program-rmp-rule-overview

both sets of impacts should collect information on deaths, injuries, hospitalizations, and property damage. Currently, the *On-Site Impacts* section does not, but should, include hospitalizations. Also, some clarification as to if "Other Medical Treatments" under *Known Off-Site Impacts* is intended to address injuries that did not result in hospitalization. If so, the CSB recommends that the EPA refer to them as 'injuries not resulting in hospitalization.' There also needs to be clarification as to what it means when the word "Public" is added to the *On-Site Impacts* as traditionally the public refers to off-site assets. Lastly, road and waterway closures are two additional categories that would be beneficial to be included under *Known Off-Site Impacts*.

EPA's General RMP Guidance – Chapter 3: Five-Year Accident History

As previously mentioned in the Root Cause Analysis and Third Party Compliance Audits sections, the CSB has significant issues with the EPA's *General RMP Guidance – Chapter 3: Five-Year Accident History* (approved and posted on their website in March 2009).[5] The regulatory language found in § 68.42 is more inclusive and therefore provides more opportunity for overall accident prevention. However, the language found in the EPA's guidance document is unreasonably restrictive. The language for both is detailed below:

§ 68.42 Five-year accident history, specifically states:

> "The owner or operator shall include in the five-year accident history **all accidental releases from covered processes** that resulted in deaths, injuries, or significant property damage on site, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage."

Section 3.1 of the EPA's *General RMP Guidance – Chapter 3: Five-Year Accident History* limits the scope of the five-year accident history submission requirements of § 68.42 by using the following language:

> (first bullet) - The release must be from a covered process **and involve a regulated substance held above its threshold quantity in the process**.
>
> (entire last paragraph) - **If you have had a release of a regulated substance from a process where the regulated substance is held below its threshold quantity, you do not need to report that release even if the release caused one of the listed impacts or if the process is covered for some other substance. You may choose to report the release in the five-year accident history, but you are not required to do so**.

As written, the EPA's guidance document is in conflict with current regulatory language. The CSB urges the EPA to revise the 'guidance document' at its earliest opportunity to correctly reflect the regulatory language found in § 68.42, specifically, "…all accidental

[5] https://www.epa.gov/sites/default/files/2013-10/documents/chap-03-final.pdf

releases from covered processes that resulted in deaths, injuries, or significant property damage on site, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage."