What's Working in EPA's **Risk Management Program**

Today's Rules and Regulations Are Keeping Communities and Industry Workers Safe

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The most **important** things

1. The Environmental Protection Agency's (EPA) existing Risk Management Plan (RMP) is expansive and working to protect industry employees, surrounding communities and the environment.

2. The refining and petrochemical industries have built upon the performance-based frameworks of EPA's RMP and the Occupational Safety and Health Administration's (OSHA) Process Safety Management standard (PSM). Industry efforts have resulted in a nearly 50% decrease in process safety events at refineries and a nearly 40% reduction at petrochemical facilities since 2011 (see a list of industry programs on the following page).

3. Efforts to change or strengthen the RMP must be evidence-based and actionable, paired with compelling data weighing the potential costs and benefits of all proposals.

Expanding process safety hazard analyses to include assessments of alternative technologies, inherently safer technology assessments (ISTs) and Safer Technology & Alternative Analyses (STAAs), would be one of costliest ways to amend RMP with no demonstrable benefits. *Consideration of technical alternatives belongs in the design phase for facilities and process units, not in post-incident assessments. Refineries and petrochemical sites are complex multi-billion-dollar facilities with numerous chemical and physical processing units integrated with miles of pipes and tanks. Once a facility is up and running, most alternative technologies are no longer feasible to implement, particularly where refinery fuel alkylation is concerned. In nearly all cases, new technology cannot be slotted in without completely reconstructing individual units and potentially reconfiguring entire facilities—major costs with potential to severely impact U.S. fuel supplies.*

Third-party audits will not add value if they happen too quickly or if the teams conducting them have the wrong expertise. *In the rare instance of an accidental release at a refinery or petrochemical facility, RMP audits should take place after facilities have implemented the recommendations identified during their post-incident investigations. The best RMP audit teams are often those with industry expertise, process and even site familiarity. The pool of qualified audit leads and auditors should not exclude individuals with critical relevant experience.*

Restricting incident investigations to just the "root cause" methodology offers no safety advantage. *At least five different types of analyses used by industry equally uncover the root causes of incidents. One such analysis happens to be called a "Root Cause Analysis," but others—by different names—are just as effective.*

There is nothing more important to U.S. fuel refineries and petrochemical facilities than the safety of the people who work at our sites and live in neighboring communities. For us, safety isn't proprietary, it is our core value. Our industries are focused on continually improving our safety performance and risk management practices, and we involve every person across our facilities in this mission.

Consistent with our safety ethos, industry members invest significant resources toward safety programs and practices. The EPA's RMP regulation, first published in 1996, and OSHA's PSM standard, launched in 1992, are used effectively by the members of the refining and chemical industries to prevent process safety incidents, mitigate risk and impact, and coordinate with emergency responders and neighboring communities.

The existing PSM and RMP are doing what they're designed to do—reducing and preventing accidental releases at fuel refineries and petrochemical facilities. Together, RMP and PSM have helped spur process safety programs and collaboration across the fuel manufacturing and chemical industries over the past three decades. The legacy of industry building on the foundation of these EPA and OSHA programs, to this point, is a nearly 50% decrease in process safety events at refineries and a nearly 40% reduction in reportable safety incidents at petrochemical facilities.[1] Our efforts are making people and communities safer. In fact, our industries are the safest within the manufacturing sector.[2]

Within our industries, every facility and every company is expected to make continual safety improvement and participate in practice sharing because we rise and fall together. One facility's performance can reflect on the whole of industry. The success story of RMP and PSM and the collaborative safety culture they've inspired continues to be written.

Industry-led efforts have built upon OSHA's Process Safety Management program and EPA's Risk Management Plan

Advancing Process Safety

AFPM's Advancing Process Safety Program consists of several programs:

- *Human Reliability Subgroup*
- *Incident Learning Subgroup (investigation subgroup/learning team)*
- *Hazard Identification/Practice Sharing Subgroup*
- *Mechanical Integrity Subgroup*

Industry Learning & Outreach Group

Six Regional Process Safety Sharing Networks

Six Regional Occupational Safety Sharing Networks

Process Safety Site Assessment Program

Process Safety Innovation Awards

Walk the Line human performance program

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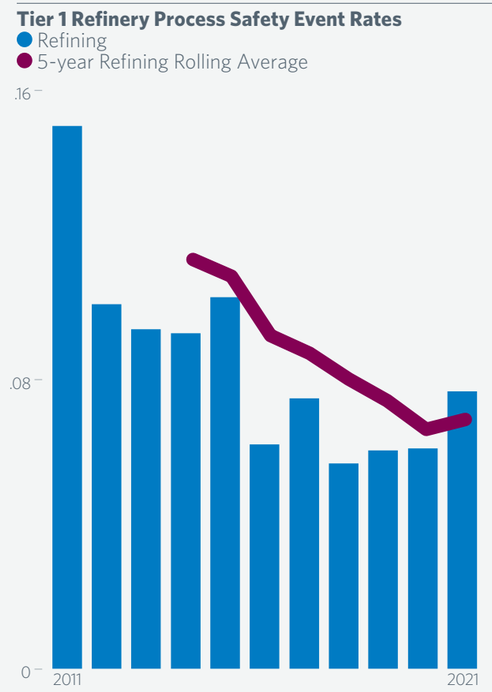
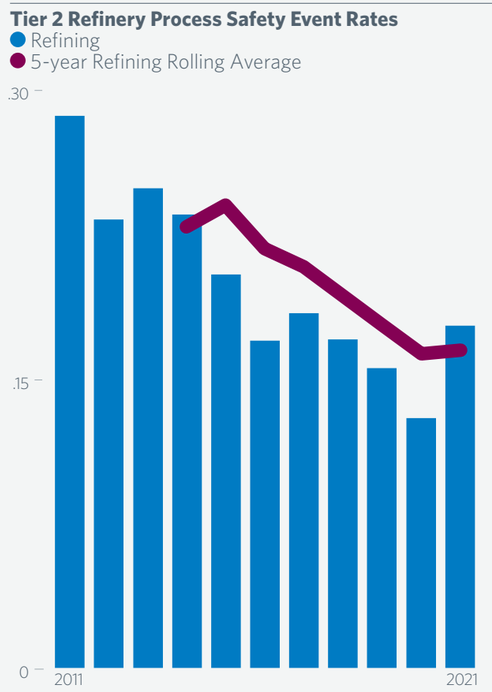
Process Safety Event (PSE) Rates





Understanding Process Safety

Process safety is focused on preventing accidental releases at manufacturing and industrial facilities.

For the refining and chemical industries, process safety is regulated by OSHA's PSM and EPA's RMP program rules. The two are intended to be aligned with each other. In fact, the goal was to make OSHA's 14 elements of process safety and RMP's 12 prevention program elements nearly identical.

Process safety is not a status that sites achieve. Process safety is a core value in our industries that requires every facility to commit to a continuous cycle of safety improvement. Sites incorporate new tools and adopt different practices as technology improves, as sites learn from their own experiences and audits, and as information is shared by industry peers.

The Nuts and Bolts of Risk Management Plans

Under the Clean Air Act, EPA requires facilities that use or store certain volumes of "regulated substances" to submit RMPs to EPA, documenting their accidental release prevention programs and emergency response programs to activate in the rare event of a catastrophic chemical release.[3] Prevention and emergency response programs are audited and updated every three years. RMP submissions to EPA are reviewed and updated at least every five years. Prevention of all incidents is the ultimate goal, but the preparation of emergency response plans, combined with training and practice implementing plans, ensures facilities and communities are prepared to minimize the impact of any potential incidents.

The emergency response programs described in Risk Management Plans require specific types of training and preparedness for operators and supervisors working in specific facility process units.

They also provide valuable information to local safety officials and emergency responders, allowing them to train for and be ready to respond to chemical risks specific to industrial facilities in their communities.

Every facility Risk Management Plan includes

Hazard assessments, detailing:

Potential effects a hypothetical "worst case" chemical accident could have on a facility and surrounding area.

A history of RMP-reportable incidents at the facility over the last five years.

Potential response strategies and outcomes for multiple accident scenarios of different scales to ensure possible risk factors and multipliers are considered for emergency response planning and procedures.

Prevention programs, carefully aligned with OSHA's PSM, that function as a comprehensive process safety management system for each site.

RMP prevention programs cover 12 elements, including precautions, maintenance, monitoring and training efforts facilities must undertake to limit risk.

Emergency response programs, unique to each site, spelling out:

Various emergency response procedures that could be required if a chemical release occurs.

The communications notification plan and coordination process between a facility and local emergency personnel.

How the public will be informed of an incident and provided necessary safety direction.

The necessary employee training provided to ensure each response procedure is carried out.

In our industries, RMP is not a "set it and forget it" program. Compliance with the RMP requires ongoing, hands-on re-assessments, data analysis and implementation of new strategies to continually reduce risk at facilities. The continuous pursuit of improvement implicit in every part of the RMP is a primary reason for the rule's success.

Where the Current RMP Regulation is Succeeding

The RMP regulation is working to reduce incidents and keep people safe. RMP incidents are rare. EPA data shows a more than 50% decline in RMP-reportable events since 2004.[4] When incidents do occur, they have been concentrated among just a few facilities. Out of 1,650 RMP-regulated chemical manufacturing facilities, more than 92% had no reportable releases from 2014 to 2019.[5] More than half of all RMP-reportable events in the chemical sector occurred among the same 40 facilities, which comprise less than 3% of the regulated chemical industry.[6] The data show failure to comply with RMP, not the substance of the rule itself, is what leads to facility-level failures.

The RMP program is effective because it recognizes that facilities face different challenges, and that process safety is best served when they prioritize the specific areas identified in their individual risk-based analyses. This flexibility, as opposed to rigid, across-the-board prescriptions, enables facilities to direct their attention and resources to manage areas with the potential for higher risk.

What belongs to EPA & what belongs to OSHA?

EPA Risk Management Plan

Protecting the surrounding community and environment

- Worst case scenario planning
- 5-year accidental release history
- Emergency response plan information

- Employee Participation
- Process Safety Information
- Process Hazard Analysis
- Operating Procedures
- Training
- Contractors
- Pre-startup Safety Review
- Mechanical Integrity
- Hot Work Permits
- Management of Change
- Compliance Audits
- Incident Investigation

Threshold quantities of some chemicals may differ between RMP and PSM

OSHA Process Safety Management Program

Protecting those working at the facility

- Trade Secrets (OSHA)
- Emergency Planning and Response

"Performance Standards" are key
EPA's RMP and OSHA's PSM programs work because they are *performance-based,* not rigid, "one-size-fits-all" requirements. This approach is essential because it correctly focuses on the results—incident prevention and mitigation—rather than the means of getting there, which minimizes unintended consequences and encourages innovation and efficiency. The incident prevention and risk mitigation strategy that's best for one facility might completely miss the nuances required for another.

Performance standards recognize that facilities have unique configurations and physical considerations that must be factored into planning. Population density around sites can vary as well as geographic, infrastructure, and environmental factors. Performance standards provide important flexibility for each site to design incident prevention, risk mitigation and emergency response strategies tailored to their local circumstances.

RMP is aligned with OSHA PSM
There's a great deal of intentional overlap between the elements of EPA's RMP prevention and emergency response program and OSHA's 14 elements of PSM. If a site is in compliance with OSHA's PSM elements, it will also be in compliance with the requirements of EPA's RMP's prevention program. Thanks to the 2019 RMP Reconsideration Rule, this harmony has been maintained and RMP information sharing, emergency response and training requirements have improved.[7]

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In New Jersey and Massachusetts, where STAAs have been required for these types of facilities and units, there is no evidence to show they work to reduce incidents.

Current RMP steps give facilities useful and actionable results

Earlier amendments to the RMP finalized in January of 2017 included the requirement for Safer Technology & Alternative Analyses (STAAs) to be part of the RMP process hazard analysis. However, this amendment failed to recognize that for many process units a switch to alternative technologies is not feasible after a facility has been constructed. Facilities are designed and engineered for specific process technologies. In nearly all cases, replacement technologies cannot be slotted in without completely reconstructing individual process units and potentially reconfiguring entire facilities. Refineries and petrochemical plants are designed to be fully integrated in terms of material and energy usage. A change to an individual process unit would have cascading effects, requiring adjustments to other units across the facility as well.

Conducting STAAs or inherently safer technology assessments (ISTs) for existing facilities or operational processes rarely leads to actionable outcomes. In New Jersey and Massachusetts, where STAAs have been required for these types of facilities and units, there is no evidence to show they reduce incidents. STAAs have also been determined to be among the costliest of potential RMP amendments, accounting for roughly 80% of regulatory costs associated with the 2017 changes to the RMP. Simply conducting the assessment for regulated processes would add more than $70 million in RMP costs each year.[8] Any actions based on the findings would impose additional costs.

RMP incident analyses get to the core of a problem

Any post-event analysis that a facility might conduct according to the RMP will include a review of contributing factors to an incident. That's an existing RMP requirement.

Previous attempts to amend the RMP sought to require specific "root cause analyses" as part of post-incident investigations. The suggestion was that a root cause analysis was the only way that facilities could get to the core of the problem that led to their RMP-reportable event. The current RMP recognizes that a "root cause analysis" is a specific type of analysis, and not the only one that looks at contributing factors to an incident.

Under the current RMP, some facilities might choose to conduct a root cause analysis after an incident, and others may find that a different tool, such as a bow tie analysis, makes more sense for them. Further, maintaining optionality around post-event investigations is necessary to in order to keep RMP aligned with OSHA's PSM.

Types of incident analyses that may be conducted under RMP:

Root Cause Analysis
Bow Tie Analysis
Fault Tree Analysis
Event Tree Analysis
Systemic Cause Analysis Technique (SCAT)

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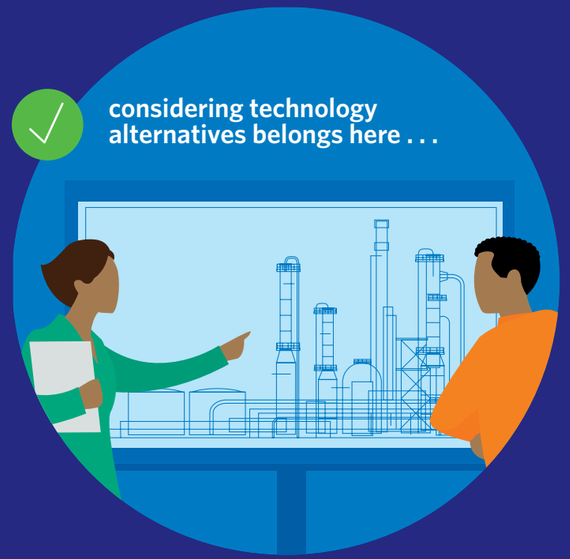
Past the point of design and concepting, many alternatives are **no longer an option.**



Facility design & concepting

In the design phase for refineries and chemical facilities—prior to construction—a number of potential technologies are considered for various process units. The decisions factor in other planned or existing units on site; byproducts from those units; transportation options for catalyst and feedstock deliveries; total facility size; and numerous other matters. Technology safety and effective risk mitigation are also key considerations in this early phase.

Once a decision is made—such as a selection of an alkylation technology—and construction begins, it is not a choice that can be reversed. The entire refinery and its interdependent process units are designed to operate optimally with that particular technology.

Facilities in operation

Requiring a STAA or IST after a facility and unit are operational is not useful or instructive and has been determined by the EPA to provide little to no benefit. Once a facility is constructed and operational, alternative technologies are no longer viable for many processes. It is for these reasons—the lack of safety benefit and the exorbitant cost of replacing technologies or processes—that EPA in 2019 removed the STAA amendment to the RMP.

Representative sampling is an effective gauge of broader RMP compliance
Consistent with OSHA's PSM and Center for Chemical Process Safety (CCPS) guidelines, audits required every three years under RMP involve a deep dive into a facility's safety management systems across a statistically representative sample of process units. The data covered can be extensive and many sites combine RMP audits with their required OSHA PSM audits since most prevention program components are identical.

Facilities implement the same process safety management systems across all covered process units. Representative sampling allows auditors to review for systemic concerns by spending more time poring through the details and records of individual process unit inspections and management system elements to get a sense for whether a site's process safety management systems are up to standard. If an RMP audit uncovers a deficiency in one unit, the issue will be proactively addressed in the management system across the facility, saving time and eliminating duplicative reporting. Decades of experience show that representative sampling works and produces a robust audit covering all incident prevention program elements.

RMP amendments a few years ago sought to eliminate the "representative sampling" audit model that CCPS, OSHA and EPA have all used for decades and replace it with mandatory audits for all RMP covered process units at a facility. In making this recommendation, EPA cited no problems with representative sampling or instances where the representative sampling model ever allowed deficient unit inspection programs to slip through the cracks. The recommendation was a solution in search of a problem that would impose significant costs without offering any meaningful improvement to the RMP program. Forgoing representative sampling and conducting individual audits for as many as 20 to 25 complex processing units for each RMP program element could add nearly $1 million in annual regulatory expenses for each RMP facility.[9] EPA has not justified that expense.

Emergency responders get the information they need, while certain facility information remains secure
RMP strikes a critical balance between empowering local emergency planning committees (LEPCs) and responders and preserving national security and business confidentiality interests.

RMP is consistent with the Emergency Planning and Community Right-to-Know Act (EPCRA). If information is essential for public safety and emergency response, it is shared with public safety professionals and LEPCs. LEPCs, which are often comprised of volunteers who do not undergo background checks, can request additional information if they believe more is needed to do their jobs. However, if information is not essential for public safety and enabling emergency response, facilities are able to keep it confidential between themselves and federal regulators.

EPA has shown it understands there is a limit to what constitutes "need-to-know," and, in fact, there are potential safety and security risks from over-sharing the names, volumes and specific locations of every chemical stored at a facility.

Facilities in our industries are closely integrated with emergency responders. They have a long history of working together within and beyond the fenceline:

- *Many facilities participate in mutual aid agreements, meaning they are part of each other's emergency response strategies and are mobilized to help at other facilities in the event of emergencies.*
- *In some rural areas, industry employees also serve as local emergency responders.*
- *RMP Program 3 Facilities coordinate annually with local emergency responders on notification drills, emergency drills and table-top exercises. This update was part of the 2019 RMP Reconsideration Rule.*

RMP makes sure the public gets the information they need
Under the RMP, facilities are held accountable for communication with their neighbors. Within 90 days of any RMP incident, facilities must hold a public meeting to share information and hear concerns from the community.

Considering Future **RMP Revisions**

Significant changes to the RMP program must be rooted in data and evidence-based. The data show failure to comply with RMP, not the substance of the rule itself, is what leads to facility-level incidents.

Policy changes must be evidence-based

By every data estimation, RMP is driving significant safety improvement across the refining and chemical sectors. The policy is working, and because RMP and PSM are performance standards that drive continuous improvement, our industries expect and have continually demonstrated such growth.

Since RMP is effective and working to drive continuing improvements in its current form, significant changes to the program must be rooted in data and evidence based. And though it may seem obvious, it bears stating that any incidents taking place at facilities not subject to RMP should not be cited as evidence of RMP shortcomings. We urge EPA to answer the following questions regarding any potential RMP amendments:

What specific problem or deficiency is a potential change intending to solve?

Are RMP rule changes an effective way to address the problem(s) in question?

What evidence is there that the proposed change will drive meaningful improvement?

What are potential negative consequences of the proposed change?

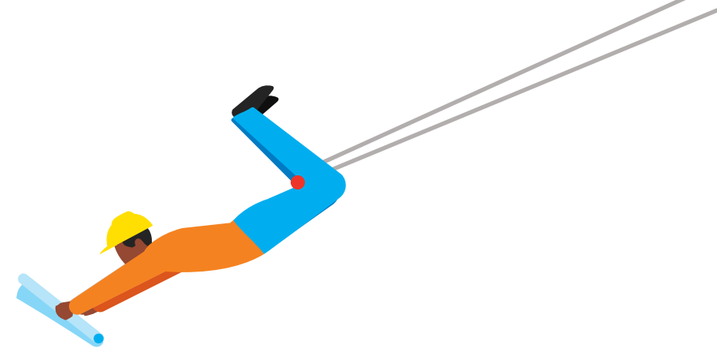
Does the projected benefit justify the expected cost of implementing the proposed change?

"Worst-case scenario" risk communication needs improvement

RMP off-site consequence analysis requires facilities to plan for hypothetical "worst case scenario" events. A number of factors are considered, and then circular perimeters are mapped around facilities indicating the largest area that could possibly be impacted by a hypothetical worst-case event as defined in the RMP. Among the regulated community and EPA, these mapped perimeters are termed "planning circles." However, activist groups have been known to mislabel them as "death circles," incorrectly stirring up fear and suggesting to the public that people who reside within the circle perimeter are at fatal risk in the event of a chemical release. EPA has said this is not the case, but misinformation from external groups on these grounds continues.

LEPCs, emergency responders and the general public would benefit from EPA providing a clearer explanation of "worst case scenario" planning—what it is and what it isn't. It's not unreasonable that the public would assume the inclusion of a "worst case scenario" suggests that such an event could plausibly occur. However, EPA's worst-case scenario requires facilities to consider what might happen if they had no functioning risk mitigation technology around chemical process units. What's more, the worst-case scenario plan directs facilities to presume the worst possible external conditions—and that each will occur simultaneously during an incident, compounding the effect. Some of the assumptions required for the worst-case plan are contradictory. For example, one requires the facility to assume that wind will be blowing according to nighttime wind stability measures, while another assumes that the temperature will be the daytime highest-observed ambient air temperature, and also that the wind will be blowing evenly in every direction—360 degrees out from the originating RMP facility. No real-world event will take place under these competing conditions. Daytime and nighttime high readings will never coincide. No refinery or chemical facility in the United States operates without multiple safety and mitigation technologies deployed in chemical process units. And any wind-borne impact from a chemical release would move in one direction, not in an uninhibited circular pattern.

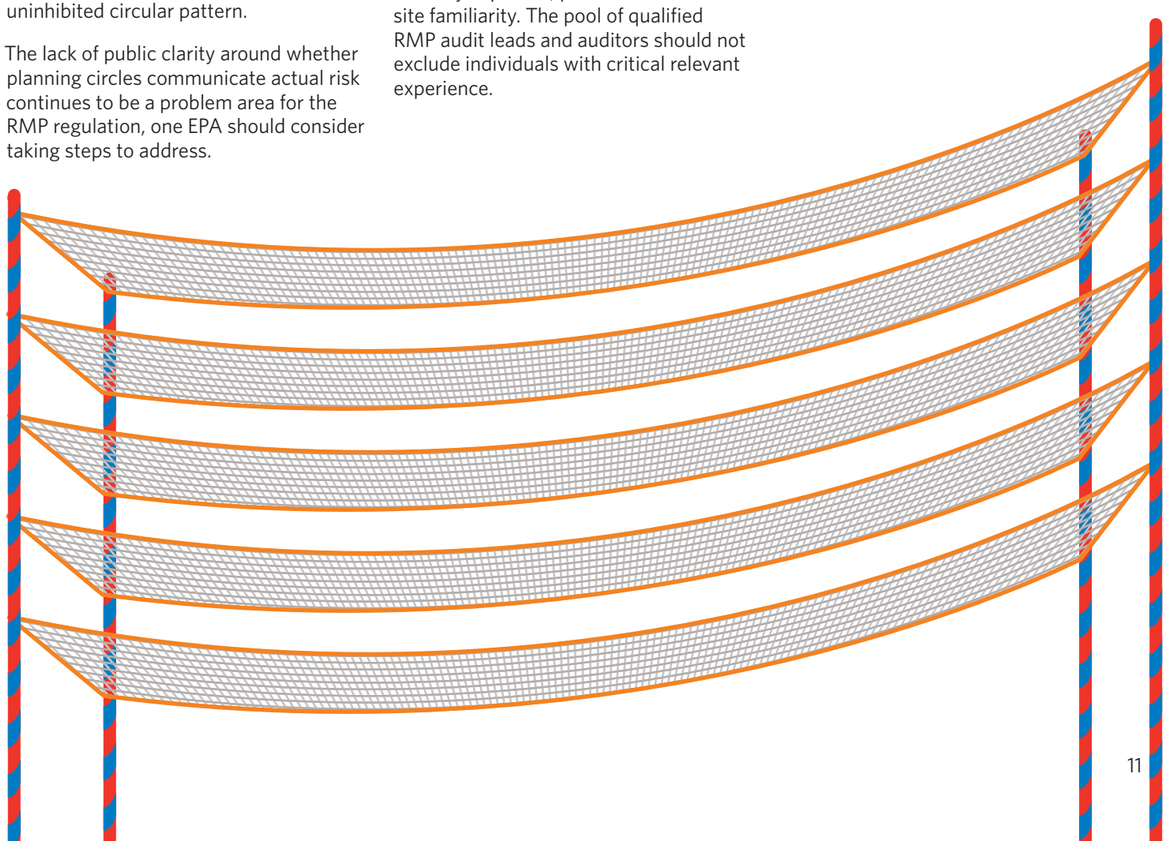
The lack of public clarity around whether planning circles communicate actual risk continues to be a problem area for the RMP regulation, one EPA should consider taking steps to address.



Audit timing matters and the best qualified people need to be able to provide safety counsel

It can take up to a year of planning to assemble qualified teams to conduct RMP audits. In the rare event of an accidental release at a refinery or petrochemical facility, audits should take place on schedule and after facilities have implemented the recommendations identified during their post incident investigations. RMP audits are one of many safety audits conducted at sites on a continuous basis. Further, the best auditors are often those with industry expertise, process and even site familiarity. The pool of qualified RMP audit leads and auditors should not exclude individuals with critical relevant experience.

Multiple layers of protection and multiple types of audits exist to prevent and mitigate incidents at our facilities.



Perspectives and concerns of nearby communities of color, low-income neighbors and representatives from areas where residents historically have faced disproportionate burdens are reflected in facility RMPs.

Today's RMP addresses hazards associated with climate change and extreme weather

Addressing potential mitigation challenges that might result from extreme weather events such as severe hurricanes, tornadoes and floods is already part of RMP prevention programs and PSM for the 31% of RMP facilities located in areas where these events are prevalent.[10] Fuel refineries and chemical facilities also contend with these types of scenarios in their emergency planning and process hazard analyses. There is no regulatory gap to be filled. In fact, the Government Accountability Office notes that just over one percent of RMP incidents reported at chemical manufacturing plants is attributable to weather events or natural hazards.[11] EPA similarly has looked for RMP incidents in the aftermath of major natural disasters such as hurricanes Harvey, Katrina and Rita and found only two accidental releases occurred from RMP facilities, neither with significant impacts.[12]

Valuing every neighbor

Where human safety regulations are concerned, refineries and chemical facilities value all people equally—our workforce and our community neighbors. The goal is zero incidents anywhere. Even still, it's been suggested that the RMP might be amended further to account for environmental justice concerns, though no evidence suggests there is any inequity in the current rule or its application in preventing accidental releases. At present, all of the planning, mitigation and community involvement components of the RMP are working to ensure that the health and safety of every employee, contractor and neighboring community member remains the priority for each facility. RMP presently requires local collaboration and community input for program compliance. That means the perspectives and concerns of nearby communities of color, low-income neighbors and representatives from areas where residents historically have faced disproportionate burdens are reflected in facility plans.

Improving external communications

Refineries and chemical facilities are committed to providing essential information to LEPCs, emergency responders and the neighboring public. We are exploring how more frequent outreach, customized for diverse local communities, on topics beyond just those specific to or required by RMP could strengthen the relationship between our facilities and their neighbors.

Applying learnings from the many successful Community Advisory Panels that have been assembled by industry facilities may be an instructive starting point toward improved communication.

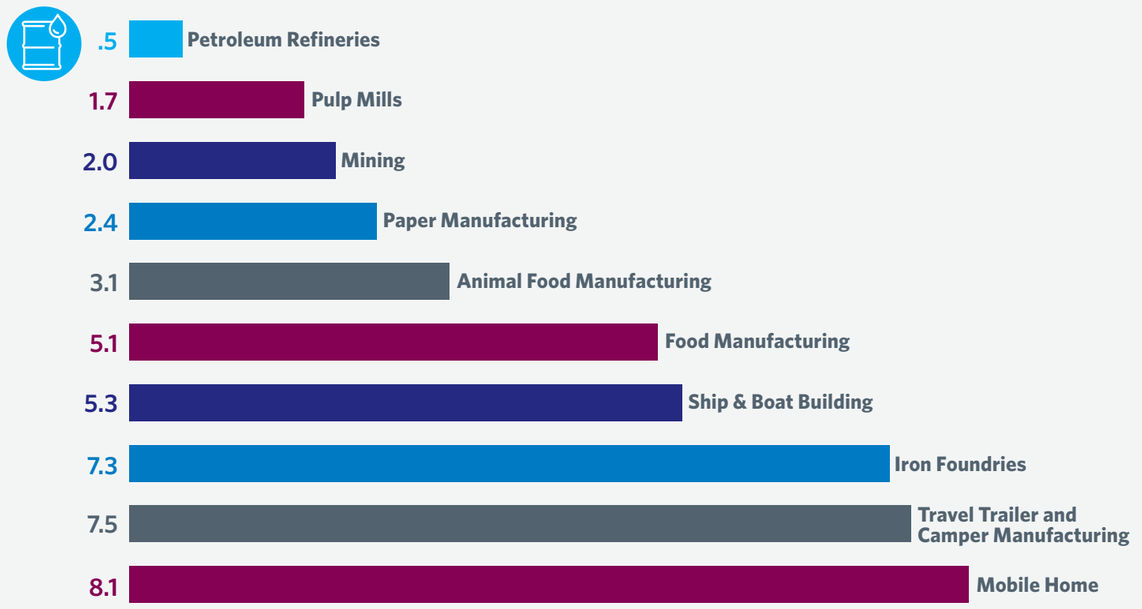
Over the past 20 years, the refining and petrochemical industries have consistently had the lowest rates of injury and illness among all of the manufacturing sectors.

Conclusion

Fuel refineries and petrochemical manufacturers are committed to fostering a strong culture of safety throughout our industries and communities, building on the progress that has led our industries to be among the safest within the entire manufacturing sector and the safest over the past 20 years. Our facilities understand that their license to operate derives from the communities they are part of and they gladly accept the responsibility of being good neighbors and responsible stewards of their workforce and the environment.

The best safety regulations result from constructive collaboration among industry, regulators, process safety experts and surrounding communities. Where the RMP, PSM and other process and occupational safety policies are concerned, refiners and petrochemical manufacturers want to be part of the conversation and the solution. The learnings we've acquired over years of industry collaboration and data sharing can be an asset and further our collective mission to promote safety above all else.

Incidence Rates of Non-Fatal Injuries or Illnesses Among Manufacturing Sectors



The American Fuel & Petrochemical Manufacturers (AFPM) is the leading trade association representing the makers of the fuels that keep us moving, the petrochemicals that are the essential building blocks for modern life, and the midstream companies that get our feedstocks and products where they need to go. We make the products that make life better, safer and more sustainable—we make progress.

Endnotes

1 Process Safety Performance Metrics (through 2020), AFPM, https://www.afpm.org/safety-programs/safety-statistics-programs/process-safety-performance-metrics.

2 AFPM analysis of U.S. Bureau of Labor Statistics Data.

3 List of Regulated Substances Under the Risk Management Plan (RMP) Program, U.S. Environmental Protection Agency, https://www.epa.gov/rmp/list-regulated-substances-under-risk-management-plan-rmp-program.

4 Comments of the American Fuel & Petrochemical Manufacturers on the U.S. Environmental Protection Agency's Accident Prevention Release Requirements: Risk Management Programs under the Clean Air Act (Proposed Rule Docket No. EPA-HQ-OEM-2015-0725 83 Fed. Reg. 24,850), Filed May 30, 2018, https://www.regulations.gov/comment/EPA-HQ-OEM-2015-0725-1924.

5 American Chemistry Council Analysis of U.S. Environmental Protection Agency Data for NAICS 325 chemical manufacturing facilities subject to RMP rules.

6 American Chemistry Council Analysis of EPA data.

7 RMP Reconsideration Final Rule Fact Sheet, Environmental Protection Agency, November 2019, https://www.epa.gov/sites/default/files/2019-11/documents/final_risk_management_program_reconsideration_final_rule_fact_sheet.pdf.

8 Regulatory Impact Analysis for Reconsideration of the 2017 Amendments to the Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7), U.S. Environmental Protection Agency, Office of Land Emergency Management, Office of Emergency Management, Page 11, November 18, 2019.

9 Comments of the American Fuel & Petrochemical Manufacturers on the U.S. Environmental Protection Agency's Accident Prevention Release Requirements: Risk Management Programs under the Clean Air Act (Proposed Rule Docket No. EPA-HQ-OEM-2015-0725 83 Fed. Reg. 24,850), Filed May 30, 2018, Appendix A, Table 3-10 (Attachment B).

10 Government Accountability Office analysis of U.S. Environmental Protection Agency, Federal Emergency Management Agency, National Oceanic and Atmospheric Administration, and U.S. Forest Service data.

11 Chemical Accident Prevention: EPA Should Ensure Regulated Facilities Consider Risks from Climate Change, Government Accountability Office, February 2022, pages 12-13, https://www.gao.gov/assets/gao-22-104494.pdf.

12 Chemical Accident Prevention, Government Accountability Office.

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