



Deciphering the Complexity of PSM and RMP Regulations

How to unravel the intricacies of compliance and forge a new path to regulatory resilience.

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Today's industrial landscape is undergoing a profound transformation driven by an escalating consciousness of environmental sustainability and worker safety. As the world witnesses the catastrophic consequences of industrial accidents involving hazardous substances, the imperative of safeguarding human lives, communities, and the ecosystem looms larger than ever before. Chemical spills, explosions, and toxic gas leaks underscore the potential for devastating health impacts, property damage, and ecological degradation. These incidents serve as stark reminders that businesses must adopt stringent measures to ensure the safety of workers, communities, and the environment.

Central to this mission of safety and environmental protection are the Occupational Safety and Health Administration's (OSHA) Process Safety Management (PSM) regulations and the Environmental Protection Agency's (EPA) Risk Management Program (RMP). These regulatory frameworks stand as sentinel defenses against potential accidents and catastrophic releases of hazardous chemicals.

PSM and RMP provide a structured road map for companies to identify potential hazards, assess risks, and implement robust safety measures. However, the complexity of navigating the intricate web of regulations, coupled with the dynamic nature of each company and facility, can pose formidable challenges in determining their applicability and in ensuring compliance. In this era of rapid regulatory evolution, companies must also grapple with the task of adapting to changing and updated rules from OSHA and the EPA. Amendments introduced in 2017, 2019, and 2022 have further compounded the intricacies of PSM and RMP regulations, making the current journey to compliance even more daunting.

Amid this labyrinth of evolving compliance challenges, navigating PSM and RMP regulations stands as a key objective for companies striving to uphold legal and ethical responsibilities. This white paper delves into the intricate tapestry of the two standards, common areas of confusion, and steps for determining if PSM and RMP regulations apply to your facility and processes.



From Catastrophe to Compliance

To fully comprehend the significance of PSM and RMP regulations, first consider their historical context and rationale. One of the most devastating industrial accidents in history was the Bhopal disaster in India in 1984. This tragedy involved the release of a highly toxic gas, exposing people to its harmful effects and killing thousands. The disaster highlighted the pressing need for stringent safety protocols when handling hazardous substances, and it spurred the development of regulations aimed at minimizing the consequences of such catastrophic incidents.

Following the Bhopal disaster, OSHA introduced the PSM standard ([29 CFR 1910.119](#)), which specifically targeted the prevention of catastrophic chemical releases in the workplace. At the same time, the EPA introduced the RMP rule ([40 CFR 68.130](#)) to protect the environment and communities surrounding facilities that handle hazardous substances. PSM and RMP are rooted in the enhancement of safety and environmental protection and affect the chemical, petrochemical, manufacturing, agriculture, utilities, food and beverage, military, and energy industries. While both programs have common goals, they also have distinct approaches and requirements, and each program requires careful consideration. Before we dive into some common mistakes and the steps for determining PSM and RMP applicability, let's look at what the two programs have in common:

- ▶ **Performance-based standards:** Both PSM and RMP adopt performance-based standards, delineating what needs to be accomplished without prescribing how to achieve it. While they incorporate specific task frequency requirements (see sidebar), they are fundamentally non-prescriptive and allow companies flexibility in how they achieve compliance, provided the required standards are met.
- ▶ **Required safety components:** Both programs require affected facilities to develop and implement program elements to prevent or minimize the consequences of catastrophic chemical releases. These program elements include Process Safety Information (PSI), Process Hazard Analysis (PHA), Mechanical Integrity (MI), operating procedures, employee training, and the identification of internal and external community resources that will respond when incidents occur.
- ▶ **Threshold quantity:** PSM and RMP both require affected facilities to determine the quantity of potentially subject chemicals within a process and compare that to a predetermined threshold quantity (TQ) to determine program applicability.
- ▶ **Industry best practices:** Companies that deal with hazardous chemicals will often adopt Recognized and Generally Acceptable Engineering Practices (RAGAGEP) which direct facilities on the design, operation, and maintenance of subject processes. These practices are not specified in the PSM or RMP standards but are valued for their proven effectiveness in minimizing risks.

Required Frequency Tasks

While specific frequency and requirements may change based on the nature of the facility, the processes involved, and/or updates to regulations, it is essential to maintain compliance with these required frequency tasks to create a safe working environment and prevent accidents.

- ▶ **Process Hazard Analysis (PHA):** This analysis identifies and evaluates potential hazards associated with covered chemical processes for both standards and must be conducted at least every five years, or more frequently if there are significant process changes or incidents.
- ▶ **Employee training:** Both standards require that facilities provide detailed operating procedure training every three years to ensure that employees are aware of potential hazards and know how to respond.
- ▶ **Compliance audits:** Compliance audits are conducted at least every three years to assess the effectiveness of the PSM and RMP programs and identify any areas that need improvement.
- ▶ **Offsite Consequence Analysis (OCA):** RMP-affected facilities must conduct an OCA to assess the potential impact of accidental releases on the surrounding community. This analysis is required to be conducted at least every five years.
- ▶ **Risk Management Plan:** RMP-affected facilities must submit a summary of their RMP program on the EPA database RMP*eSubmit. This submittal is required to be updated at least every five years.
- ▶ **Accident history reporting:** RMP-affected facilities are obligated to maintain a five-year accident history record detailing any incidents involving hazardous substances and the on- and off-site impacts.

Boundary Lines and Beyond

The implementing agency jurisdiction plays a pivotal role in shaping the distinct characteristics and emphases of both PSM and RMP regulations. Both share the common objective of safeguarding against potential chemical incidents, but they diverge in their scope, applicability, and specific requirements.

Now that we have explored what the two programs have in common, let's take a closer look at the specific details that define them.

The PSM standard (29 CFR 1910.119) focuses on the prevention of catastrophic chemical releases in the workplace. It applies to any process that involves a chemical at or above the specified threshold quantities ([Appendix A list](#)) and/or processes involving certain flammable gases and liquids above 10,000 pounds, including Category 1 flammable gases (as defined in [1910.1200\(c\)](#)) or a flammable liquid with a flashpoint below 100°F (37.8°C).

The standard's scope extends within a facility's fence line, focusing on the safety of the company's workforce, contractors, and visitors. Key components of PSM include PSI, PHA, MI, operating procedures, and employee training. The PSM standard also contains a trade secret element to ensure that workers have access to information on the hazards they work with, regardless of company proprietary information.

The RMP standard (40 CFR Part 68) is designed to protect the environment and surrounding communities. The EPA's RMP regulation applies to processes that involve [RMP-listed](#) toxic or flammable chemicals at or above the specified threshold quantities. Unlike the PSM standard, the scope for RMP extends beyond the site boundary, encompassing nearby residences, public areas, and adjacent facilities such as schools and hospitals.

RMP applicability determination results in a program level assignment for each qualified process, which prescribes the program elements that must be met based on the degree of risk associated with the facility. For Program Levels 1 and 2 Processes, facility management has the option of modifying processes to opt out of the standard or step down to a less rigorous level of requirement. Level 3 RMP programs share 12 elements in common with the strict prescriptive PSM standards, making it easier to manage their regulations together.

What Is a Process?

A "process" in the context of PSM and RMP applicability is defined as any activity or combination of activities that involves the use, storage, manufacturing, handling, or on-site movement of hazardous chemicals. Any group of interconnected vessels or separate vessels that are stored together is considered a single process. (See sidebar on interconnection and proximity.)

Emergency Preparedness

The framework for emergency preparedness within RMP underwent noteworthy enhancements with updated rule changes in 2019. These modifications underscore the vital role of coordination and communication during emergencies and include:

- **Notification Procedures:** Clear and concise steps for promptly notifying relevant authorities and the public in the event of incidents, ensuring timely dissemination of critical information.
- **Field and Tabletop Exercises:** Regular drills and exercises to be conducted on a regular basis, aimed at testing and refining emergency response plans and bolstering preparedness.
- **Public Meeting Requirements:** Stringent requirements for conducting public meetings after reportable incidents, fostering transparency and engagement between facilities and the communities they impact.

Unraveling PSM and RMP Applicability

With the many similarities and differences between when PSM and RMP regulations apply, clearing the confusion between their scopes and distinct applicability criteria can be a daunting task, but understanding the nuances in applicability, program management, and compliance is essential. Each company, facility, and situation is different, and internal safety and environmental stakeholders can become overwhelmed by the quickly changing environments, process modifications, and the ambiguity of the many disparate rules.

Facilities must carefully navigate these PSM and RMP regulation differences to ensure proper compliance and implement the appropriate risk-management measures based on the relevant regulatory framework. Let's consider three key areas where PSM and RMP differences play a big role in determining applicability.

Types of substances

RMP regulations primarily focus on toxic and flammable substances, whereas PSM encompasses a broader range, including toxic chemicals and general flammables. To assess PSM and RMP applicability, companies must cross-reference comprehensive lists and the flammable mixture definition provided by OSHA and the EPA for their respective regulations. These lists contain specific hazardous substances, the flammable properties definition, and the threshold quantities that trigger regulatory coverage.

Threshold quantities and concentrations

Both PSM and RMP regulations consider the quantity of hazardous substances present at a facility. Neither require facilities to count any listed chemicals in mixtures toward the TQ if their concentration is less than 1 percent or below the specified minimum concentration by weight in their applicable table. Both PSM and RMP have a mixture rule for toxic chemicals that requires that only the toxic portion of the chemical is counted toward the TQ. (PSM standards apply to chemicals listed in 29 CFR 1910.119, Appendix A, and RMP standards apply to chemicals listed in 40 CFR 68.130, Tables 1 and 2.) Regarding flammable chemicals, the entire flammable mixture is counted toward the TQ. (PSM standards apply to chemicals that meet the general flammable category, and RMP standards apply to chemicals listed in 40 CFR 68.130, Tables 3 and 4.)

Exemptions

One of the most significant challenges in PSM and RMP applicability determination lies in navigating the various exemptions present in each program. Exemptions can significantly impact the applicability of the regulations and the compliance requirements for companies handling hazardous substances.

Exemptions for PSM applicability include:

- ▶ flammable mixtures stored in atmospheric tanks (less than 0.5 psig) without mixing operations;
- ▶ flammable hydrocarbon mixtures used as fuel on-site; and
- ▶ normally unoccupied remote facilities (limited to sites where employees perform tasks up to 1.5 man-hours per day and a total of 14.5 man-hours per week).

Exemptions for RMP applicability include:

- ▶ mixtures of flammable materials that do not meet a National Fire Protection Association (NFPA) 4 flammability rating;
- ▶ listed flammables used as fuel on-site; and
- ▶ listed flammable components in naturally occurring hydrocarbon (NOHC) mixtures before natural gas processing or refining (such as condensate, crude oil, field gas, and produced water). (Listed toxic components in NOHC are not exempted from TQ consideration.)
- ▶ except for oleum and toluene diisocyanate isomers, mixtures where the partial pressure of the regulated substance under all handling and storage conditions is less than 10 millimeters of mercury (mm Hg)
- ▶ regulated substances in gasoline, when in distribution or related storage for use as fuel for internal combustion engines.

Real-world Example: Interconnection and Proximity

Interconnection and proximity are crucial aspects in both PSM and RMP regulations because they directly influence the regulatory boundary and applicability of these programs.

Consider a chemical facility that has two separate vessels storing different hazardous substances. Each vessel is treated as an individual process, and the quantities of chemicals in each vessel are below the threshold for RMP and PSM coverage. The facility might be under the impression that they are exempt from compliance with these regulations.

However, if a hose connects the two vessels, allowing chemicals to flow freely between them, this creates an interconnected process, meaning that the facility needs to reevaluate its PSM and RMP applicability. Since the chemicals in both vessels are now effectively part of the same interconnected process, their combined quantities may exceed the threshold for regulatory coverage.

Similarly, the combination of drums from different parts of the site into a single storage area can also trigger PSM and RMP applicability. If drums containing hazardous substances were previously treated as separate processes but are now stored together, their combined quantities may exceed the regulatory threshold, subjecting the entire storage area to the PSM and RMP requirements.

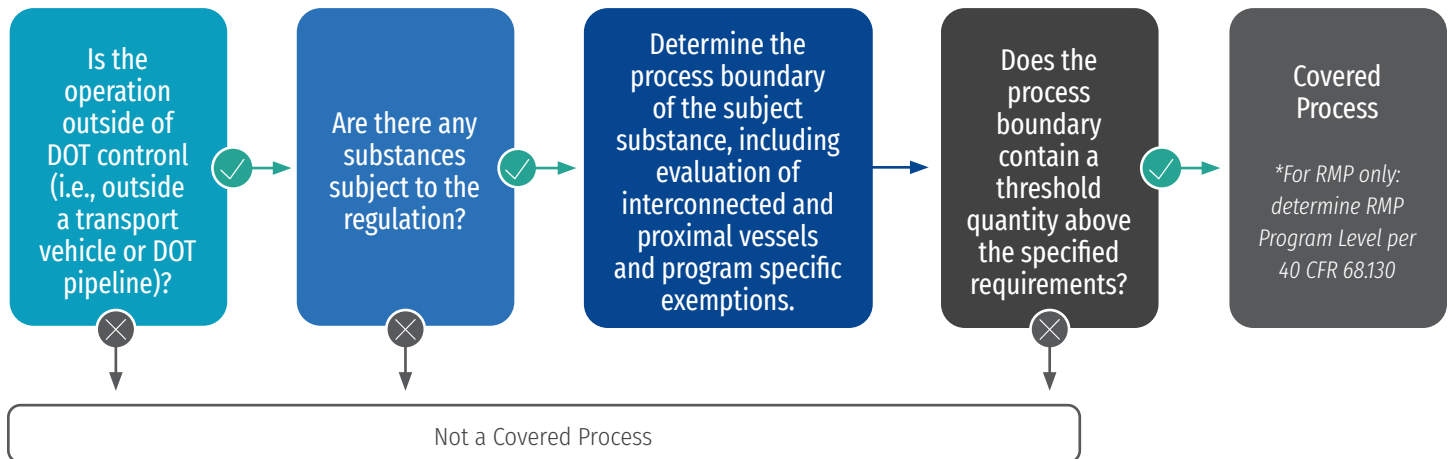
Flammable Liquid Definition Differences

PSM flammable is any material with a liquid flashpoint less than 100 F. It is not limited to any list and will usually involve chemicals NOT listed on Appendix A.

RMP flammable is a mixture of material(s) listed on 40 CFR 68.130 Tables 3 & 4 that meet NFPA 4, which means a mixture flashpoint less than 73 F AND boiling point less than 100 F.

The PSM flammable definition is broader and is not limited to a list, so it is common for sites to have more flammable materials subject to PSM than subject to RMP.

PSM and RMP Applicability Steps



Unlocking Regulatory Success

As we have discussed in this paper, navigating the intricate world of PSM and RMP regulations can be a formidable challenge - that's where experienced consultants can help. Consultants offer invaluable support to companies seeking to confidently navigate the dynamic regulatory landscape. They provide a wealth of expertise and are adept at deciphering complex requirements and tailoring solutions to fit each company's unique needs. Whether it's ensuring compliance with specific thresholds, implementing effective risk management strategies, offering unbiased assessments, or providing on-site audit assistance, consultants provide insights that companies might not have access to otherwise.

Conclusions

OSHA's Process Safety Management (PSM) and EPA's Risk Management Program (RMP) regulations stand as pillars of protection, shielding workers from hazardous substances, communities from potential health risks, and the environment from damage due to chemical releases. Understanding and complying with their applicability is crucial for effective risk management and fostering a culture of safety and responsibility. As these regulations evolve, engaging qualified PSM and RMP consultants is essential for companies seeking to navigate the ever-changing regulatory landscape with confidence. With personalized services, unbiased assessments, and tested best practices, Trinity Consultants' Provenance Team empowers companies to create safer and more efficient operational environments for all stakeholders.

About Trinity Consultants

Trinity Consultants is a leading global environmental consulting firm that provides services and solutions in the EH&S Regulatory Compliance, Built Environment, Life Sciences, and Water & Ecology markets. Founded in 1974, Trinity has the technical expertise, industry depth and capabilities to help clients achieve their goals across natural and built environments.

Trinity Consultants' Provenance Team service areas include all elements of the PSM and RMP regulations, with expanded expertise in environmental consulting, mechanical integrity programs, process hazard analyses, and process safety information management. In short, there's no better choice for your PSM and RMP needs. Our experience is multifaceted and extensive, and our strategies are innovative, time-saving, and cost-effective. Our staff and tools are the best in the business.