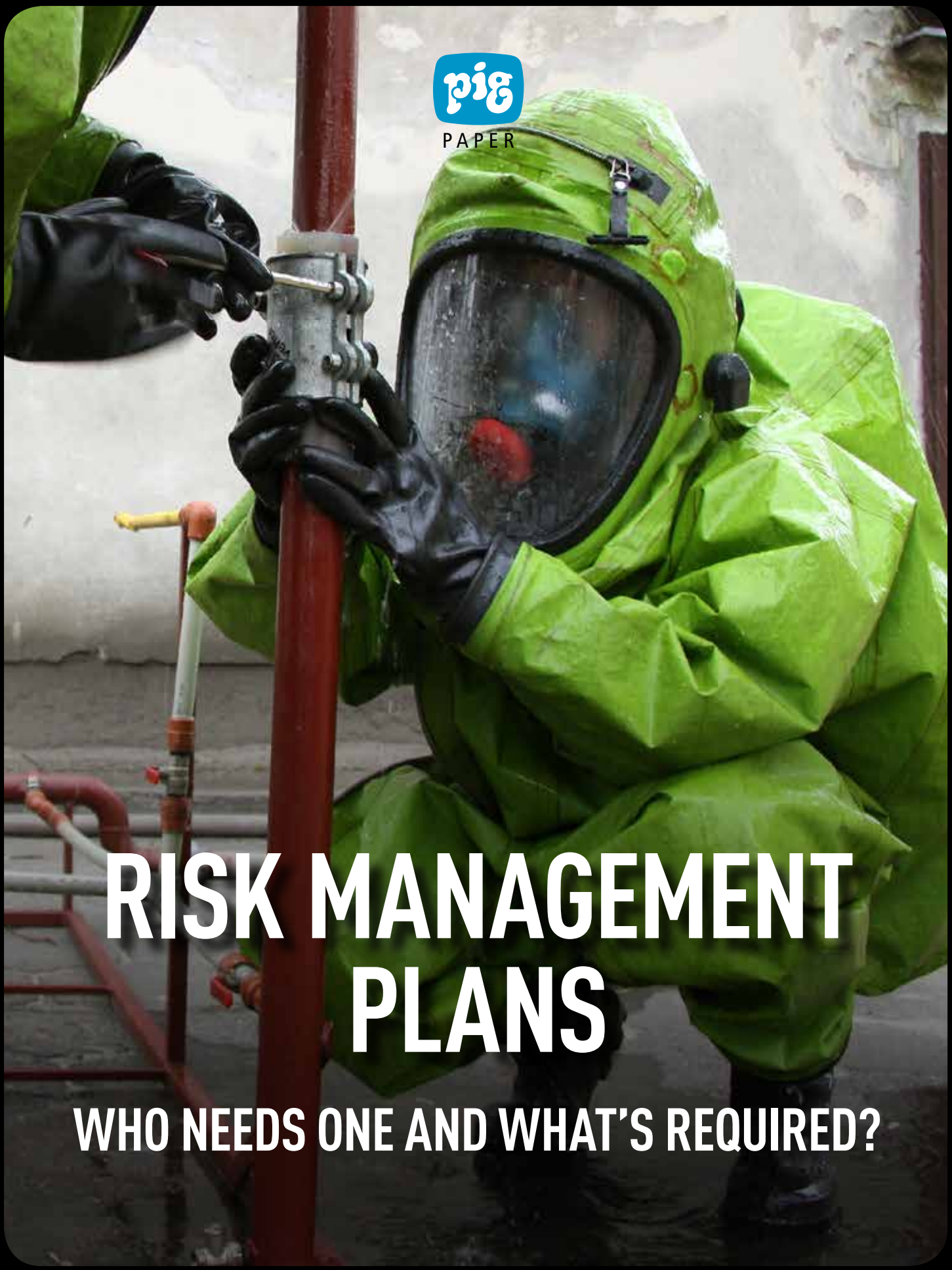

PAPER

RISK MANAGEMENT PLANS

WHO NEEDS ONE AND WHAT'S REQUIRED?

A Standard for Identifying & Mitigating Environmental Risks

As part of the requirements of the Clean Air Act's 1990 Amendments to help prevent chemical accidents, the Environmental Protection Agency (EPA) created the Risk Management Program Rule to help reduce the risk of hazardous chemical releases. In addition to helping facilities reduce risks and operate safely, elements of a facility's Risk Management Plan (RMP) help local fire, police and emergency response personnel prepare for and respond to chemical accidents and educate citizens on chemical hazards in their communities.

Similar to OSHA's Process Safety Management (PSM) Standard, which was also a requirement of the 1990 Clean Air Act Amendments, owners and operators of facilities that manufacture, use, store or otherwise process more than a threshold quantity of flammable liquids (except flammable fuels that are used solely as fuel or are held for sale as fuel at a retail facility) or any of the 140 toxic substances found in 40 CFR 68.130 must:

1. Perform a hazard assessment to evaluate each hazardous chemical and process

2. Establish a prevention program that outlines safe operational procedures to prevent accidental chemical release and process failures

3. Create an emergency response program that mitigates risks posed by hazardous chemicals in processes

"Process" means any activity involving a listed regulated substance, including any use, storage, manufacturing, handling or onsite movement of such substances, or combination of these activities [40 CFR 68.3].

These plans encompass many facets of facility operations and, similar to many regulations, are designed to help facilities take a proactive approach to identify and prevent problems. However, because some risk factors cannot be entirely eliminated, RMPs must also contain emergency response plans that describe how personnel at the facility will respond to accidental releases of hazardous chemicals.

In this PIG Paper, we will outline why RMPs are important, what facilities need an RMP and the requirements facilities must meet for each of the program levels.

RMP Program Eligibility

Within the regulation are three program eligibility levels. These levels have varying degrees of preparedness and emergency response requirements that take into account the potential for any type of accidental release to impact "public receptors," which include offsite residences, institutions, industrial, commercial and office buildings, parks and recreational areas that may be occupied by the public at any time [40 CFR 68].

Program levels are assigned for each process, not the facility as a whole. It's possible that some processes within a facility are eligible for the streamlined regulatory requirements of Programs 1 or 2 while other processes are subject to Program 3 requirements. Although facilities may have different levels of Program requirements, all processes will be included and managed within a single RMP. North American Industry Classification System (NAICS) codes must also be assigned to each process within the facility and it is possible for these to differ from the facility's overall NAICS code.

Facilities can manage each covered process according to its individual program level or manage all processes according to the rules of the most stringent program level found at the facility. Managing all processes at the most stringent level can help to simplify training requirements and help the facility prepare for process changes that affect its program level.

Program Eligibility

Program 1 [40 CFR 68.10(b)] Eligibility:

- Has not had an accidental release that resulted in death, injury, response or restorative activities in the past five years
- Does not have a worst-case scenario release that could reach public receptors
- Has coordinated their emergency response procedures with local emergency planning and response organizations

Program 2 [40 CFR 68.10(c)] Eligibility:

- Includes any processes that do not meet Program 1 or Program 3 eligibility

Program 3 [40 CFR 68.10(d)] Eligibility:

- Does not meet the requirements of Program 1 and is either:
  - Subject to OSHA's PSM Standard [29 CFR 1910.119]
  - In NAICS Codes:
    - 32211 — Pulp Mills
    - 32411 — Petroleum Refineries
    - 32511 — Petrochemical Manufacturing
    - 325181 — (Replaced with 325180 in 2012) Alkali and Chlorine Manufacturing
    - 325188 — (Replaced with 325180 in 2012) Inorganic Chemical Manufacturing
    - 325192 — (Replaced with 325194 in 2012) Cyclic Crude and Intermediate Manufacturing
    - 325199 — Organic Chemical Manufacturing
    - 325211 — Plastic Material and Resin Manufacturing
    - 325311 — Nitrogenous Fertilizer Manufacturing
    - 32532 — Pesticide and Agricultural Chemical Manufacturing

General Requirements

RMPs are unique to a facility and include in-depth analysis of risk factors for all covered processes. All RMPs must, at a minimum, include the following general information with a qualified person or position having overall responsibility for implementing the RMP at the facility.

Program Level	Program 1	Program 2	Program 3
Submit a single RMP including registration that reflects all covered processes	X	X	X
Analyze worst-case release scenarios for each process and document that there are no public receptors	X		
Analyze alternate "most-likely" release scenarios for processes		X	X
Complete 5-year accident history	X	X	X
Coordinate response actions and plans with local response agencies	X	X	X
Sign and date required certification statements	X	X	X
Develop and implement a risk management system		X	X
Conduct a hazard assessment for each process		X	X
Implement an appropriate prevention program		X	X
Develop and implement an emergency management system		X	X
Conduct training on process safety and emergency response		X	X
Submit data on prevention program elements		X	X

Hazard Assesment

Hazard assessments involve reviewing existing operating procedures, safety data sheets, maximum inventories, applicable industry codes and standards, as well as other information, to determine how a release may affect both the facility and the community. Without assessing what could happen, it is difficult to put effective plans and operating procedures in place to prevent hazards.

Taking a look at past incidents as part of a hazard assessment can help prevent them from happening again. This is why accidental chemical releases that resulted in onsite deaths, injuries, significant property damage or off-site deaths, injuries, evacuations, shelter-in-place orders or environmental damage must be summarized and documented in the facility's five-year accident history.

At least one worst-case release scenario must also be analyzed for each covered process [40 CFR 68.25]. A worst-case scenario is the largest possible release from a process that affects the largest possible area. In other words: the biggest, worst thing that could possibly happen. Scenarios can be multi-faceted and involve releases to air, water or land — each with a different scope of impact.

As part of this analysis, factors such as wind speed, temperature, topography and humidity can play roles in how far or how fast a release will spread. Local emergency management agencies with mapping capabilities and various online tools can be used to determine how far different types of releases may travel.

In addition to worst-case scenario analyses, processes governed under Programs 2 and 3 must also explore at least one alternative release scenario that is "more likely" to occur than a worst-case release [40 CFR 68.28]. Transfer hose failures, pipe failures, cracks in pumps or vessels and over-pressurizing or overfilling a tank are examples of common less-than-worst-case scenarios to consider.

Identifying the consequences of hazardous chemical releases, including population and environmental impacts, helps to determine the active and passive mitigation strategies needed to avoid or minimize the effects of an accidental release. To help ensure that hazard assessments remain accurate, they must be reviewed at least once every five years or within six months of any change to a covered process.

Prevention Programs — Program 2

Facilities that are already in compliance with federal and state regulations, apply industry codes and standards to operations and use good engineering practices often already meet most of the seven Program 2 prevention elements. When these seven elements are incorporated into the processes and procedures that are already in place, safety risks and the chance for equipment failure that could cause a chemical release are minimized.

Safety Information	To ensure you're properly evaluating risks, it's important to have accurate, up-to-date information and keep up with changes to safety data sheets, applicable codes and standards. This information is typically stored onsite to comply with OSHA and other regulations. It does not need to be kept with the plan, but must be accessible by employees who need to supply information to auditors or compliance officers.
Hazard Reviews	Checklists and industry standards are two tools that can be used to help evaluate process and chemical hazards and consistently operate processes safely. The potential effects of natural disasters, such as earthquakes or flooding, should also be factored into hazard reviews.
Operating Procedures	Written operating procedures need to provide clear, detailed instruction on how to safely start up, operate and shut down processes and equipment. Operating parameters, such as temperature, pressure or other variables, should be documented with the consequences of deviating from the desirable ranges. Procedures should also include instruction on how to avoid emergencies and what to do if an emergency occurs.
Training	Employees who have been properly trained are able to operate processes safely and efficiently, with less downtime, less waste, less damaged equipment and fewer mistakes. The length, type and style of training are not specified in the regulation to allow a variety of teaching methods to be used. Facilities must document employees' understanding by means of tests, supervising activity to prove competency. Refresher trainings must be provided every three years or immediately if there is a process change.
Routine and Preventative Maintenance	Following supplier's recommendations or utilizing checklists and other information, industry codes or trade groups for preventive maintenance helps avoid untimely breakdowns that could cause unsafe conditions and accidental releases. In some instances, preventative maintenance procedures can be worked into standard operating procedures. Anyone performing routine or preventative maintenance functions should be trained to perform the tasks properly and understand the hazards involved.
Compliance Audits	Audits review the elements of a program to make sure that they are still accurate, up-to-date and effective. They can also verify whether procedures and practices outlined in a plan are followed. Plans need to be audited at least every three years with the two most recent records of audit findings and any responses to those findings included with the plan.
Incident Investigation	Investigating incidents and near misses often uncovers problems that are missed in day-to-day operations. Each incident that resulted in or could have resulted in a catastrophic (immediate and substantially dangerous) release must be investigated. Incident investigations should occur within 48 hours of the incident and should include at least the date of the incident, the date the investigation began, a description of the incident and contributing factors and recommendations for improvement. Investigation findings and recommendations should be addressed and resolutions documented. All investigation summaries must be retained for five years.

Prevention Programs — Program 3

Because OSHA's PSM standard and EPA's RMP standard were developed simultaneously, both contain similar language. This means that facilities with a PSM plan may already meet most of the Program 3 requirements. A Program 3 Prevention Program has 12 elements:

Process Safety Information	Chemicals, process technologies and equipment must be compiled to enable anyone operating a process to identify and understand present hazards.
Process Hazard Analysis (PHA)	A PHA must address the hazards of each process. Analysis must be performed by a team with expertise in engineering and process operations. PHAs must be reevaluated every five years.
Operating Procedures	Operating procedures must be written and be readily accessible to anyone operating a process. The steps for each phase of operation must be documented.
Training	Process operators must understand safety and health hazards, emergency operations, and safe work practices. Records that demonstrate operators' understanding of these trainings must be kept, and refresher trainings must be held at least every three years.
Mechanical Integrity	Pressure vessels, storage tanks, piping system, relief and vent systems and devices, emergency shutdown systems, controls and pumps must all have written mechanical integrity programs that document inspection and test schedules and a method to correct deficiencies.
Management of Change	Written procedures need to be in place to manage changes to chemicals, technologies, equipment or procedures that could impact health and safety.
Pre-Startup Review	Operating, safety, maintenance and emergency procedures must be in place before a new process is brought online. PHS must also be performed and workers trained prior to startup.
Compliance Audits	Procedures and practices must be verified at least every three years or when any changes are made. The two most recent audits must be retained.
Incident Investigation	Any incident that resulted in or could have resulted in a catastrophic release must be investigated. Reports must include required elements and findings must be resolved and documented. Reports and resolutions must be kept for five years.
Employee Participation	Employees and their representatives should be involved with PHAs and the development of operational procedures for processes. They must also have ready access to PHAs and the facility's RMP.
Hot Work Permit	Permits documenting fire prevention and protection measures must be issued for all hot work operations conducted near or on a covered process and kept on file until work is completed.
Contractors	Contractors performing maintenance, repair, turnaround, major renovation or other specialty work on or near a covered process must follow safe work practices and be trained to understand hazards.

Emergency Response Programs

Emergency response programs must be implemented at facilities with Program 2 or Program 3 processes if employees will respond to chemical releases. The EPA realizes that in some instances responding to a large release may be inappropriate or unsafe for some facilities, especially smaller ones staffed by fewer than 10 employees. In these cases, facilities have the option of developing an emergency action plan to ensure employee safety and coordinating response with local response agencies or hiring a response contractor.

Coordinating response efforts with local response agencies ensures that the outside responding agencies have the capability, tools and personnel to handle emergencies at the facility. It also ensures that the facility's hazards are included in the community's response plan.

Whether the facility chooses to respond using their own employees or using outside resources, the facility is still responsible for responding to releases efficiently and effectively. For facilities that will have employees respond to chemical releases, an emergency response program needs to be coordinated with community emergency response agencies and consist of:

- An emergency response plan that includes procedures and measures for responding to a release
- A list of emergency response equipment and procedures for its use, inspection, testing and maintenance
- Procedures for informing the public and local emergency response agencies about accidental releases

Emergency Response Programs

- Documentation of first aid and emergency medical treatment that may be needed to treat accidental exposure to regulated chemicals
- Employee training information
- Procedures to ensure that the program is reviewed and up-to-date

Emergency Response Programs help ensure that when an unexpected release happens, employees are properly trained to respond safely with the tools and equipment that are needed to get the release under control as quickly as possible. For some facilities, emergency response plans may have already been developed as part of other regulatory requirements such as:

- EPA's SPCC, Facility Response Plan, Contingency Plan, EPCRA Plan or Stormwater Plan
- RSPA's Pipeline Response Plan
- OSHA's Emergency Action Plan, PSM standard or HAZWOPER

You can incorporate the elements of one of your existing plans into your ERP to streamline training and promote understanding. Individual plans will also become more useful as maintenance of multiple response plans decreases.

Recognizing hazards and establishing plans with procedures that clearly document how to operate processes safely are keys to minimizing the potential for costly, disruptive and hazardous spills. Because of their comprehensive nature, RMPs help facilities improve safety and avoid disruptions in production while minimizing the potential for environmental and public harm.

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