
Prevention of Accidental Releases

A brief Overview of the New Clean Air Act Rule

Introduction

On June 20, 1996, the U.S. Environmental Protection Agency (EPA) issued its final rule for regulations aimed at preventing accidental releases of regulated substances. The rule, *Risk Management Program*, mandated by Section 112(r) of the Clean Air Act Amendments (CAAA) is intended to prevent accidental releases to the air and mitigate the consequences of such releases by focusing prevention measures on chemicals that pose the greatest risk to the public and the environment. The rule is unique from other CAAA regulations in that it focuses on accidental releases as opposed to ongoing emissions of air pollutants. In developing the rule, the EPA coordinated closely with the Occupational Health and Safety Administration (OSHA) and the Department of Transportation (DOT) to provide a rule consistent with these other agencies' rules. Sources affected by the rule must develop and implement a risk management program that includes a hazard assessment, a prevention program, and an emergency response program. The rule is similar to the OSHA's Process Safety Management (PSM) standard in that it addresses accidental releases of over 100 chemicals, including 77 acutely toxic chemical compounds, 63 flammable gases, and certain explosives. The final rule has appeared in the *Federal Register*, and becomes effective August 19, 1996.

The EPA intends for the regulations to encourage affected sources to reduce the probability of accidental releases of substances that have the potential to cause immediate harm to public health and the environment. In addition, the agency hopes that the regulations will stimulate the dialogue between industry and the public to improve accident prevention and emergency response practices.

Who is affected?

EPA expects the rule to affect 66,100 sources including: chemical manufacturers, petrochemical manufacturers, other manufacturers (such as electronics, semiconductors, paper, fabricated metals, industrial machinery, furniture, textiles, fertilizers, pesticides), public sources (drinking and waste water treatment works), utilities, and federal sources (military and energy installations). However, since the rule covers some facilities that neither manufacture goods nor typically emit air pollutants, many expect the rule to affect a much higher number of sources than anticipated by EPA.

The rule applies to all stationary sources with processes that contain more than a threshold quantity of a regulated substance. Processes will be divided into three categories based on: the potential for offsite consequences associated with a worst-case accidental release; accident history; or compliance with the prevention requirements of OSHA's PSM standard.

For those processes that have no potential impact on the public in the event of an accidental release, the requirements will be minimal. For other processes, sources must implement a risk management program that includes more detailed requirements for hazard assessment, prevention, and emergency response. Processes in industry categories with a history of accidental releases and processes already complying with OSHA's PSM standard will be subject to a prevention program that contains parallel elements of the OSHA standard. All other sources will be subject to streamlined prevention requirements.

All affected sources are required to document their risk management program in a written document called the **risk management plan** (RMP). This plan must be registered with the EPA and submitted to state and local authorities. The plan will also be made available to the public. A brief description of the primary elements of the RMP is provided below.

Risk Management Plan (RMP)

The RMP is the crux of the regulation. It is a multi-purpose document that serves as the vehicle to demonstrate compliance with the requirements of the rule. The rule requires that the RMP demonstrate compliance with the regulations, as well as, include the *hazard assessment, prevention program, and emergency response program*. The rule states that the EPA will develop a RMP auditing program and will require facilities to make revisions to their plans where necessary. As such, it is important that the RMP contain sufficient data for the implementing agency to determine if the facility is in compliance. The EPA also intends for the RMP to provide information to the public in an understandable form. The EPA hopes that the public will use the information to improve the dialogue with sources on issues related to prevention and preparedness.

The RMP is to be submitted to a central point specified by EPA and will be available to state and local governments and to the public. After submittal, changes at the source may require updates to the RMP, other than the standard update every five years. The EPA intends for the RMP to be submitted electronically. Thereby eliminating the major burden of filing by federal, state, and local agencies. Also, interested parties (state, local, public) will be able to access the information more readily and easily. In addition to the three basic elements (hazard assessment, prevention program, emergency response program), the RMP must include the following:

- Source registration;
- Executive summary that provides a brief description of the source's activities as they relate to covered processes and program elements. (EPA

intends for the executive summary to provide text descriptions and give the source a chance to explain its programs in a format that the public can easily understand);

- Data elements that address compliance with each of the rule elements. (The data elements should provide the implementing agency with the basic data it needs to assess compliance without asking for detailed documentation. The EPA is considering development of a simple form that facilities can use).

The three primary elements of the RMP are discussed below.

Three Basic Elements of a RMP

(1) Hazard Assessment. A Hazard Assessment is intended to assess the potential effects of an accidental release. The assessment must review previous accidents, and other potential releases. The other elements of the RMP will be based on the findings of the Hazard Assessment. The hazard assessment portion of the RMP should include the following information.

■ **Potential Worst-Case Release.** EPA defines the worst-case release as the release of the largest quantity of a regulated substance from a vessel or process line failure, including administrative controls and passive mitigation that limit the total quantity involved or the release rate. The rule and EPA provide criteria for the selection of worst-case criteria such as release rate, critical downwind receptors, weather conditions, how to handle mixtures, and other criteria.

■ **Alternative Release Scenarios.** Since catastrophic events are rare, the EPA also included a more realistic scenario for non-worst-case accidental releases and called it "alternative release scenario." These scenarios provide flexibility to facilities to select non-worst-case scenarios that are the most useful to communication with the public and first responders and for emergency response preparedness and planning.

■ **Consequence Analysis.** The EPA requires that an endpoint be determined for the offsite consequence analysis. The rule lists endpoints for toxic substances that must be used in worst-case and alternative scenario assessments. The “toxic endpoint” is defined as how far the pollutant cloud will travel before it falls below the health standard. The EPA has selected 1.5 meters per second (m/s) wind speed and F atmospheric stability class as the default worst-case scenario meteorological conditions. If the facility has sufficient meteorological data that show different wind speeds and atmospheric class conditions, it can use these instead of the default. For alternative release scenarios, the facility may use site-specific, typical meteorological conditions.

■ **Radius of Concern.** The radius of concern is essentially the distance the cloud will travel before the toxic endpoint is reached under both the worst-case and alternative scenarios. It is defined as the population potentially affected within a circle that has as its center the point of release and its radius the distance to the toxic or flammable endpoint.

■ **Five-Year Accident History.** The five-year accident history will cover all accidents involving regulated substances, but only from covered processes at the source that resulted in serious on site or offsite impacts in the five years prior to the submission of each RMP. Each RMP must provide information that should be readily available from properly documented accident reports.

(2) **Prevention Program.** The rule requires that affected facilities designate a qualified person or position with overall responsibility for the program and specify the lines of authority if responsibility for implementing individual requirements is assigned to other persons or positions. In general, this element addresses safety precautions, maintenance, training, and monitoring. The Prevention Program has been modeled (it is nearly identical) after OSHA’s PSM standard. In some cases, a facility may use its Process Hazard Analysis (PHA) (a requirement of OSHA’s PSM standard) to satisfy this requirement.

(3) **Emergency Response.** While the rule emphasizes the prevention of accidental releases, in the event that one does occur, it requires an emergency response program. The program must address such elements as first aid and emergency medical treatment, employee training, emergency response equipment, drills and exercises, and a written plan. For the RMP the following elements must be addressed:

- *is there a written emergency response plan?*
- *does the plan include specific actions to be taken in response to an accidental release?*
- *does the plan include procedures for informing the public and local agencies responsible for responding to accidental releases?*
- *does the plan include information on emergency health care?*
- *the date of the most recent review or update of the emergency response plan.*
- *the date of the most recent emergency response training for employees.*
- *the name and telephone number of the local agency with which the plan is coordinated.*
- *a list of other Federal or state emergency plan requirements that affect the facility.*

The rule also provides relief for facilities that are too small to respond to releases with their own employees; these sources will not have to develop emergency response plans provided that procedures for notifying non-employee emergency responders have been adopted and that appropriate responses to their hazards have been addressed in the community emergency response plan developed under the Emergency Planning and Community Right to Know Act (EPCRA) for toxics or coordinated with the local fire department for flammables.

Relationship of Section 112(r) and CAA Air Permitting

Under the CAAA Title V (Operating Permits) requirements, air permitting authorities must ensure that sources are in compliance with applicable air standards. Since section 112(r) is an applicable requirement, the EPA has identified in the rule the permit conditions, and the actions affected facilities and air permitting authorities must take to ensure compliance. Essentially, a Title V operating permit must identify section 112(r) as an applicable requirement and establish conditions that require the facility to submit either a compliance schedule for meeting the requirements of the rule or a certification statement stating the facility is in compliance with all requirements of the rule, including the registration and submission of the RMP. If the permit has already been submitted and does not contain this information, then it must be reopened and a permit revision completed.

Modeling Requirements

In many cases computer modeling will be required to assess the off-site consequences of accident scenarios. Many facilities will do screen modeling using the EPA modeling package "TSCREEN." The rule also allows for other commercially, publicly available models, or proprietary air dispersion models to be used. If proprietary models are used, the facility must allow the implementing agency access to the model and describe any features that may be unique from traditional models.

It is important for facilities to carefully select a model that best suits their particular needs. There are several different types of models that can be used. Some assume worst case scenarios while others (e.g., ADAM, ALOHA, DEGADIS, HGSYSTEMS, SLAB) are more refined and are used with actual weather databases and with more sophisticated air dispersion patterns. Using a more refined model may predict lower concentrations at given receptors.

Compliance Deadlines

The rule requires that the RMP be submitted by June 21, 1999, three years after the EPA first lists a substance, or the date on which a source first becomes subject to the rule, whichever is latest. After June 21, 1999, sources that begin using a substance that has been listed for at least three years will be required to submit their RMPs on the date the substance is first on site above the threshold quantity. Sources that begin using such a regulated substance prior to June 21, 1999, will need to be in compliance with the rule by June 21, 1999.