New EPA Regulations
40 CFR Part 68
Risk Management Program

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Why the Risk Management Program?

Clean Air Act Amendments of 1990:
Congressional response to preventing further major chemical accidents

–*Bhopal, India*
–*Institute, West Virginia*

In the event of an accidental release:

–*OSHA PSM Standard designed to protect on-site workers*
–*EPA RMP Rule designed to protect nearby community*
SEC. 304. CHEMICAL PROCESS SAFETY MANAGEMENT.

(a) CHEMICAL PROCESS SAFETY STANDARD.—The Secretary of Labor shall act under the Occupational Safety and Health Act of 1970 (29 U.S.C. 653) to prevent accidental releases of chemicals which could pose a threat to employees. Not later than 12 months after the date of enactment of the Clean Air Act Amendments of 1990, the Secretary of Labor, in coordination with the Administrator of the Environmental Protection Agency, shall promulgate, pursuant to the Occupational Safety and Health Act, a chemical process safety standard designed to protect employees from hazards associated with accidental releases of highly hazardous chemicals in the workplace.
CAA Amendments of 1990: EPA

- General Duty Clause

- EPA List of Regulated Substances
  EPA RMP 40 CFR 68 6/20/1996
    - 77 toxic substances
    - 63 flammable substances

- Amended 8/5/1999 by the Chemical Safety Information, Site Security, and Fuels Regulatory Relief Act (CSISSFRRRA)
General Duty Clause (GDC)  
Clean Air Act §112(r)(1)

“The owners and operators of stationary sources producing, processing, handling or storing [extremely hazardous substances] have a general duty ... to identify hazards which may result from [accidental] releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.”
GENERAL DUTY CLAUSE

Identify Hazards

Design, Maintain & Operate Facility in accordance with Industry Codes and Standards

Minimize Consequences of an Accidental Release
Key Points about GDC:

- Statutory requirement
- Effective as of November, 1990
- No list of covered substances
- No threshold quantities
- No reporting requirement
- No required information sharing with public
- No exemptions nor exclusions
BASIC GOAL OF RMP PROGRAM

Reduce the likelihood and severity of accidental chemical releases by using hazard assessments, prevention programs and emergency response planning
WHO IS SUBJECT TO THE RMP RULE?

- Stationary source
- Regulated Substance
  - EPA developed a list of chemicals:
    - 77 toxic (anhydrous ammonia)
    - 63 flammable
- More than a Threshold Quantity (TQ)
- In a Process

*FACILITY REQUIRED TO SUBMIT A RMPlan*
RMP Processes – 3 Program Levels

Program 1 - No Prevention Program
Program 2 - PSM Light
Program 3 - PSM Plus

One source could have processes in one or more programs
Applicability of Program Levels

1. Are public receptors within the distance to the endpoint for a worst-case release?  
   - Yes → Is the process subject to the OSHA PSM Standard?  
     - Yes → Process Subject to Program Level 3  
     - No → Is the process classified in one of the listed NAICS codes?  
       - Yes → Process Subject to Program Level 2  
       - No → Process Eligible for Program Level 1

2. Have offsite impacts occurred due to a release of a regulated substance from the process?  
   - Yes → Process Subject to Program Level 3  
   - No → Process Eligible for Program Level 1

3. Is the process subject to the OSHA PSM Standard?  
   - Yes → Process Subject to Program Level 3  
   - No → Is the process classified in one of the listed NAICS codes?  
     - Yes → Process Subject to Program Level 2  
     - No → Process Eligible for Program Level 1
## RMP Program level applicability

**PROGRAM 1**
- 778 Facilities*
- Processes that would not affect the public in the event of a worst-case release & no accidents with offsite consequences in the last five years
  - Small quantities of flammables, less volatile toxics
  - Limited accident prevention including hazard assessment and emergency response requirements

**PROGRAM 2**
- 4,383 Facilities*
- Processes not eligible for Program 1, not subject to Program 3
  - Mainly water & wastewater treatment in Federal OSHA states
  - Additional hazard assessment, accident prevention, management, and emergency response requirements

**PROGRAM 3**
- 7,235 Facilities*
- Processes subject to OSHA’s PSM or in one of 10 specified NAICS codes
  - Larger facilities or those with complex processes
  - Examples include: refining, chemical manufacturing, energy production, water treatment
  - Covered by OSHA’s PSM accident prevention program and include additional hazard assessment, management, and emergency response requirements

*Data accurate as of February 19, 2019*
Comparison of Level Requirements

Level 1

- Conduct and document worst-case scenario analysis
- Prepare 5-yr Accident History
- Coordinate with Local Responders
- Prepare & Submit a RMP for all Covered Processes

Level 2

- Conduct and document worst-case scenario analysis
- Conduct and document alternative release analysis
- Prepare 5-yr Accident History
- Implement Management System
- Implement Level 2 Prevention Program
- Implement Emergency Response Program (if applicable)

Level 3

- Conduct and document worst-case scenario analysis
- Prepare 5-yr Accident History
- Implement Management System
- Implement Level 2 Prevention Program
- Implement Level 3 Prevention Program
- Implement Emergency Response Program (if applicable)
FIVE COMPONENTS OF RMP PROGRAM

Hazard Assessment
Management System
Prevention Program
Emergency Response Program
Risk Management Plan
NAICS With Most Accidents Reported

- Refrigeration
- Water supply, irrigation systems & sewage treatment
- Petroleum Refineries
- Fertilizer Manufacturing
- Farm Supplies
# National Top 10 Toxic Chemicals by Quantity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Quantity (tons)</th>
<th>Active Facilities*</th>
<th>Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (anhydrous)</td>
<td>5,113,417</td>
<td>6,905</td>
<td>7,412</td>
</tr>
<tr>
<td>Chlorine</td>
<td>427,028</td>
<td>2,317</td>
<td>2,559</td>
</tr>
<tr>
<td>Vinyl acetate monomer [Acetic acid ethenyl ester]</td>
<td>241,931</td>
<td>111</td>
<td>129</td>
</tr>
<tr>
<td>Propylene oxide [Oxirane, methyl-]</td>
<td>166,585</td>
<td>92</td>
<td>132</td>
</tr>
<tr>
<td>Acrylonitrile [2-Propenenitrile]</td>
<td>165,182</td>
<td>82</td>
<td>113</td>
</tr>
<tr>
<td>Ammonia (conc 20% or greater)</td>
<td>107,154</td>
<td>457</td>
<td>510</td>
</tr>
<tr>
<td>Ethylene oxide [Oxirane]</td>
<td>102,347</td>
<td>89</td>
<td>128</td>
</tr>
<tr>
<td>Formaldehyde (solution)</td>
<td>81,358</td>
<td>178</td>
<td>245</td>
</tr>
<tr>
<td>Oleum (Fuming Sulfuric acid) [Sulfuric acid, mixture with sulfur trioxide]</td>
<td>79,998</td>
<td>49</td>
<td>59</td>
</tr>
<tr>
<td>Toluene diisocyanate (unspecified isomer) [Benzene, 1,3-diisocyanatomethyl-]</td>
<td>76,631</td>
<td>118</td>
<td>133</td>
</tr>
</tbody>
</table>

*A facility may report more than one process and be included in the counts for more than one chemical.

Data displayed is accurate as of 12:01 AM (EST) Tuesday, February 19, 2019
Geographic Distribution of RMP Facilities
Region 5 Facilities by Industry

- Agriculture: 1,208 (46%)
- Food and Beverage: 551 (21%)
- Chemical Manufacturing: 376 (14%)
- Energy: 152 (6%)
- Water and Wastewater: 206 (8%)
- Other: 133 (5%)

Current (Active) Facilities: 2,604

Data displayed is accurate as of 12:05 AM (EST) Tuesday, February 19, 2019
West Fertilizer Explosion and Fire, West, Texas

On April 17, 2013, a massive fire and explosion occurred at a fertilizer storage and distribution facility in West, Texas. The explosion fatally injured twelve volunteer firefighters, two members of the public, caused hundreds of injuries and widespread community damage.

Source: U.S. Chemical Safety Board
Changes to the Risk Management Program (RMP) Rule

Why?

- **Executive Order (EO) 13650: Improving Chemical Facility Safety and Security** on August 1, 2013
  - EO 13650 directed the federal government to:
    - Improve operational coordination with state, tribes and local partners
    - Enhance federal agency coordination and information sharing
    - Modernize policies, regulations and guidance
    - Work with stakeholders to identify best practices

- EPA issued a Request for Information (RFI) to update the RMP Rule on July 21, 2014

- Published in Federal Register on March 14, 2016
- Final Rule Effective Date June 14, 2017
- Rule Effective Date Delayed until February 19, 2019

- EPA Published RMP Reconsideration Rule on May 30, 2018
- Court decision issued on August 17, 2018 vacating the June 2017 EPA regulation that delayed the effective date of the final RMP Amendments Rule
- Court mandate issued for vacatur of the RMP Delay Rule on September 21, 2018
So what does this all mean?

- The 2017 RMP Amendment rule is now effective.
  - The Rule contains a schedule for compliance of major provisions.

*EPA has proposed to repeal many of the provisions with future compliance dates*
Emergency Coordination Provisions

Emergency Response Coordination Activities (68.93)*:

- Owner and operator must coordinate response needs at least annually with local emergency planning and response organizations and document these coordination activities

- *Applies only to Program Level 2 and 3 facilities
Emergency Coordination Provisions

Emergency Response Coordination Activities (68.93)*:

• Must provide to the local emergency planning and response organizations
  ➢ The stationary source’s emergency response plan if one exists,
  ➢ The source’s emergency action plan,
  ➢ Updated emergency contact information, and
  ➢ Any other information relevant to local emergency response planning

*Applies only to Program Level 2 and 3 facilities
Emergency Coordination Provisions

• Responding stationary sources must consult with local emergency response officials to establish appropriate schedules and plans for field and tabletop exercises required under 68.96(b) before the March 15, 2021 compliance date for exercise provisions.
Emergency Response Program
Provisions

Emergency Response Program requirements (68.95):

• Inform Federal and state emergency response agencies about accidental releases.
Emergency Response Program Provisions

Emergency Response Program requirements (68.95):

• Review and update the source’s emergency response plan, as appropriate.
  ➢ Base updates on changes at the stationary source or new information obtained from:
    • Coordination activities,
    • Emergency response exercises,
    • Incident investigations, or
    • Other available information

• Ensure that employees are informed of the changes to the source’s emergency response plan.
Emergency Response Program Provisions

• A facility owner or operator must develop and implement an Emergency Response Program within three years of when the facility becomes subject to the requirements (i.e., a need for a facility Emergency Response Program is determined).
Changes to the Program 2 and Program 3 Prevention Program requirements (Subparts C and D) for which the effective date is the compliance date (68.10(a)(4)).
• Safety Information (68.48)
  ➢ Maintain Safety Data Sheets (SDS) instead of Material Safety Data Sheets (MSDS).

• Hazard Review (68.50)
  ➢ Include findings from incident investigation in the hazard review.
Prevention Program Provisions

• Training (68.54 and 68.71)
  • Employee training requirements also apply to supervisors responsible for directing process operations and supervisors with process operational responsibilities.

• Compliance Audits (68.58 and 68.79)
  • The owner or operator must evaluate compliance with the provisions of the RMP rule “for each covered process” at least every three years.
Prevention Program Provisions

• Incident Investigations (68.60 and 68.61)
  ➢ Added the phrase “a near miss” to describe incidents that “could reasonably have resulted in a catastrophic release.”
  ➢ An investigation is required when an incident resulting in a catastrophic release also results in the affected process being decommissioned or destroyed.
• Incident Investigations (68.60 and 68.61)
  ➢ Required incident investigation teams to be established for incident investigations on Program 2 processes.
  ➢ Incident investigation reports shall be completed within 12 months of the incident, unless the implementing agency approved, in writing, an extension of time.
  ➢ Replaced the word “summary” with “report” to describe the documentation required for an incident investigation.
Incident Investigations (68.60 and 68.61) cont.

- Specified content of the investigation report – new provisions are underlined:
  - Date, time, and location of the incident;
  - Description of the incident, in chronological order, providing all relevant facts;
  - The name amount of the regulated substance involved in the release (e.g., fire, explosion, toxic gas loss of containment) or near miss and the duration of the event.
  - The consequences, if any, of the incident including, but not limited to:
    - Injuries;
    - Fatalities;
    - The number of people evacuated;
    - The number of people sheltered in place; and the impact on the environment;
  - Emergency response actions taken.
• Incident Investigations (68.60 and 68.61) cont.

➢ Specified content of the investigation report – new provisions are underlined:

• The factors that contributed to the incident including the:
  • Initiating event;
  • Direct and indirect contributing factors; and
  • Root causes. Root causes shall be determined by conducting an analysis for each incident using a recognized method. (for incidents that occur after March 15, 2021).

• Recommendations resulting from the investigation and a schedule for addressing them.
Prevention Program Provisions

- Process Safety Information (68.65)
  - Owner or operator required to keep process safety information up-to-date.
  - Material Safety Data Sheets revised to Safety Data Sheets (SDS).

- Process Hazard Analysis (68.67)
  - PHA must include the findings from all incident investigations required under 68.81, as well as any other potential failure scenarios.
RMP Amendments with Future Compliance Obligations

• Third-party audit provisions in 68.58(f), 68.58(h), 68.59, 68.79(f), 68.79(g), 68.79(h), and 68.80;

• Incident investigation root cause analysis provisions in 68.60(d)(7) and 68.81 (d)(7);

• Safer technology and alternatives analysis provisions in 68.67 (c)(8);
RMP Amendments with Future Compliance Obligations

• Emergency response exercise provisions in 68.96;

• Providing chemical hazard information or community preparedness information to the public and conducting a public meeting 90 days after and RMP accident in 68.210 (b)-(e).

• Facilities are required to update their RMPs to comply with new or revised provisions by March 14, 2022.
Pipe showing rupture

Schedule 40 – 0.154”
At cut – 0.1123” 27% loss
At rupture – 0.0563” 63% loss
Thickness at pit bottoms even less
Plugging, wrong schedule piping
0.431” is less than allowable thickness
Inspecting the vessel as insulation is removed. Note ammonia liquid level up to the frost line.