New EPA Regulations
40 CFR Part 68
Risk Management Program

Monika Chrzaszcz
U.S. EPA, Region 5
(312) 886-0181
Chrzaszcz.monika@epa.gov

Why the Risk Management Program?

<u>Clean Air Act Amendments of 1990:</u>

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***

PROVISIONS OF THE CLEAN AIR ACT AMENDMENTS OF 1990 (PUBLIC LAW 101–549)

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 (CSISSFRRA)*

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

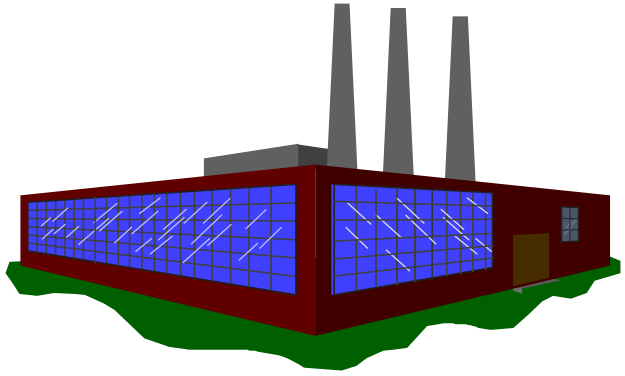
Identify Hazards

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

Minimize Consequences of an Accidental Release

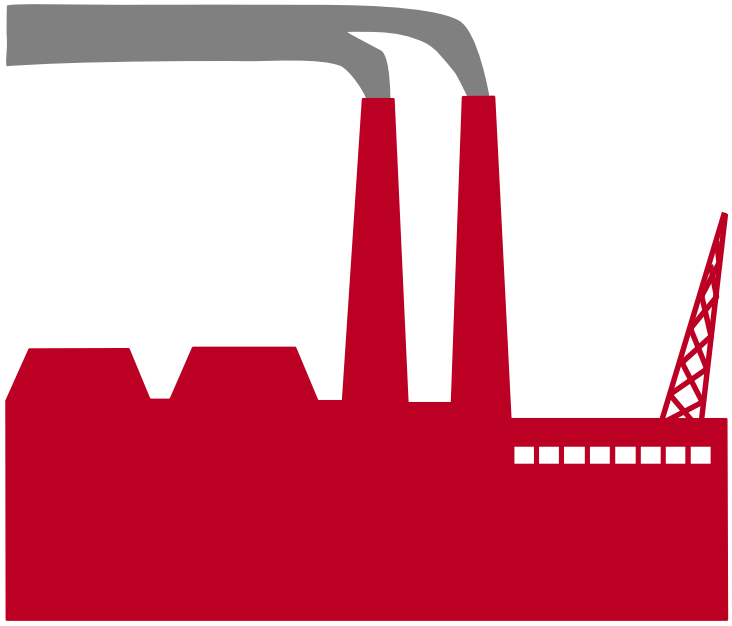
Key Points about GDC:

- 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

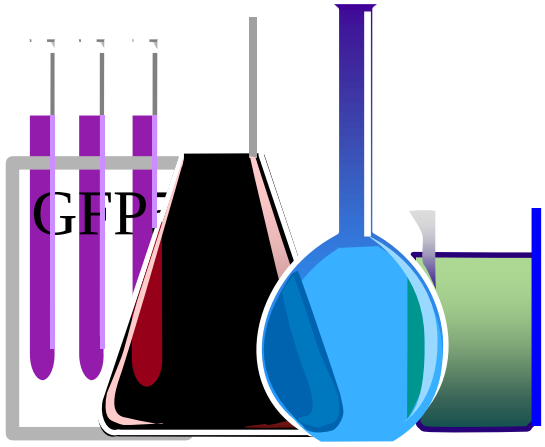
Reduce the likelihood and severity of accidental chemical releases by using hazard assessments, prevention programs and emergency response planning



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

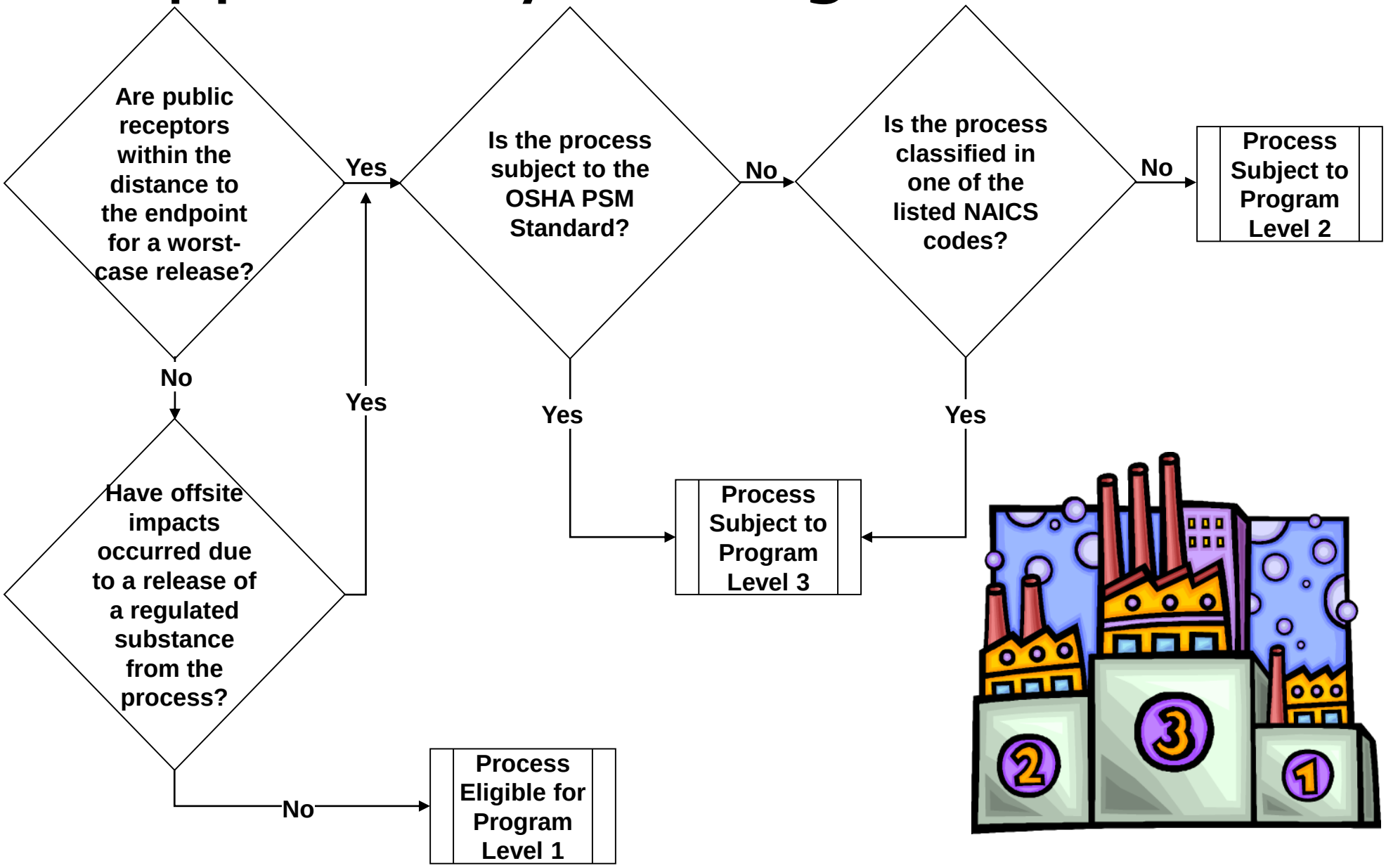
Program 1 - No Prevention Program

Program 2 - PSM Light

Program 3 - PSM Plus

One source could have processes in one or more programs

Applicability of Program Levels



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

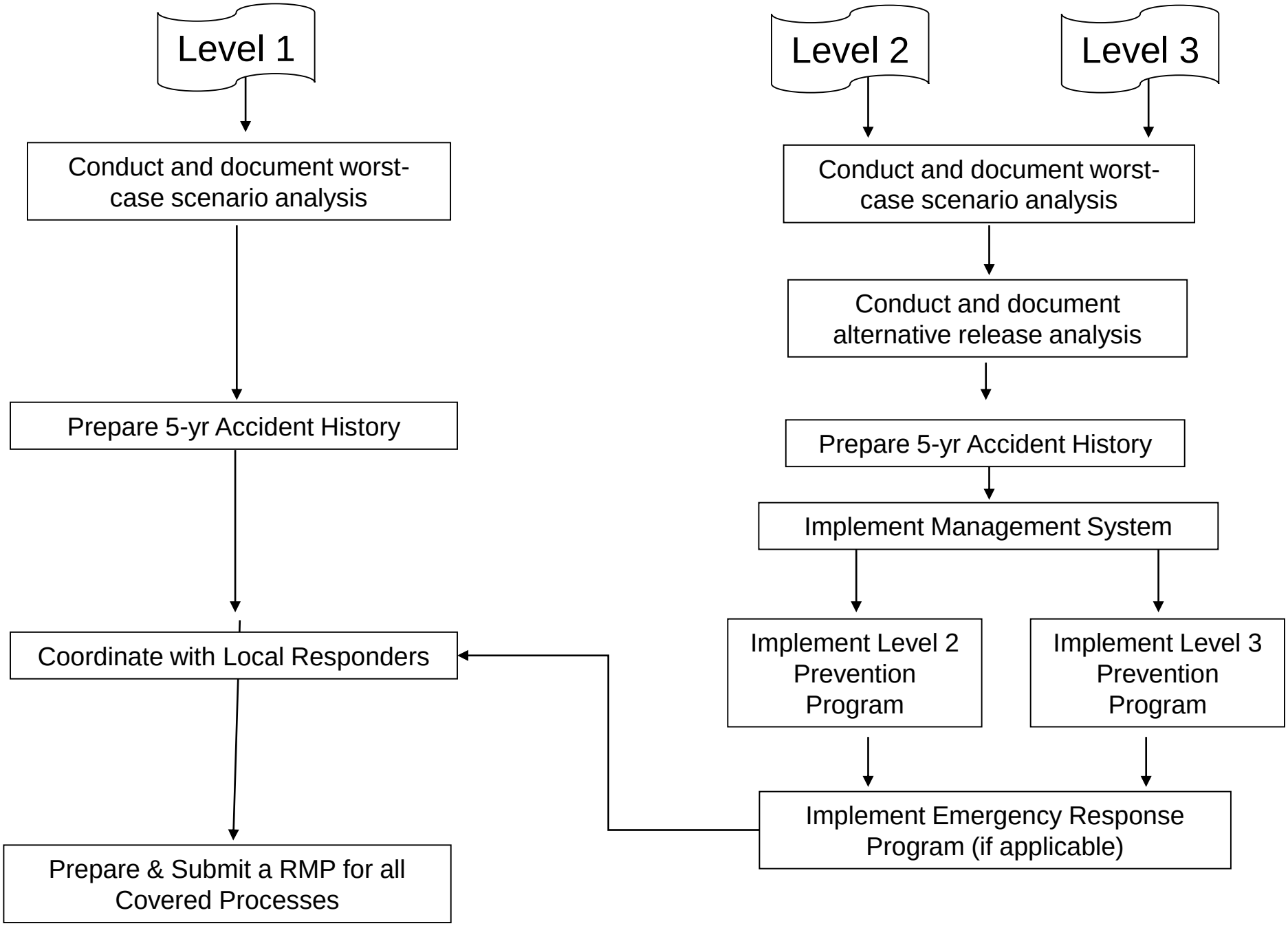
7,235 Facilities*

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



FIVE COMPONENTS OF RMP PROGRAM

Hazard Assessment

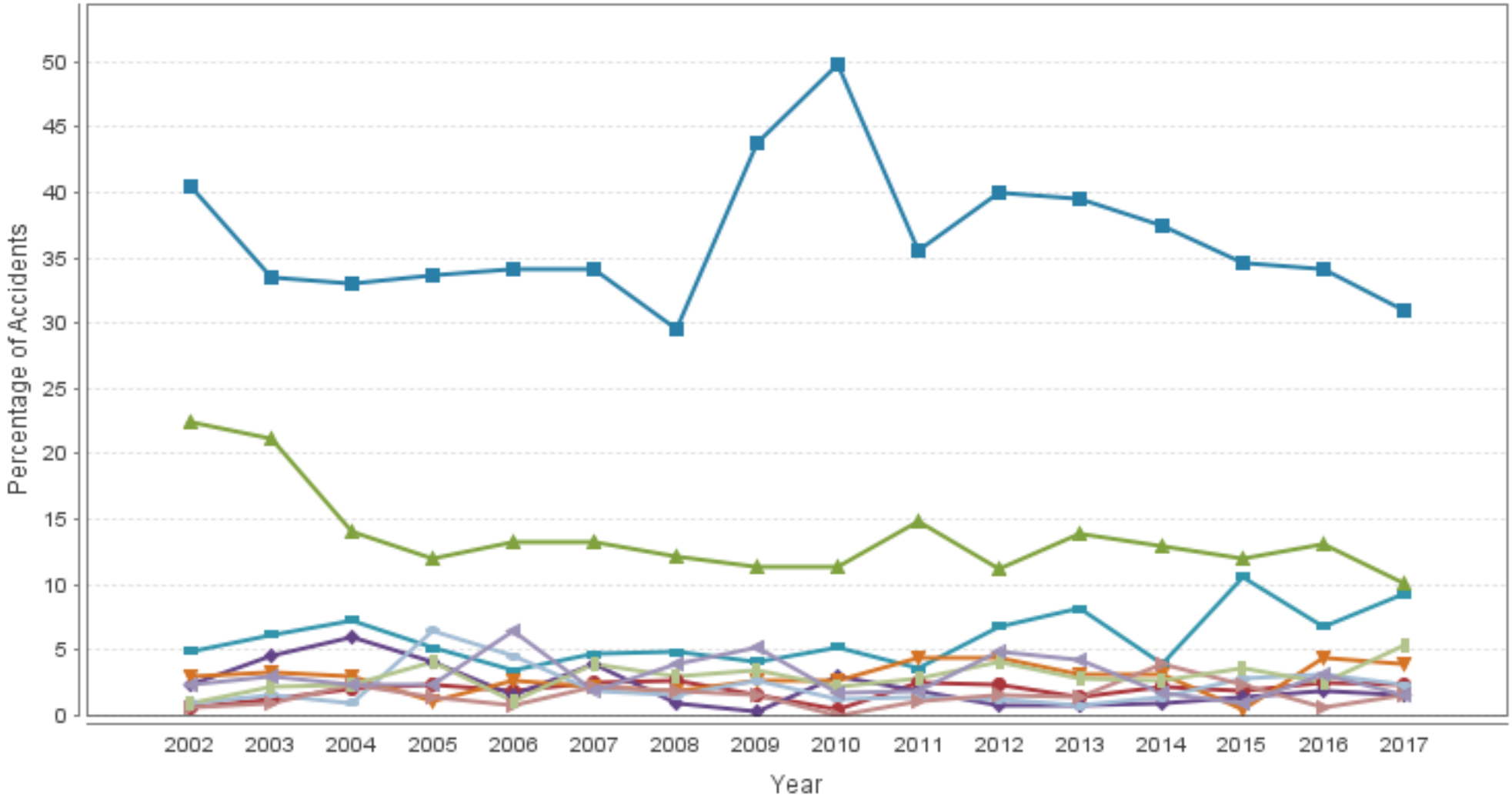
Management System

Prevention Program

Emergency Response Program

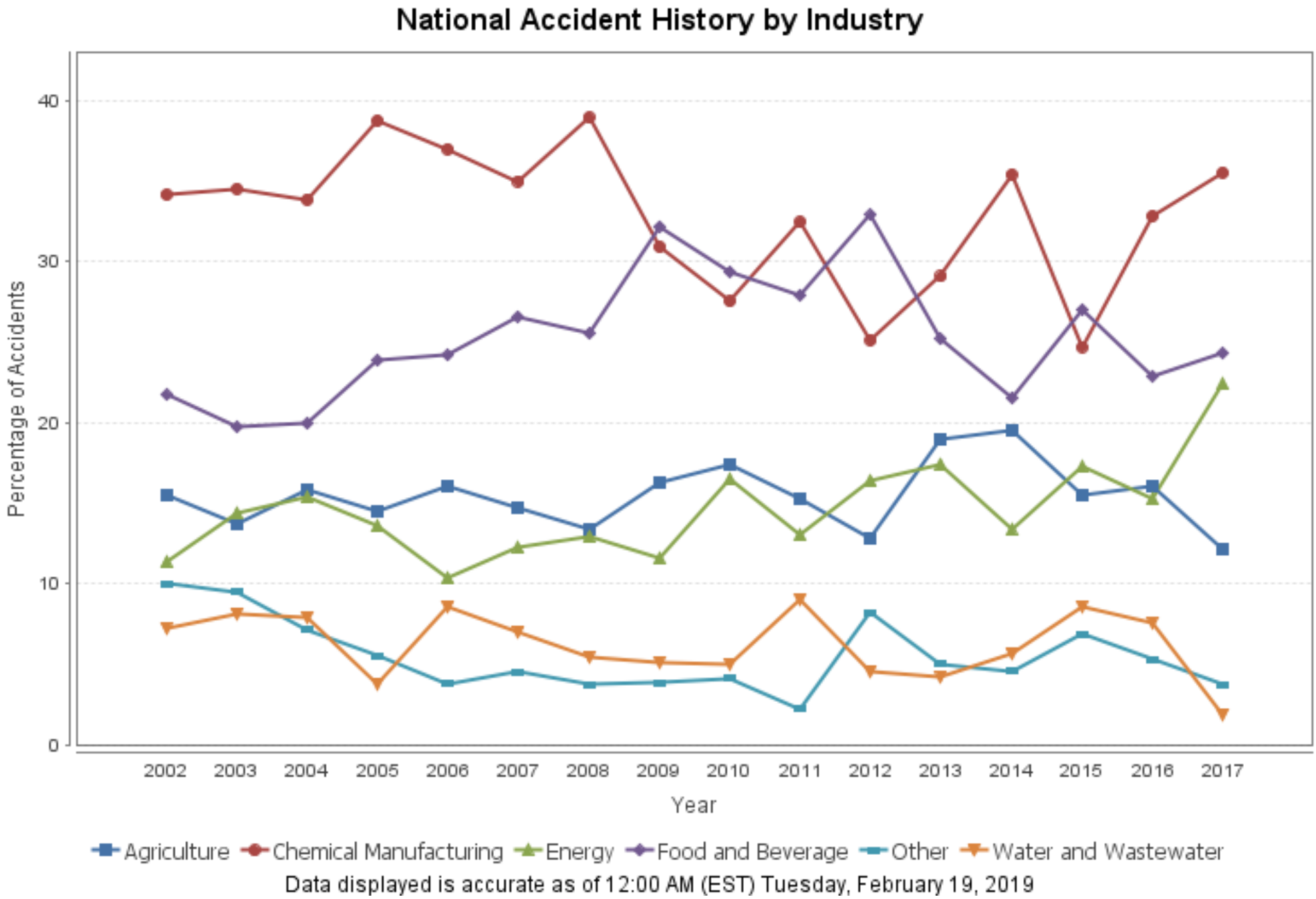
Risk Management Plan

National Accident History by Chemical



Ammonia (anhydrous) Butane Chlorine Chlorine dioxide [Chlorine oxide (ClO2)] Flammable Mixture
Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) [Hydrofluoric acid] Hydrogen sulfide Methane Propane
Sulfur dioxide (anhydrous)

Data displayed is accurate as of 12:00 AM (EST) Tuesday, February 19, 2019


National Accident History by Industry
Percentage of Accidents
0
10
20
30
40
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
Agriculture
Chemical Manufacturing
Energy
Food and Beverage
Other
Water and Wastewater
Data displayed is accurate as of 12:00 AM (EST) Tuesday, February 19, 2019

NAICS With Most Accidents Reported

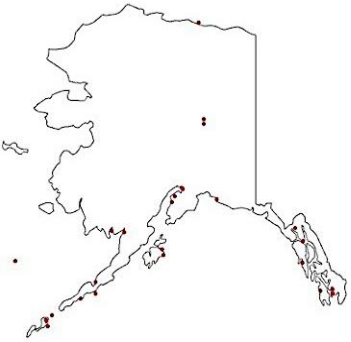
- Refrigeration
- Water supply, irrigation systems & sewage treatment
- Petroleum Refineries
- Fertilizer Manufacturing
- Farm Supplies

National Top 10 Toxic Chemicals by Quantity

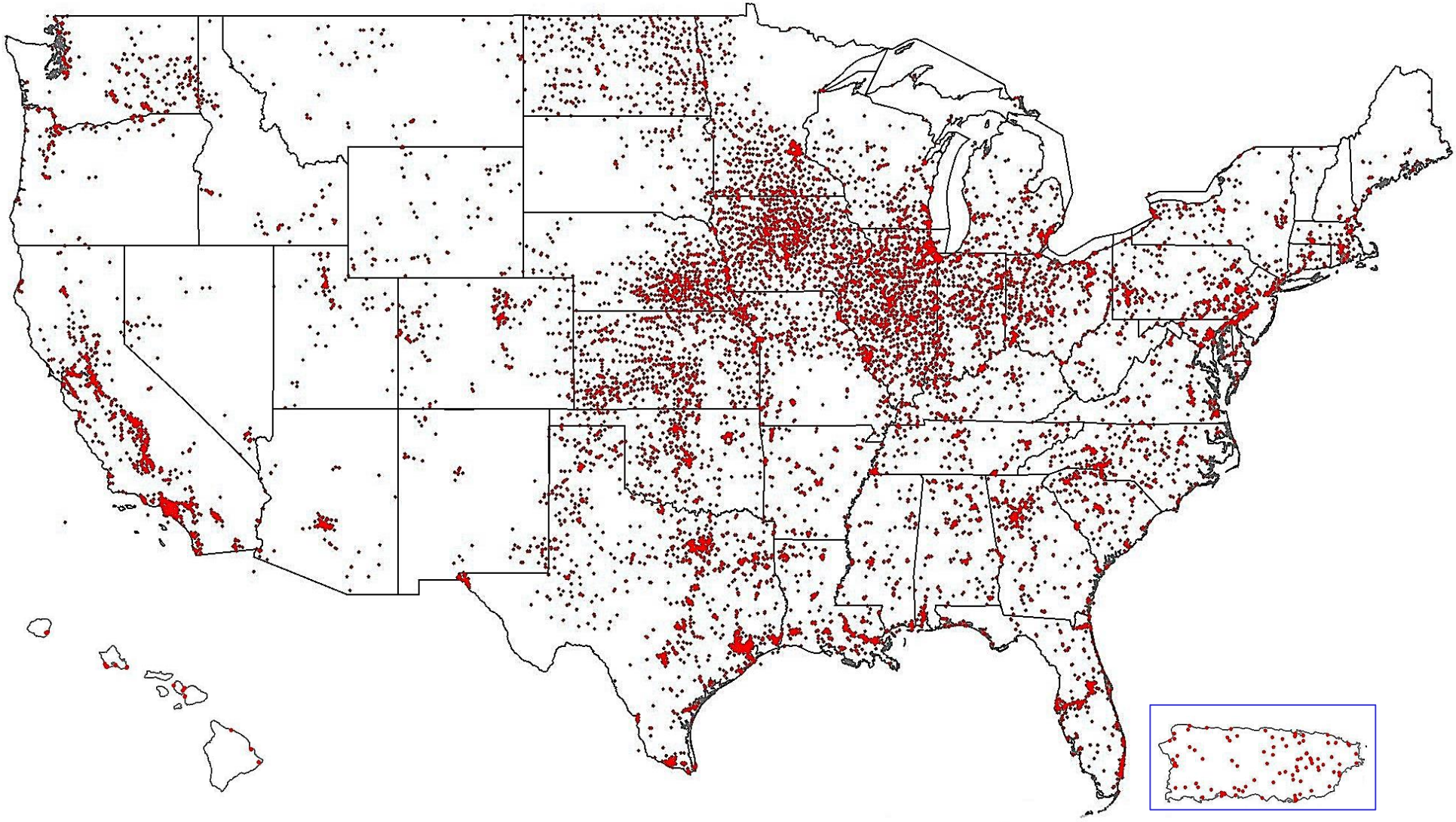
Chemical Name	Quantity (tons)	Active Facilities*	Processes
Ammonia (anhydrous)	5,113,417	6,905	7,412
Chlorine	427,028	2,317	2,559
Vinyl acetate monomer [Acetic acid ethenyl ester]	241,931	111	129
Propylene oxide [Oxirane, methyl-]	166,585	92	132
Acrylonitrile [2-Propenenitrile]	165,182	82	113
Ammonia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

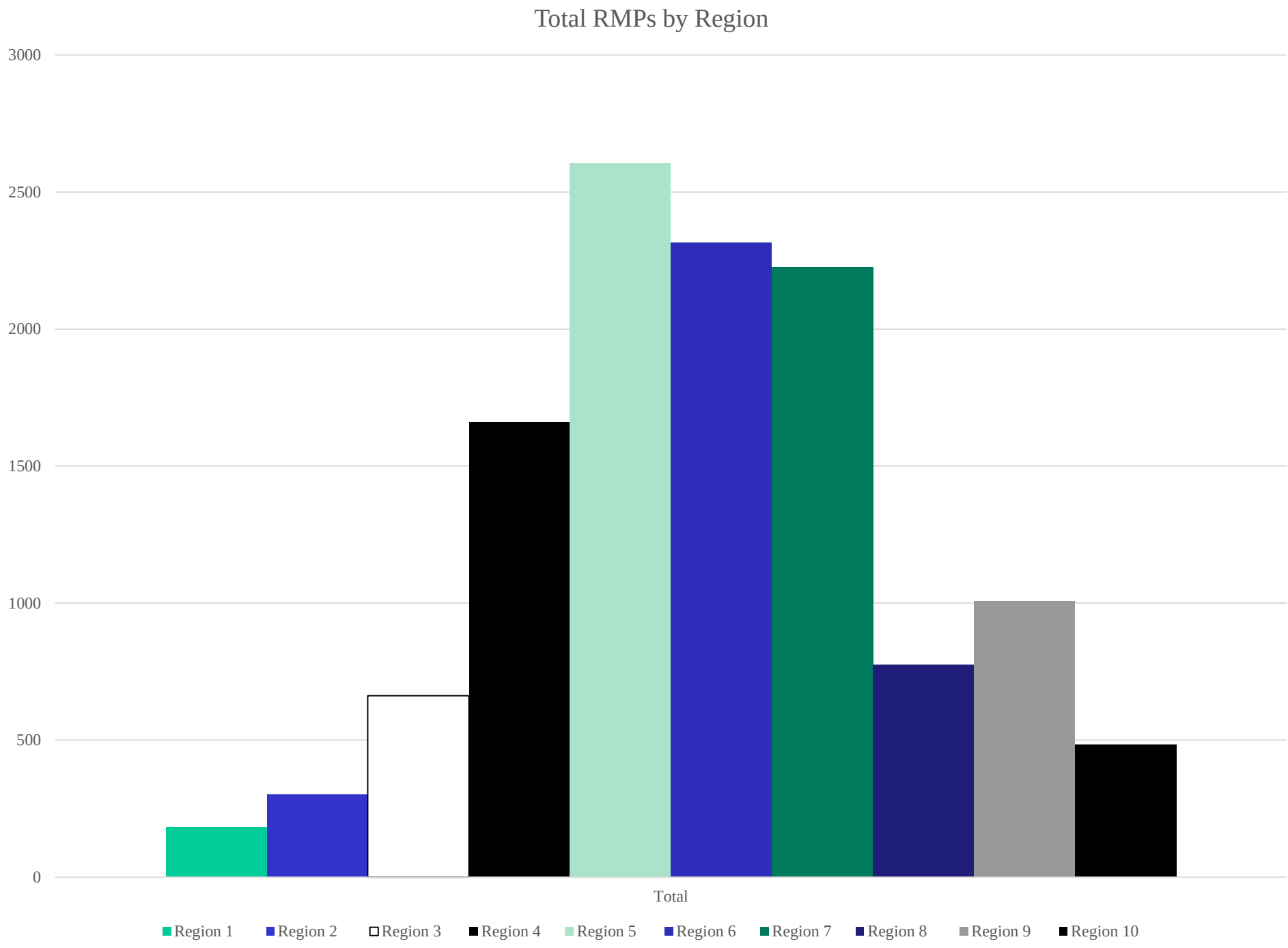
*A facility may report more than one process and be included in the counts for more than one chemical.

Data displayed is accurate as of 12:01 AM (EST) Tuesday, February 19, 2019

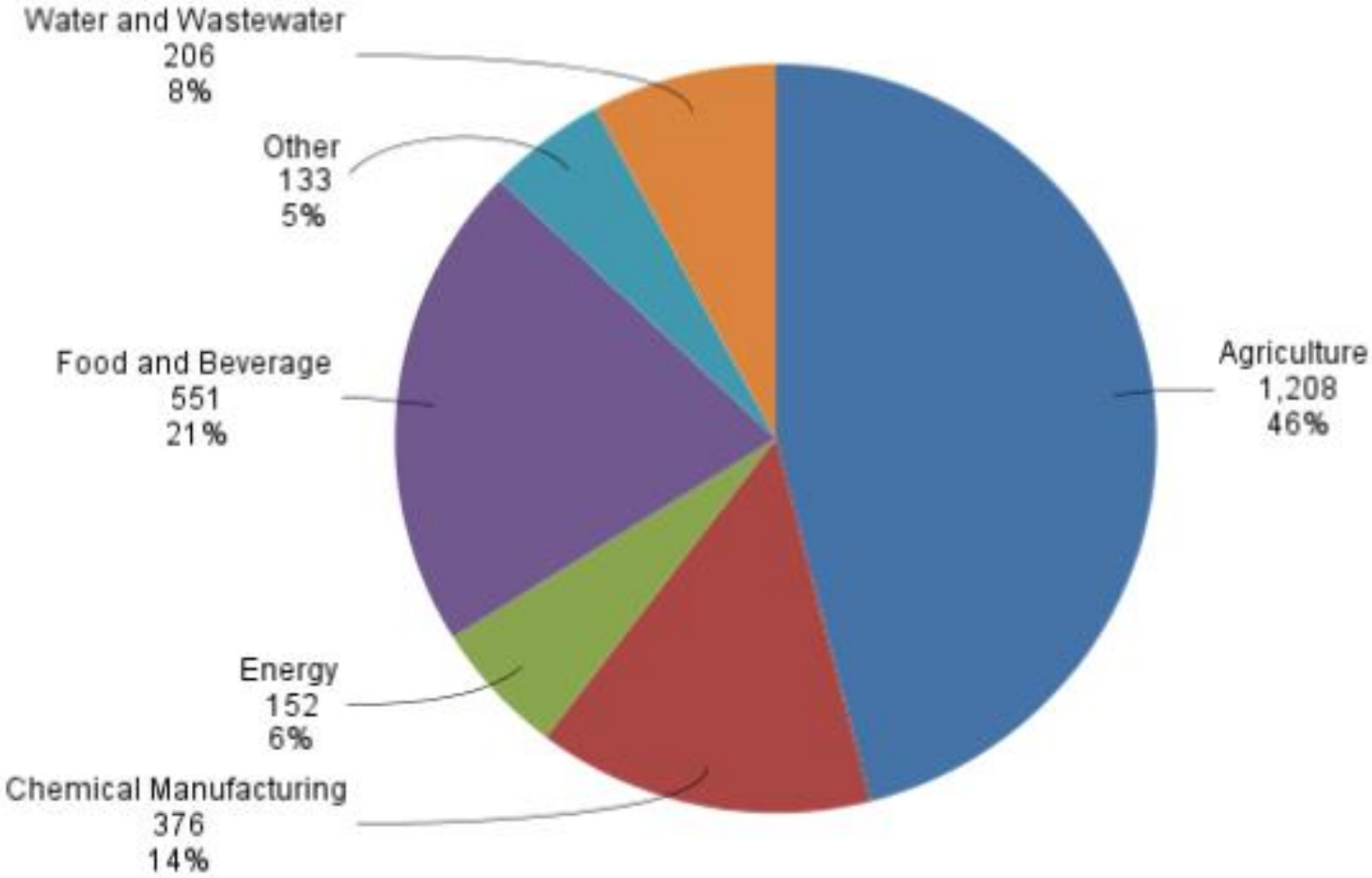


Geographic Distribution of RMP Facilities




Total RMPs by Region
3000
2500
2000
1500
1000
500
0
Total
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

Region 5 Facilities by Industry



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

Source: U.S. Chemical Safety Board

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.

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

40 CFR Part 68: Accidental Prevention Requirements: Risk Management Programs Under the Clean Air Act: **Proposed/Final Rule**

- Published in Federal Register on March 14, 2016
  - https://www.gpo.gov/fdsys/pkg/FR-2016-03-14/pdf/2016-05191.pdf
- Final Rule Effective Date June 14, 2017
- Rule Effective Date Delayed until February 19, 2019

40 CFR Part 68: Accidental Prevention Requirements: Risk Management Programs Under the Clean Air Act: **Proposed/Final Rule**

- 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.
  - https://www.epa.gov/rmp/risk-management-plan-rmp-amendments-compliance-information

***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

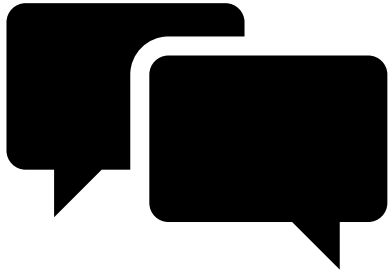
Emergency Response Coordination Activities (68.93)*:

- 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

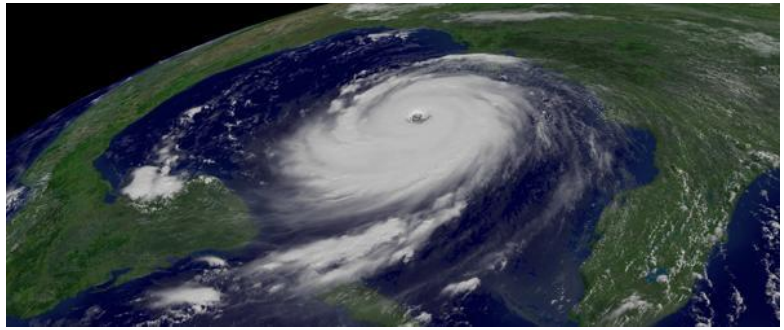
Emergency Response Program requirements (68.95):

- 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).

Prevention Program Provisions

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)).

Prevention Program Provisions

- 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.

Prevention Program Provisions

- 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.

Prevention Program Provisions

- Incident Investigations (68.60 and 68.61) cont.
  - Specified content of the investigation report – new provisions are underlined:
    - Date, <u>time, and location</u> of the incident;
    - Description of the incident, <u>in chronological order, providing all relevant facts;</u>
    - <u>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.</u>
    - <u>The consequences, if any, of the incident including, but not limited to:</u>
      - <u>Injuries;</u>
      - <u>Fatalities;</u>
      - <u>The number of people evacuated;</u>
      - <u>The number of people sheltered in place; and the impact on the environment;</u>
    - <u>Emergency response actions taken.</u>

Prevention Program Provisions

- 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


Contains Anhydrous Ammonia
1 10:37AM


TRANSFER
VESSEL


0.431” is less than
allowable thickness
.431
CONTROL
.460


Inspecting the vessel as insulation is removed. Note ammonia liquid level up to the frost line.
02/0


1 10:36AM


01-10-1016


2
01-1076-10


King Valve