



Risk Management Program

Clean Air Act 112(r)
40 CFR Part 68



Clean Air Act (CAA) 112(r) Purpose

- Prevent accidents from occurring
- Minimize consequences of accidents that do occur

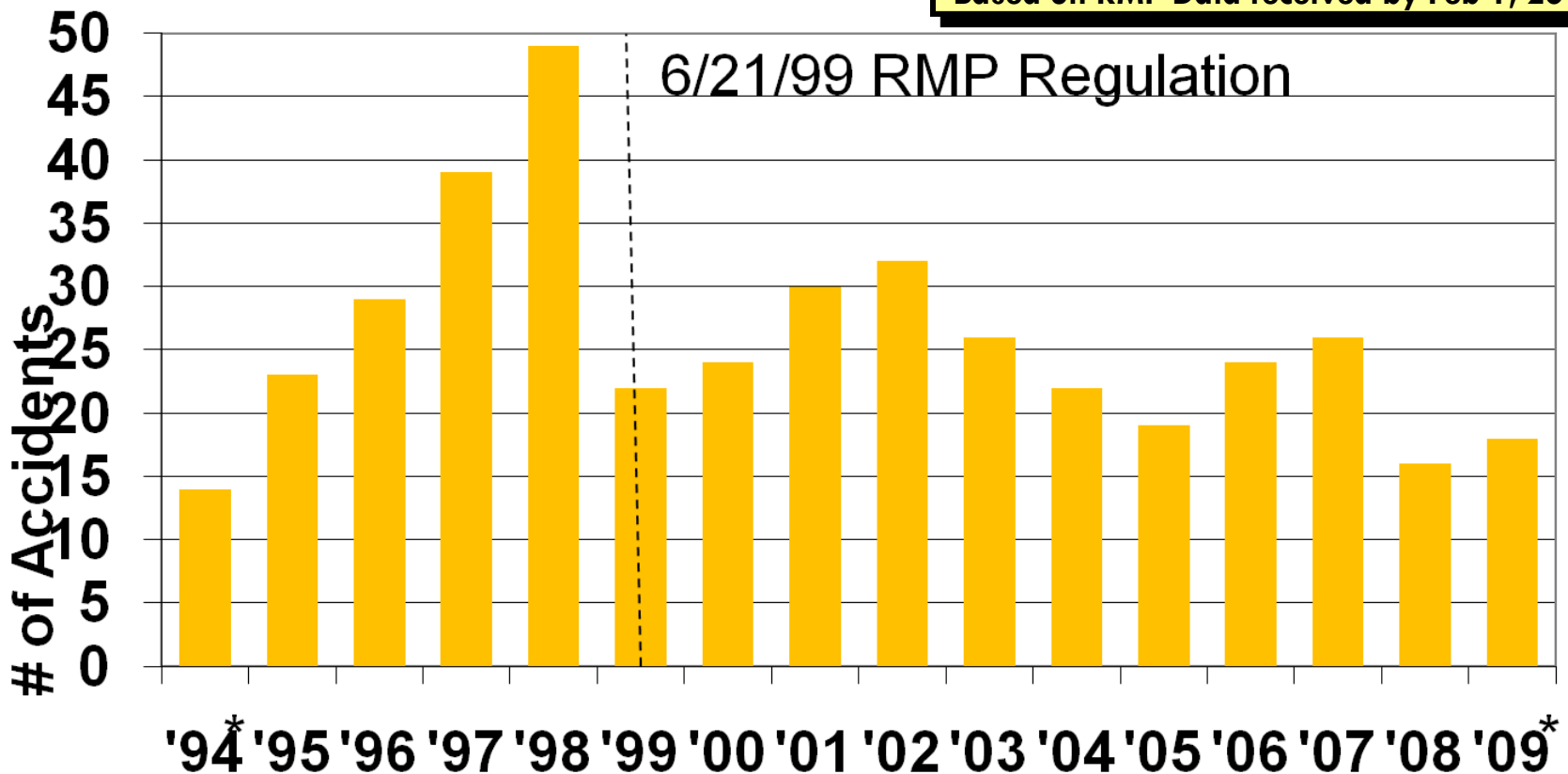




Accidents in EPA Region 7

413 Accidents

Based on RMP Data received by Feb 1, 2010



* Not a Full Year of Data



Applicability

- ❑ Does facility have a regulated chemical?
- ❑ Is quantity of chemical in any single process above specified threshold?
- ❑ What Program Level is the process?



Definitions

- **Regulated substance:** any substance listed in CAA 112(r)(3) in CFR 68.130
- **Threshold quantity:** quantity specified for a regulated substance present at a stationary source
- **Stationary source:** any structures/equipment located on one or more contiguous properties under the control of the same person(s) from which an accidental release may occur
 - ▣ Properties shall not be considered contiguous solely because of a railroad or pipeline right-of-way



Final List of Regulated Substances

- 140 substances (63 flammable, 77 toxic)
 - Toxicity
 - Ambient physical state
 - Gas
 - Liquid with vapor pressure > 10 mmHg
 - Flammability
 - NFPA 4 flammability (Flash point < 73°F; boiling point < 100°F)



Chemicals Commonly Reported at Ethanol Facilities

□ Threshold Quantities

■ Anhydrous ammonia	10,000 pounds
■ Flammable Mixture	10,000 pounds
■ Pentane / Isopentane	10,000 pounds
■ Aqueous ammonia ($\geq 20\%$)	20,000 pounds
■ Chlorine	2,500 pounds



Mixtures and Solutions

- Listed **toxic** mixtures containing $\geq 1\%$ listed toxic substance with partial pressure ≥ 10 mmHg
- Listed **flammable** mixtures containing $\geq 1\%$ listed flammable substance with mixture exceeding NFPA 4 flammability criteria
- Substances with specified concentrations
 - ▣ Nitric acid ($\geq 80\%$)
 - ▣ Hydrofluoric acid ($\geq 50\%$)
 - ▣ Hydrochloric acid ($\geq 37\%$)
 - ▣ Aqueous ammonia ($\geq 20\%$)



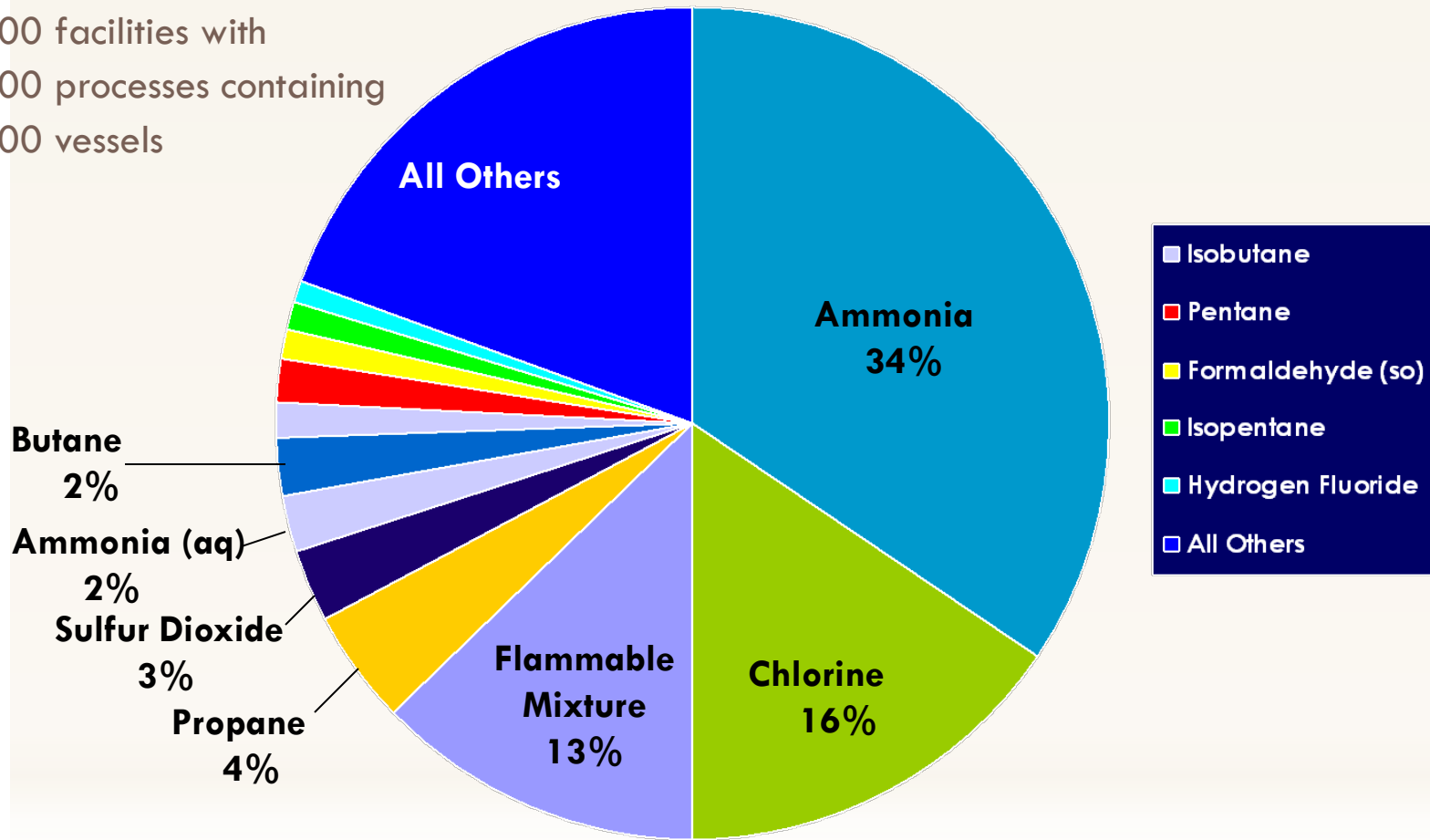
RMP Regulation Exemptions

- **Mixtures < 1% concentration (flammable and toxic)**
- Gasoline used as fuel for internal combustion engines
- **Naturally occurring hydrocarbon mixtures prior to processing**
- “Articles”
- Activities in laboratories
- Flammable substances used as fuel or held for retail sale
- Specified uses
 - As structural component of stationary source
 - For routine janitorial maintenance
 - As foods, drugs, cosmetics, or other personal items
 - In process water, non-contact cooling water, compressed air, or air used for combustion
- Outer continental shelf sources
- Anhydrous ammonia held by farmers for use as nutrient
- Transportation



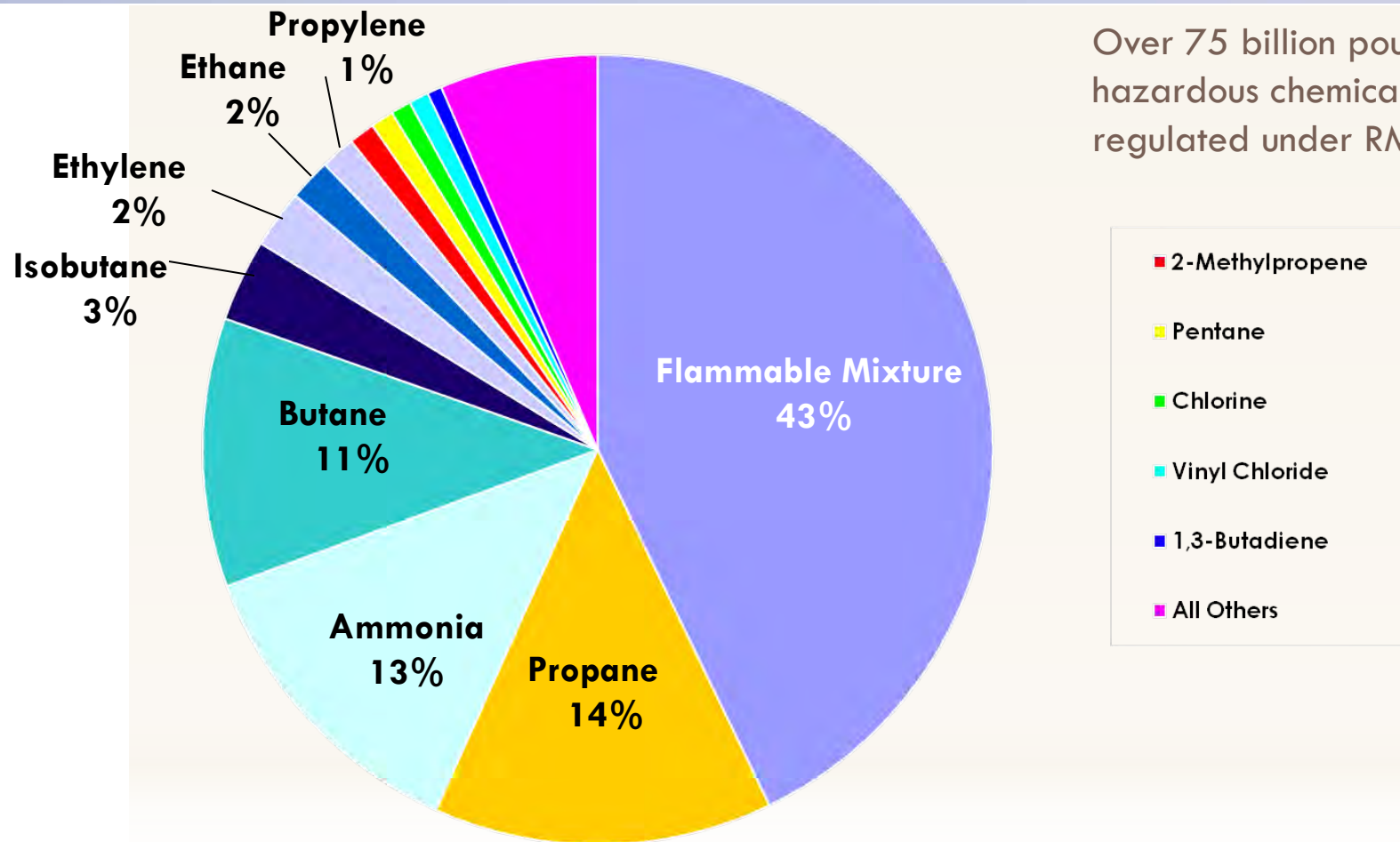
RMP Chemical Processes

~ 14,000 facilities with
~ 19,000 processes containing
~ 24,000 vessels

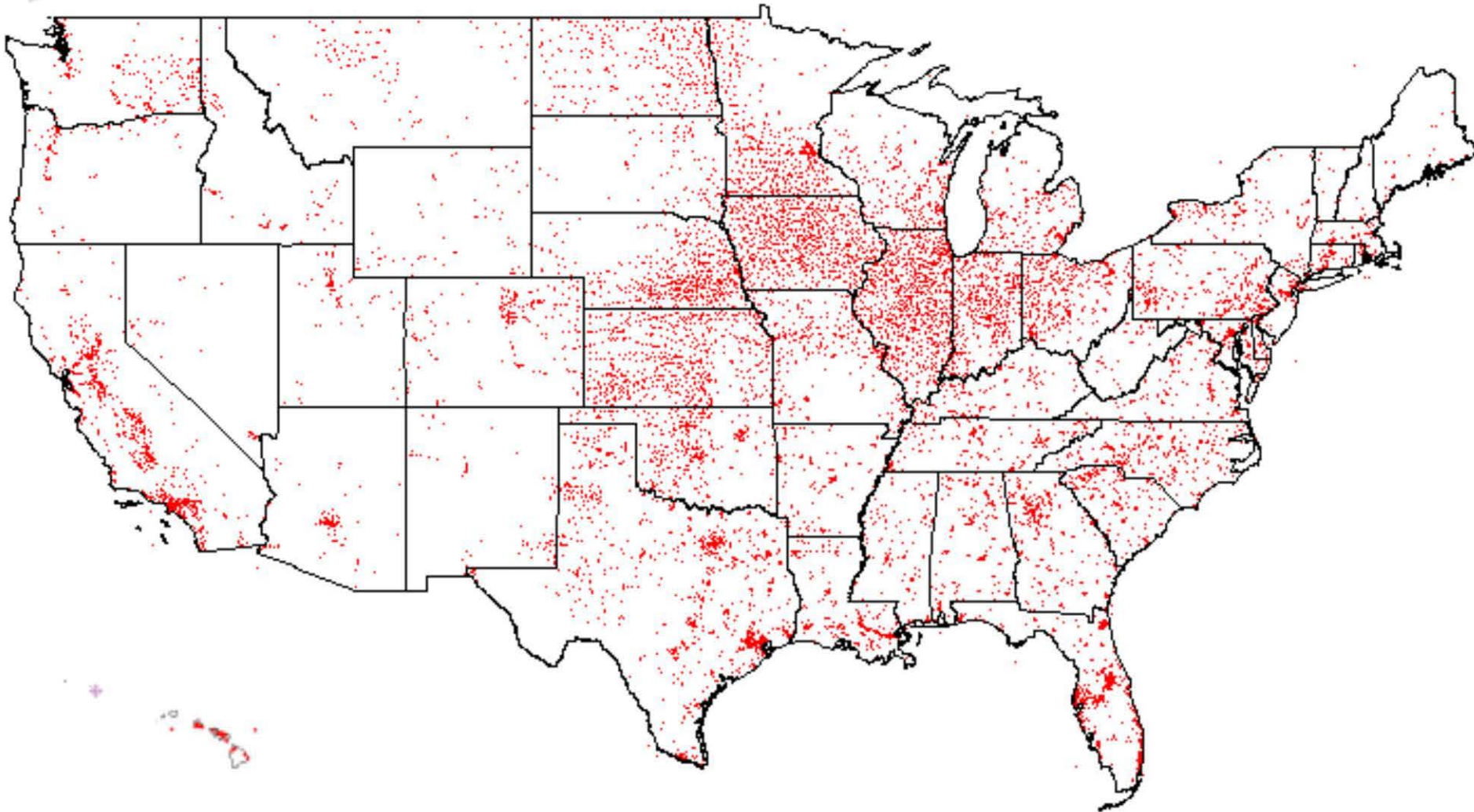




RMP Chemical Quantities



Geographic Distribution of Risk Management Plan Facilities





Definitions

- **Process:** activity involving a regulated substance
 - ▣ Any group of vessels that are interconnected or separate vessels that are located such that a regulated substance could be involved in a potential release shall be considered a single process
- **Covered process:** process that has a regulated substance present in more than a threshold quantity
- **Vessel:** any reactor, tank, drum, barrel, cylinder, vat, kettle, boiler, pipe, hose, or other container
 - ▣ Includes transportation containers disconnected from mode of power



One Process



One Process



How Many
Processes?





Program Level

- Determine Program 1, 2, or 3 and follow appropriate regulatory requirements
 - ▣ Program 1 40 CFR 68.10(b) and 68.12
 - ▣ Program 2 40 CFR 68 Subpart C
 - ▣ Program 3 40 CFR 68 Subpart D
- Ensure that individual chemical processes are subject to appropriate requirements based on the processes associated risks



Definitions

- **Distance to an endpoint:** distance toxic vapor cloud, fire, or explosion from accidental release will travel before dissipating to point that serious injuries from short-term exposures will no longer occur





Definitions

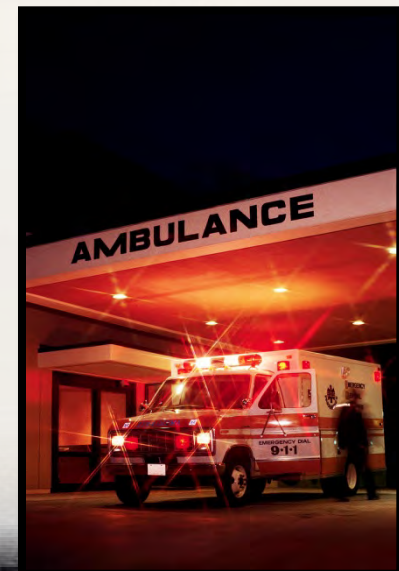
- **Environmental receptors:** natural areas such as national or state parks, forests, or monuments; officially designated wildlife sanctuaries, preserves, refuges, or areas; and Federal wilderness areas





Definitions

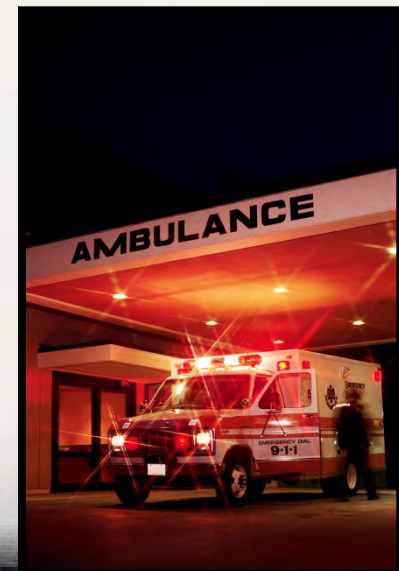
- ❑ **Public:** any person except employees or contractors of stationary source





Definitions

residences; institutions (e.g., schools, hospitals); industrial, commercial, and office buildings; parks; or recreational areas inhabited or occupied by public at any time ***without restriction*** by stationary source where members of public could be exposed to toxic concentrations, radiant heat, or overpressure as a result of accidental release





Definitions

- **Injury:** any effect on a human that results either from direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from direct consequences of vapor cloud explosion (such as flying glass, debris, and other projectiles) from accidental release
- **Offsite:** areas beyond property boundary and “areas within the property boundary to which the public has routine and unrestricted access during or outside business hours”



Applicability of Program Levels

□ Program 1 Eligibility criteria

- No public receptors in worst-case scenario zone and
- No accidents with a specified **OFF-SITE** consequence in last five years
 - Off-site: death, injury, response or restoration activity for an exposure of an environmental receptor

□ Flammable storage most common



Applicability of Program Levels

□ Program 1 Requirements

- Limited hazard assessment requirements
- Minimal prevention and emergency response requirements



Applicability of Program Levels

□ Program 3 Eligibility

- Ineligible for Program 1
- Either ***subject to OSHA PSM*** (Federal or state) or one of ten North American Industry Classification System (NAICS) codes specified in 40 CFR Part 68



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□ Usually complex chemical processes



Applicability of Program Levels

- **Ethanol Manufacturing NAICS Code = 325193**
 - Ethyl Alcohol Manufacturing is NOT one of the listed codes
- **CAA 112(r)-RMP Program Level 3 NAICS Codes**
 - 32211 Pulp mills
 - 32411 Petroleum refineries
 - 32511 Petrochemical manufacturing
 - 325181 Alkali & chlorine manufacturing
 - 325188 All other basic inorganic chemical manufacturing
 - 325192 Cyclic crude & intermediate manufacturing
 - 325199 All other basic organic chemical manufacturing
 - 325211 Plastics material & resin manufacturing
 - 325311 Nitrogenous fertilizer manufacturing
 - 32532 Pesticide & other agricultural chemical manufacturing



Applicability of Program Levels

□ Program 3 Requirements

- Imposes OSHA's PSM standard as the prevention program
- Plus, additional hazard assessment, management, and emergency response requirements



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Applicability of Program Levels

□ Program 2

▣ Eligibility Criteria

- Ineligible for Program 1 **and** not covered by Program 3

▣ Requirements

- Streamlined prevention program requirements (compared to Program 3)
- Plus, additional hazard assessment, management, and emergency response requirements (compared to Program 1)



Applicability of Program Levels

- Facilities likely to have one or more Program 2 Process(es)
 - ▣ Petroleum distillate/natural gasoline stored at atmospheric pressure and temperature
 - ▣ Aqueous ammonia with concentration greater than 20% and lower than 44%
 - ▣ Agricultural fertilizer retailer



Applicability of Program Levels

□ Key Points to Remember

- Each process is assigned to a program level, not the facility as a whole
- Any process that meets criteria for Program 1 can be assigned to Program 1, even if it is subject to OSHA PSM or is in one of the 10 NAICS codes listed for Program 3

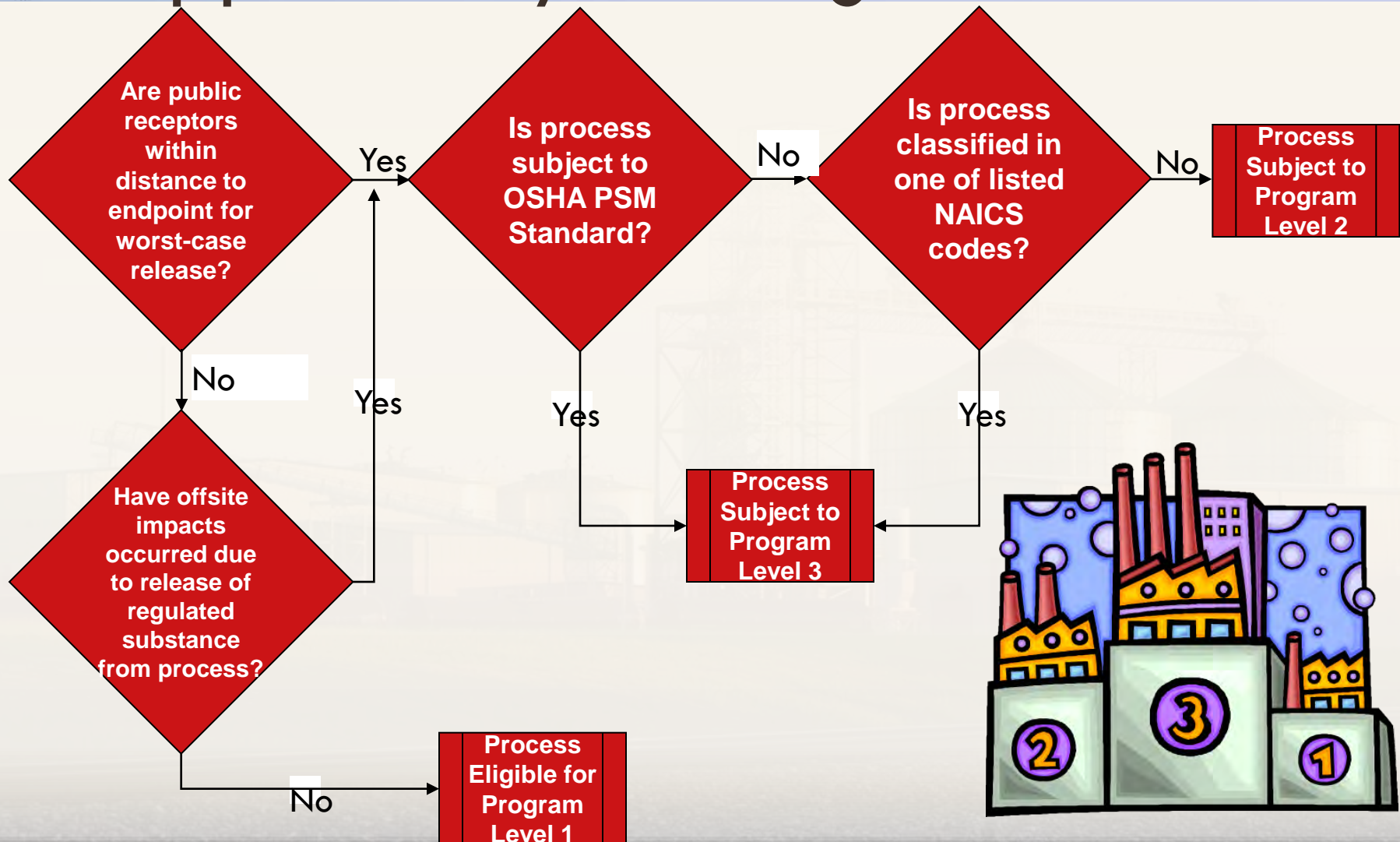


Applicability of Program Levels

□ Key Points to Remember

- Program 2 is default program level. Any process that does not meet applicability requirements for Program 1 or Program 3 is subject to requirements for Program 2
- Only one program level can apply to a process.
Highest program level that applies to any segment of process applies to all parts
- Program 1 eligibility can change

Applicability of Program Levels





Risk Management Program

- ❑ Written Hazard Assessment (All program levels)
- ❑ Written Management System (P2 & 3)
- ❑ Written and Implemented Accident Prevention Program (P2 & 3)
- ❑ Emergency Response Program (P2 & 3)
- ❑ Coordinate with Emergency Response Agencies (All program levels)
- ❑ Risk Management Plan (RMP) and Registration (All program levels)



Prevention Program

Program 2

- Safety information
- Hazard review
- Operating procedures
- Training
- Maintenance
- Compliance audits
- Incident investigation



Program 3

- Process safety information
- Process hazard analysis
- Operating procedures
- Training
- Mechanical integrity
- Compliance audits
- Incident investigation
- Pre-startup review
- Management of change
- Employee participation
- Hot work permit
- Contractor accountability



Prevention Program Requirements

40 CFR Part 68 Regulatory References			
Requirement	Level 1	Level 2	Level 3
Safety Information /Process Safety Information	N/A	68.48	68.65
Hazard Review/Process Hazard Analysis	N/A	68.50	68.67
Operating Procedures	N/A	68.52	68.69
Training	N/A	68.54	68.71
Maintenance	N/A	68.56	N/A
Mechanical Integrity	N/A	N/A	68.73
Incident Investigation	N/A	68.60	68.81
Compliance Audit	N/A	68.58	68.79
Management of Change	N/A	N/A	68.75
Pre-Startup Review	N/A	N/A	68.77
Contractors	N/A	68.54(b)	68.87
Employee Participation	N/A	68.54(b)	68.83
Hot Work Permits	N/A	N/A	68.85



Risk Management Plan Information

- ❑ Chemicals on-site
- ❑ Facility/process summary as it relates to the regulated substances
- ❑ Facility emergency contact information
- ❑ Previous accidental releases
- ❑ Worst/Alternative-case release scenarios



Common Deficiencies

□ Program Levels

- Wrong program level determination, especially Program 2 vs. Program 3 facilities in OSHA and non-OSHA delegated states

□ Program Level 1

- Proper documentation not maintained for worst-case release scenarios
- Facilities claim to have Program 1 process(es), but in fact are not eligible



Written Management System

- Owner or operator of a stationary source with processes subject to Program 2 or Program 3 shall develop a management system to oversee the implementation of the Risk Management Program elements (40 CFR 68.15(a))



Written Management System

- Owner or operator shall assign a qualified person or position that has the overall responsibility for the development, implementation, and integration of the risk management program elements. (40 CFR 68.15(b))



Written Management System

- When responsibility for implementing individual requirements of this part is assigned to persons other than the person identified under paragraph (b) of this section, the names or positions of these people shall be documented and the lines of authority defined through an organization chart or similar document. (40 CFR 68.15(c))

Common Deficiency

SAMPLE MANAGEMENT DOCUMENTATION

Position	Primary Responsibility	Changes	Responsibility re: Changes
Operations Manager	<ul style="list-style-type: none"> Oversight of operation On-the-job training On-the-job competency testing Process Safety Information Selecting participants for PHAs, incident investigations Develop management of change & pre-startup procedures Submit the RMP 	<ul style="list-style-type: none"> New Process Chemistry New Process Parameters New Procedures Change in Process Utilization 	<ul style="list-style-type: none"> Inform head of maintenance Inform lead for PHAs Inform hazmat team as needed Inform contractors
Training Supervisor	<ul style="list-style-type: none"> Develop, track, oversee operator training program Track competency testing Set up & track operator refresher training Set up training for maintenance Work with contractors 	<ul style="list-style-type: none"> New Equipment New Process Chemistry New Process Parameters New Procedures Change in Process Utilization New regulatory requirements 	<ul style="list-style-type: none"> Revise training & refresher training courses Revise maintenance courses, as needed Inform other leads of need for additional training
Maintenance Supervisor	<ul style="list-style-type: none"> Develop maintenance schedules Oversee & document maintenance Revise schedules as needed 	<ul style="list-style-type: none"> New Equipment New Process Chemistry New Process Parameters New Procedures Change in Process Utilization 	<ul style="list-style-type: none"> Inform operations manager of potential problem areas Inform training supervisor of any training revisions Inform contractors Revise schedules
Hazmat Team Chief	<ul style="list-style-type: none"> Develop & exercise ER plan Train responders Test & maintain ER equipment Coordinate with public responders Select participants in accident investigations 	<ul style="list-style-type: none"> New Equipment New Process Chemistry New Process Parameters New Procedures Change in Process Utilization New regulatory requirements 	<ul style="list-style-type: none"> Revise the ER plan as needed Inform operations manager of problems created by changes Work with training supervisor to revise training of team & others



Questions?

