



Clean Air Act (CAA) Section 112(r) Accidental Release Prevention Program



March 2011





Objectives

- Overview of U.S. Emergency Management and Accidental Release Prevention laws
- Incident Investigations
- Teamwork





Federal Regulations

- **EPCRA** - Emergency Planning and Community Right to Know Act (aka SARA Title III or EPCRA 304, 311 and 312)

- In CA, Hazardous Materials Business Plans = Tier IIs
CalEMA = SERC;
CUPA is local agency contact for release reporting.

- **CERCLA** – Comprehensive Environmental Response Compensation and Liability Act Section 103

- CERCLA 103 is a federal-only requirement.

- Clean Air Act CAA 112r Risk Management Program (**RMP**) and General Duty Clause (**GDC**)

- In CA, California Accidental Release Prevention Program (CalARPP) is parallel program to RMP.
CA has no General Duty authority under CalARPP.



Clean Air Act Amendments Accidental Release Prevention CAA 112(r) 1990



- Process Safety Management Standard – PSM (1992)
- Risk Management Program Regulation (1994-1996) and General Duty Clause
- U.S. Chemical Safety and Hazard Investigation Board – CSB (1998)



Law says.....



- Owners & operators have a general duty to:
 - Identify hazards associated with potential accidental release,
 - Design & maintain safe facility, and
 - Minimize consequences of accidental releases.



- RMP/PSM → list of chemicals/quantities & NAICS codes
- GDC → no list, quantities or codes



RMP Requirements

GDC Requirements*

- Offsite consequence analysis
- Five-year accident history
- Risk Management Plan (RMP)
- Accident prevention program
- Emergency response program

***Per Senate Report 101-228,
12/20/1989**





Senate Report 101-228 12/20/89



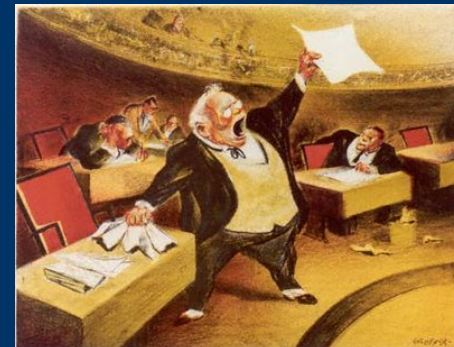
The General Duty Clause

The responsibility to prevent releases of these extremely hazardous substances is the general duty of the owners and operators of facilities producing, processing, handling or storing such substances, whether or not explicit requirements have been imposed under this section or other authorities.

Contractors = Operators

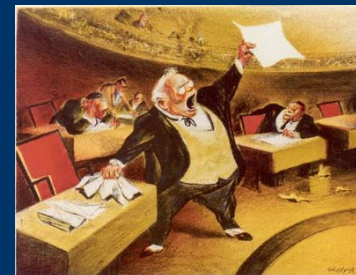
A general duty to:

- Prevent releases
- Whether or not explicit requirements imposed under any authority.





Senate Report 101-228 12/20/89

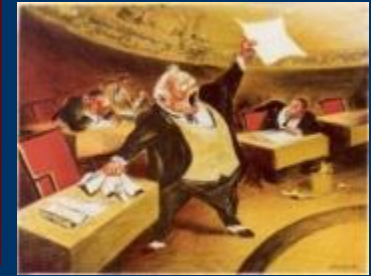


OSHA GDC case settlement cited as standard:

1. The employer failed to render its workplace free of a hazard,
2. The hazard was recognized by employer or employee,
3. Likely to cause harm, and
4. There was a feasible means by which employer could have eliminated or materially reduced the hazard.



Senate Report 101-228 12/20/89



"Awareness" may be documented by:
"Existence of an industry code or consensus standard...which is used by others operating similar facilities within the industry."

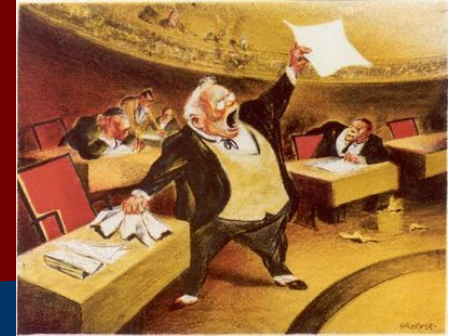


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Senate Report 101-228 12/20/89



“Feasible means” include:

- Prevention and mitigation measures to reduce likelihood or extent of a hazard onsite and off-site,
- Public warning (alert) and emergency response systems.





Prevention Program RMP and GDC



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



INCIDENT INVESTIGATIONS



Include "Near-Misses"

An Incident that:

- Could reasonably have resulted in a release
- Uncontrolled emission, fire or explosion.





Corporate Culture



- Key to success
- Avoids "finger pointing"
- Rewards solutions
- Shares findings

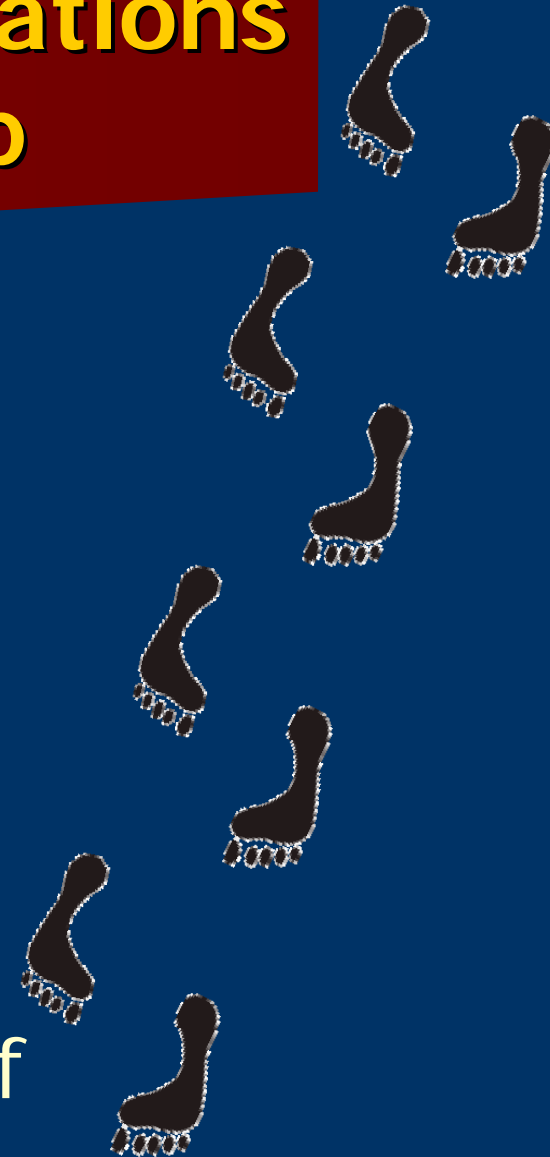
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Incident Investigations Step-by-Step

- Establish a team
- Choose a method
- Gather evidence
- Find solutions
- Update/retrain staff





Establish a Team



- At least one person knowledgeable in the process,
- A contract employee (if appropriate),
- An operator (not involved in the incident),
- Outside expert



Not a good idea...



Someone:

- Too close to the incident – might be biased
- Who feels they “know” the cause already....
- Whose schedule is too crowded already.



Choose a Method



- Accident Anatomy Method
- Causal Tree Method
- Fault Tree Analysis
- Hazard and Operability Study
- Multiple-Cause
- Systems-Oriented Incident Investigation
- TapRoot_{TM} Incident Investigation
- ThinkReliability_{TM}



Any format that works.....



- First – Define the problem (primary effect)
- Second – Create a cause-and-effect chart
- Third – Identify effective solutions
- Fourth – Implement the best solutions



Define the Problem An Example



What happened – primary effect ?

- *An explosion of a fired heater tube.*





Cause and Effect An Example



Cause	Effect
Flame impinged on tube of stagnant blocked-in liquid.	Tube over heated and ruptured.
Heater was valved in or blocked from circulating pump.	The liquid did not flow thru the heater.
Operator was not warned via protective instruments about the process problem.	Operator made an undetected error.
Necessary step was missing from calibration procedures.	Protective instruments did not show actual conditions of liquid flow.



Identify and Implement Solutions – An Example



Cause	Effect	Solution
Necessary step was missing from calibration procedure	Protective instruments did not show actual conditions of liquid flow.	<ol style="list-style-type: none">1. Rewrite procedures to include necessary information.2. Retrain all personnel involved in unit operation.3. Recalibrate.



Clear/Complete SOPs are essential.



Where to Find More Assistance and Lessons Learned?

- ❑ Industry publications, websites, workshops, etc.
- ❑ EPA Website
- ❑ Chemical Safety Board website

https://www.asmark.org/myrmp/

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Click Here to access:

[myRMP Suite of Retail Guidance Materials](#)

myRMP Suite of Retail Guidance Materials

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The Fertilizer Institute

Nourish, Replenish, Grow

The **myRMP** Suite of Retail Guidance Materials is sponsored by The Fertilizer Institute and was developed cooperatively with the Asmark Institute. This innovative new approach to industry-specific guidance is supported by U.S. EPA. This suite of compliance assistance tools has been specifically developed to provide retailers with industry-standard information to assist in the preparation and maintenance of the Risk Management Program for their facility.

Based on the past nine years of experience with RMP compliance, the task force responsible for developing **myRMP** noticed one common deficiency that prevents genuine compliance at retail locations, which is a lack of understanding and basic knowledge of the Risk Management Program rule by the facility personnel. Any performance-oriented requirement is only as good as its implementation. Accordingly, **myRMP** has been developed with a special emphasis on education and personalizing the experience and materials to a specific facility.

Please note that additional information may be required to supplement the information provided based upon the specific circumstances found at each facility. Management or supervisors who are in direct contact with, and responsible for, a group of employees are essential to effective implementation of the provisions of the Risk Management Program.

myRMP Suite of Retail Guidance Materials includes the following features for assisting with the compliance of Program 2 Risk Management Plans. Please select from the following links.

- **Risk Management Program Guidance for Retail Agricultural Facilities**
- **Tutorial and Personalized Written Operating Procedures**
- **RMP Maintenance Manual Online**
- **RMP Hazard Review Form and Instructions**
- **RMP Compliance Audit Form and Instructions**
- **Incident Investigation Form and Instructions**



[EPA Letter of Support](#)

Quick Link!
Master List of Resources



U.S. CHEMICAL SAFETY BOARD

An independent federal agency investigating chemical accidents to protect workers, the public, and the environment.

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Deadly Practices
February 03, 2011
Dangers of intentionally releasing natural gas into work areas.
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**Animation of Bayer CropScience Pesticide
Water Tank Explosion**
January 20, 2011
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RECENT NEWS RELEASES

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CSB Continues Investigation of Fatal Fire at Horganama Corporation Located Outside of Nashville, Tennessee

Final Budget Justification FY 2012

CSB Chairperson Moussé-Escaó Encourages Adoption of Legislation to Permanently Ban Gas Blows in Connecticut

CSB Releases New Safety Video on One Year Anniversary of Klean Energy: "Deadly Practices" Focuses on Conchs and Klean Energy Explosions to Show Hazards of Gas Releases

CRITICAL ACCIDENTS IN THE NEWS

Technician Cory Rogers at the L...

March 12, 2011 (The Southern Worker killed in explosion at NC power plant: Officials say an explosion at a coal-fired power plant in North Carolina has killed one worker. Progress Energy Inc. says the explosion Tuesday morning killed 60-year-old technician Cory Rogers at the L...

March 12, 2011 (The Southern Worker killed in explosion at NC power plant: N.C. (AP) — Officials say an explosion at a coal-fired power plant in North Carolina has killed one worker. Progress...

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WELCOME TO THE CSB

The CSB is an independent federal agency charged with investigating industrial chemical accidents. Headquartered in Washington, DC, the agency's board members are appointed by the President and confirmed by the Senate. [Learn More About Us](#)



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PHOTOS



<http://www.csb.gov>

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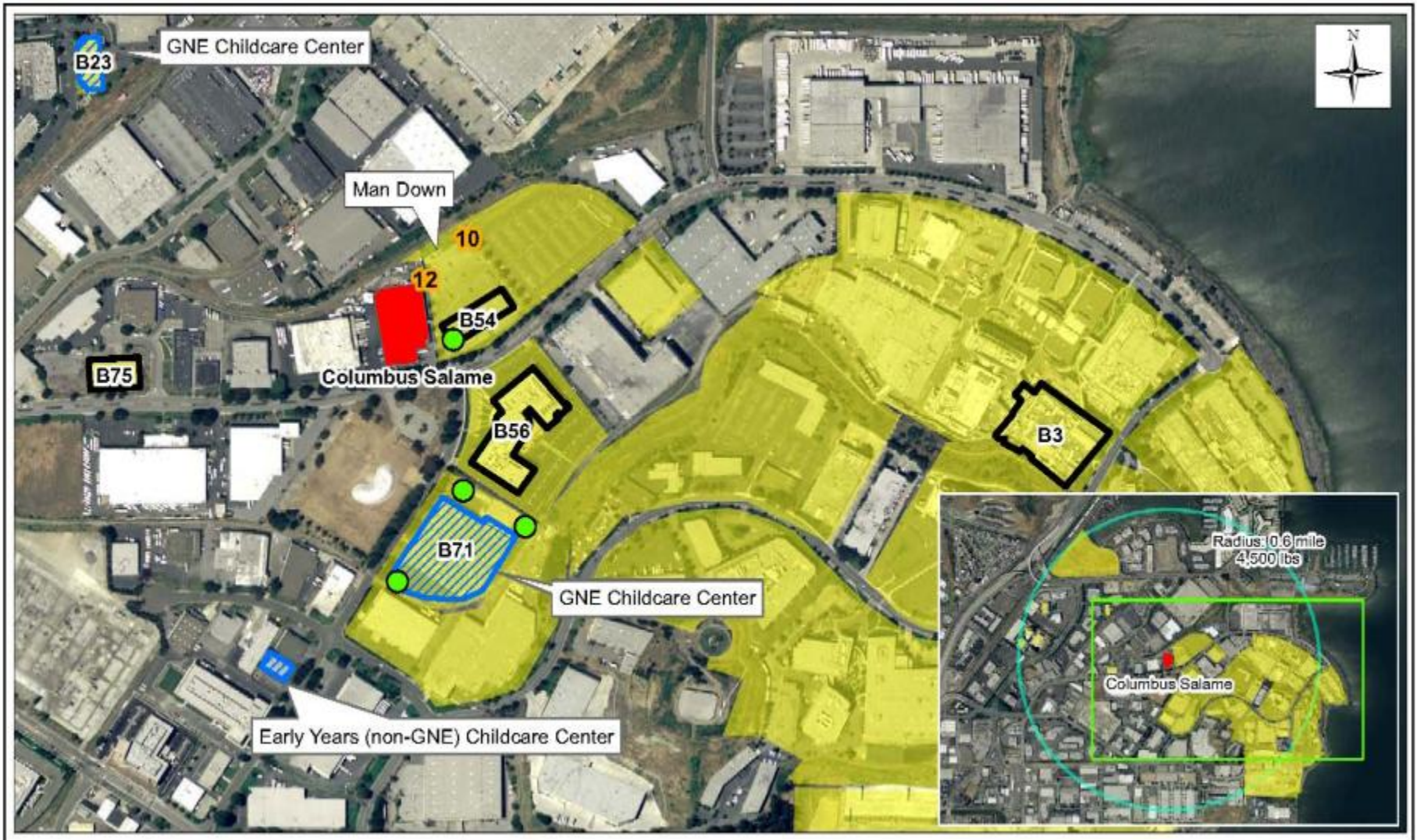


US EPA R9 Emphasis on Teamwork



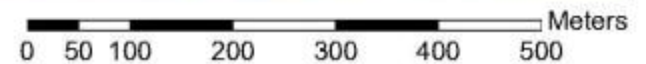
- State and Local Agencies
- Other EPA Regions
- Industry professional associations
- Industry training organizations
- Other federal agencies
- International organizations

Case in Point – Columbus Manufacturing



Legend

- Genentech Campus
- Genentech Buildings
- Childcare Centers
- Columbus Salame
- RMP Worst Case Impact Area (4,500 lb)
- Monitor Locations
- #10 Camera
- #12 Camera



ENVIRON



Columbus Manufacturing NH₃ Releases

- February and August '09 NH₄ releases
- Injury to 30 people, 17 hospitalized
- Shelter-in-place for day care and others
- Late reporting of release to NRC and State
- Result of serious engineering and procedural flaws





GDC Administrative Order CAA §113(a)(b)(3)

- Failed to follow industry standards & practices
 - Inadequate maintenance on PRVs
 - Inadequate line labeling / valve tagging
 - Use of incompatible materials





Consent Order Requirements

- Comply with IIAR Bull 110 re: NH₃ system O&M, training, PRV replacement, etc.
- Inspect system and replace components made with incompatible materials per ANSI K61.1
- Inspect system and perform appropriate maintenance on all components showing visible signs of corrosion



Consent Order Requirements (cont.)

- Make fixes to and get County sign off on revisions to failed valve group
- Institute ESD controls
- Perform and submit feasibility study re: improved community-wide notification in event of releases
- Perform and submit feasibility study re: enclosing or re-locating indoors the rooftop NH₃ components



Coordination with County

- Joint inspection with 2 counties at 3 facilities
- Facility paid County large penalty to settle case.
- EPA required facility to get County sign off on mitigation measures and resolution of issues.





Teamwork!!!!



Industry

Responders



Community



Local

State

Federal

