

# Emergency Planning Regulatory Framework: An overview of State/Federal Requirements and Best Practices for Business and Industry Chemical Users

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# Why Are We Here?



West, Texas – Fertilizer explosion, 15 dead



# This can't happen here?



Danvers, MA

# Yes, climate change impacts





# Contamination of waterways in a flood zone



# Relevant Federal Requirements

- EPCRA and SARA Title III
- RCRA
- Oil Pollution Prevention Act (SPCC)
- CFATS – Chemical Facility Anti-Terrorism Standard
- CAA – Risk management Program
- OSHA – Process Safety Management Standard
- MA Hazardous Materials Processing Regulation
- Emergency Preparedness

# EPCRA – Emergency Planning & Community Right-to-Know

- Public's right to information about potential chemical hazards and to plan to prevent hazardous events
- Requires facilities storing hazardous materials >10,000 lbs Threshold Planning Quantities (TPQ) to file annual Tier II reports with local emergency responders.
- Lower thresholds (e.g. 100-500 lbs.) for extremely hazardous substances (EHSs – chlorine, AA, HF)
- EHS facilities must work with LEPC & FD to develop emergency response plan and to support and participate in LEPC/REPC.
- Broad authority to LEPC/FD to request information to support local planning effort.



# RCRA – Resource Conservation & Recovery Act

- Safe management, cradle-to-grave to prevent Superfund Sites
- Contingency plans shared with emergency responders
- LQGs are required to develop a Contingency Plan and share it with local emergency responders.
- LQGs are required to work with local responders to develop a site pre-plan.
- SQGs are encouraged to develop a Contingency Plan and share it with emergency responders.

# Contingency Plans

- Actions facility personnel will take to minimize hazards
- Arrangements with emergency responders
- Designated emergency coordinator contact info
- List of emergency response and cleanup equipment
- Evacuation plan for facility personnel

# Oil Pollution Prevention Act

- Facilities storing >1320 gallons of petroleum on site are required to develop a Spill Control & Countermeasures Plan (SPCC Plan)
- Regulated sites must initiate control measures to prevent the release of petroleum.
- Site must identify and train response staff.
- Site must identify off site resources to provide spill response when needed.
- Site is required to conduct monthly inspections.

# Chemical Facility Anti-Terrorism Standard

- Facilities storing specific materials above planning threshold are required to report and screen their facility for risk using Homeland Security protocol.
- For Chemicals of Interest (e.g. anhydrous ammonia, chlorine, propane) at sufficient quantities, facilities need: Security Vulnerability Assessments, Site Security Plans.
- Facilities deemed a risk may have to complete more in depth screening or may be inspected by Homeland Security.



# Clean Air Act – Risk Management Program

- Goal is to protect communities from accidental releases of air toxics
- Facilities that store respiratory toxins (e.g. chlorine, AA) above planning thresholds must prepare RMP plan.
- RMP plan will include a comprehensive review of the facility, identify control or mitigation measures, requires preparation of a worst case and realistic release scenario.
- Prevention program includes training.
- Emergency response program: emergency health care, procedures for informing public and fire department.
- These facilities can pose major risks, impacting square miles.

# OSHA – Process Safety Management Standard

- Facilities that store or use specific flammable or toxic materials on site usually >10,000 lbs are required to develop a PSM plan.
- Requires facility to conduct comprehensive hazard analysis and to initiate controls measures to mitigate the risk posed by site operations.
- Process Hazard Analysis (consequences of control failure as hazard to employees) – checklist/what if/fault tree.
- These sites should coordinate with local responders to develop a training and response plan.
- Written plans of procedures for all phases – start-up to emergency.

# OSHA Emergency Standard (for protection of employees)

- Means of egress
- Emergency Action Plans
- PSM
- Hazardous waste operations and emergency response (HAZWOPER)
- Personal Protective Equipment
- Confined Space
- Lock-out/Tag-out
- Fire protection
- Medical services/first aid

# Integrated Contingency Plan (the “One Plan”)

- National Response Team Guidance for creating ONE plan that satisfies nine Federal regulations from five Federal agencies
- Voluntary and not a substitute for each agency’s approval





# Chemical Safety Board says RMP and PSM are out of date

- RMP should include reactive chemicals, high/low explosives, ammonium nitrate as regulated substances
- Enhance development and reporting of worst case and alternate release scenarios
- Add new prevention program requirements: automated monitoring; contractor oversight; public disclosure of info.

# CSB says PSM should

- Include oil and gas sector and reactive chemicals
- Provide stop work authority to employees
- Update existing Process Hazard Analysis to include inherently safer systems, hierarchy of controls, damage mechanism hazard reviews, sufficient and adequate safeguards
- Develop requirements for facility/process siting and human factors
- Require coordination of facility emergency plans with local ER authorities.
- Permit third-party compliance audits

# CSB recommends also...

- Preventive maintenance
  - Inadequate mechanical integrity programs; delayed preventive maintenance; aging infrastructure & equipment at chem. plants
- Emergency planning and response
  - Training for emergency responders, including hazmat training
  - Local emergency planning and community response plans and teams
  - Use of community notification systems
  - Use of incident command system
  - Conducting ER exercises
  - Information sharing between facilities, emergency responders and community
  - Communication during emergencies

# MA Hazardous Materials Processing Standard

- In response to 3 chemical explosions (Danvers, Middleton, Leominster)
- For processors, not just “storers”
- Most businesses using hazardous materials are now required to provide process information to local responders & obtain a permit from the FD (5 categories by type and volume).
- This standard applies OSHA PSM type requirements on facilities having tanks/containers with a volume of 300 gals.
- Broad authority to FD to seek information for planning.
- Requires facilities to work with FD to develop ER plan.
- Document process information (e.g. safety relief valves), facility suitability for the process (building codes, etc.), and good work practices.



# These Municipal Facilities Are Often Subject to these Regulations

- Highway garage
- Drinking water plants
- Wastewater plants
- Ice rinks
- Municipal pools
- Motor pool / fleet operations
- Grounds / field maintenance
- Airports
- Port Authorities

# Goals for Pre-Planning

- Identify and address historic problem areas.
- Identify and plan for likely scenarios
- Collect and organize the info you would need if these events occur.



# Things to Consider

- Process or system upset
- Structural failure
- Transportation release
- Problems caused by loss of power or water
- External impacts
- Potential for run away reactions
- Weather induced problems
- Issues causing greater concern during a fire

# Focus on the essential

- Focus on what you can manage.
- Work through scenarios for 3 most likely problems.
- Inspect, maintain, repair or upgrade your equipment.
- Develop procedures and train staff to support effort.
- Review, practice and update procedures (Drills work!)

# Coordinating with Emergency Responders

- Invite the fire department to tour your facility.
- Share your Contingency Plan
  - Make a pre-plan
- Review high hazard/critical processes or storage areas.
  - Label, photograph the areas
- Do you need specialized medical support?
  - Cyanides, HF, others?
- Consider a drill

# Prepare a Pre-Plan

- Identify critical do's and don't's
- Establish incident command and notification procedures.
- Identify safety controls to be maintained.
- Plan for 3 likely potential problems.
- Identify potential external impacts – develop notification or response procedures
- Train staff
- Review plan with emergency responders.

# Critical Questions

Does an explosion risk exist at the facility?	YES
Could the facility release a respiratory hazard that could threaten site workers, emergency responders or neighbors?	YES
Is it okay to shut the power off during an event?	NO
Is it okay to shut the water off during an event	NO
Is it okay to shut the gas off during an event?	YES
Can a run-away reaction/process occur?*	YES

**\*If so, describe how:** Failure of safety equipment could result in a continuous release of flammable adhesives from coating units. A loss of cooling water to the mixing tanks in the south side of the building could result in a runaway exothermic reaction, resulting in a fire.

**Describe special hazards identified above:** The site contains large quantities of flammable adhesives and liquid solvents, including three 3,000-gallon and two 4,500-

# Process Description & Scenarios

## **Coatings, Inc. Emergency Plan Summary**

gallon underground storage tank. The facility also contains an 11,000 gallon liquid nitrogen tank, which is used to supply nitrogen gas to the coating units. A leak from the nitrogen piping located within the facility could result in suffocating atmospheres. If the solvent recovery system is shut down inappropriately, an explosive atmosphere could develop inside the coating lines. The facility is equipped with a natural gas-powered emergency generator, however emergency responders should first confirm with Coatings, Inc. staff that it is safe to shut off power to the facility if needed. If the water to the facility is cut without first ensuring the mixing tanks have been shutdown, the contents of the mixing tanks could overheat and ignite.

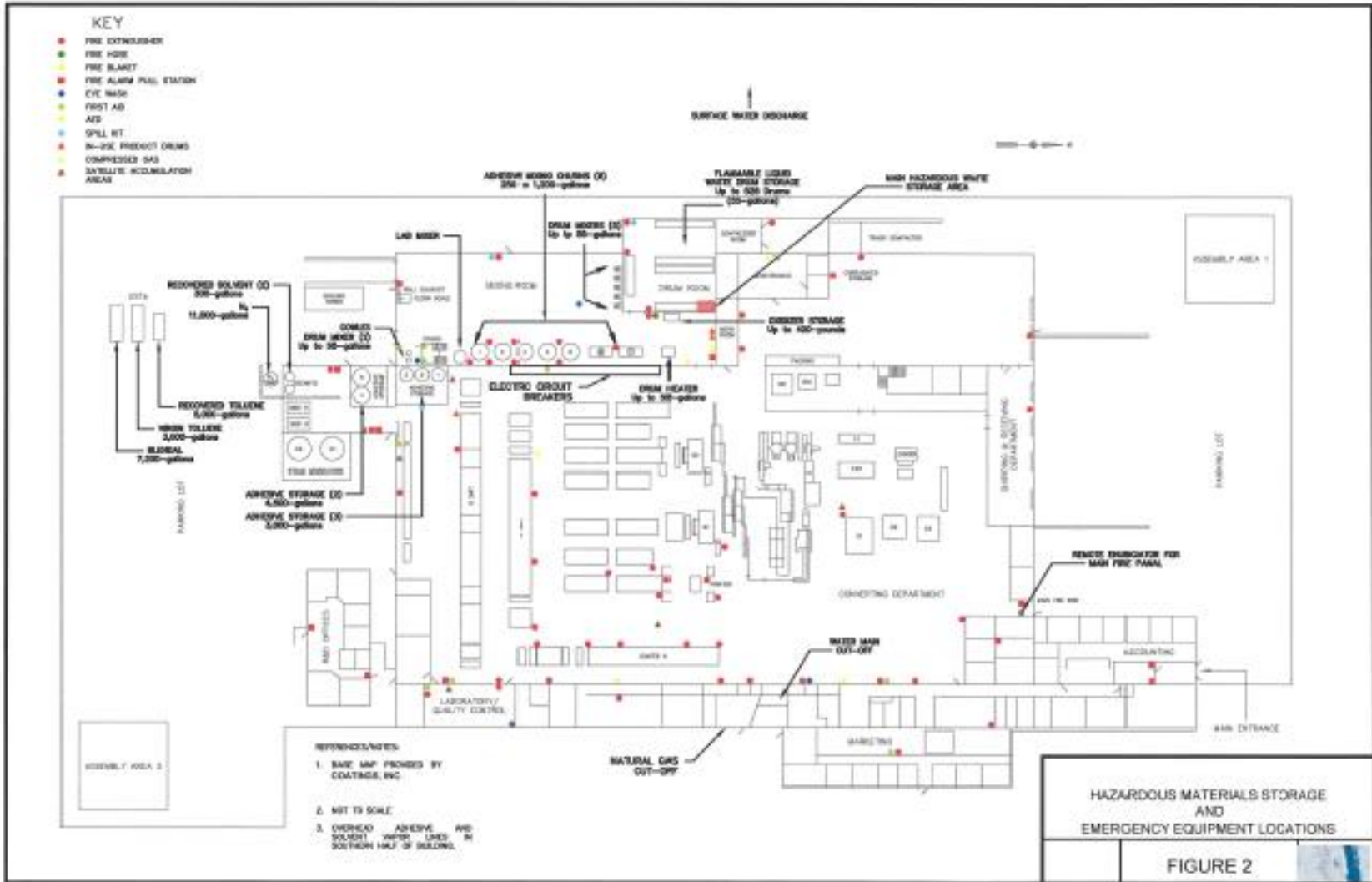
### **Worst-case scenarios that could occur involving hazardous materials stored on site:**

<b>Scenario</b>	<b>Negative Outcome</b>	<b>Location</b>
Atmospheric controls within coating units fails.	Explosion	Eastern and southern sections of the process floor.
Uncontrolled fire in Drum or AST Bulk Storage Rooms.	Potential for devastating fire. Due to administrative controls in the drum storage room (blow-out walls and skylights), an explosion in the AST Bulk Storage Room has the potential to be more structurally damaging than an explosion in the Drum Storage Room.	Western side of the building.
Loss of cooling water to the mixing tanks while in operation	Mixing tanks overheat and contents ignite	Mixing Room on the southwest side of the building

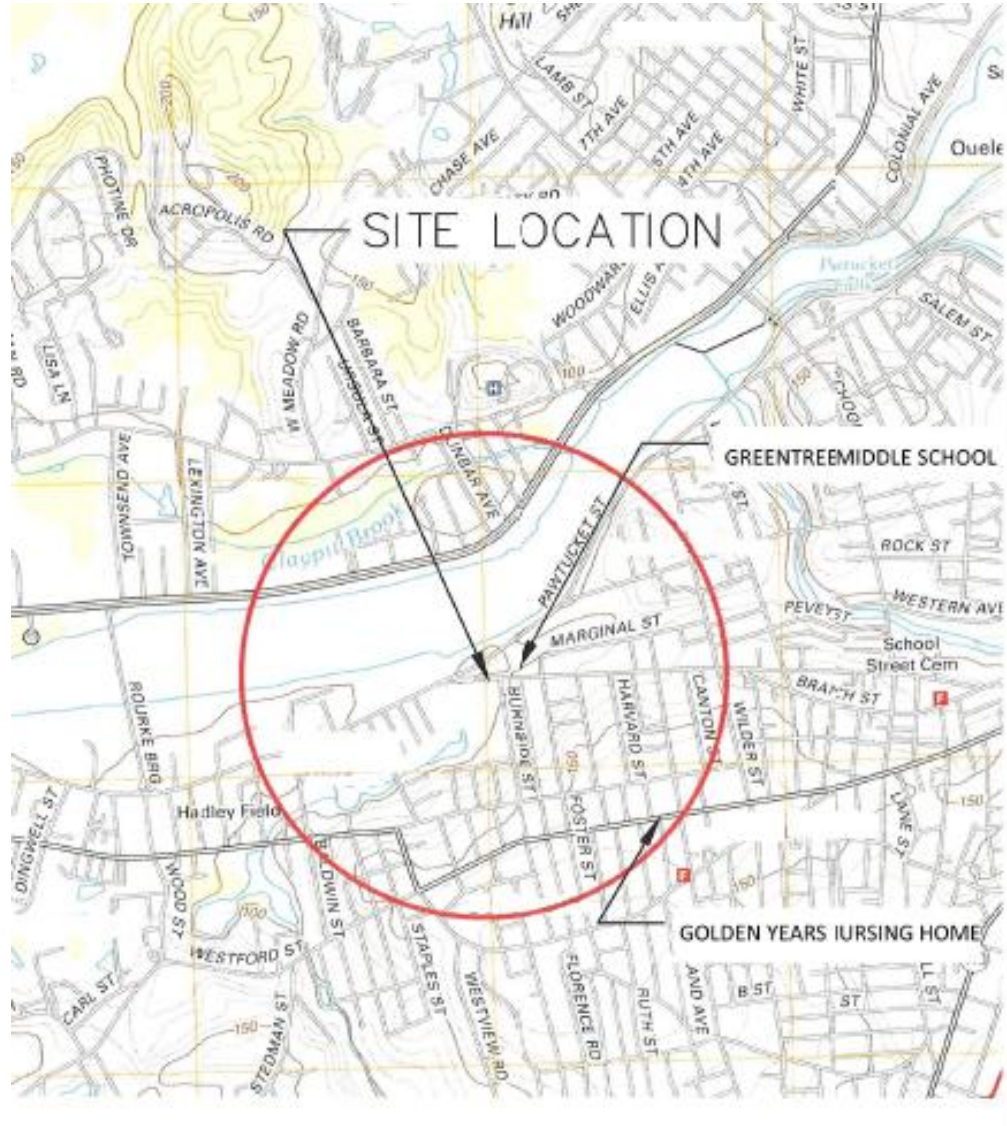
See attached facility map, which includes the locations of hazardous materials, locations of process equipment, locations of emergency response equipment, and locations of Process Stop switches and buttons.



# Plant Schematic Map



# Site Location



# CORE ELEMENTS OF THE RECOMMENDED PRACTICES FOR SAFETY AND HEALTH PROGRAMS IN CONSTRUCTION

## MANAGEMENT LEADERSHIP

- Top management demonstrates its commitment to eliminating hazards and to continuously improving workplace safety and health, communicates that commitment to workers, and sets program expectations and responsibilities.
- Managers at all levels make safety and health a core organizational value, establish safety and health goals and objectives, provide adequate resources and support for the program, and set a good example.

## WORKER PARTICIPATION

- Workers and their representatives are involved in all aspects of the program—including setting goals, identifying and reporting hazards, investigating incidents, and tracking progress.
- All workers, including contractors and temporary workers, understand their roles and responsibilities under the program and what they need to do to effectively carry them out.
- Workers are encouraged and have means to communicate openly with management and to report safety and health concerns or suggest improvements, without fear of retaliation.
- Any potential barriers or obstacles to worker participation in the program (for example, language, lack of information, or disincentives) are removed or addressed.

## HAZARD IDENTIFICATION AND ASSESSMENT

- Procedures are put in place to continually identify workplace hazards and evaluate risks.
- Safety and health hazards from routine, nonroutine, and emergency situations are identified and assessed.
- An initial assessment of existing hazards, exposures, and control measures is followed by periodic inspections and reassessments, to identify new hazards.
- Any incidents are investigated with the goal of identifying the root causes.
- Identified hazards are prioritized for control.

## HAZARD PREVENTION AND CONTROL

- Employers and workers cooperate to identify and select methods for eliminating, preventing, or controlling workplace hazards.
- Controls are selected according to a hierarchy that uses engineering solutions first, followed by safe work practices, administrative controls, and finally personal protective equipment (PPE).
- A plan is developed that ensures controls are implemented, interim protection is provided, progress is tracked, and the effectiveness of controls is verified.

## EDUCATION AND TRAINING

- All workers are trained to understand how the program works and how to carry out the responsibilities assigned to them under the program.
- Employers, managers, and supervisors receive training on safety concepts and their responsibility for protecting workers' rights and responding to workers' reports and concerns.
- All workers are trained to recognize workplace hazards and to understand the control measures that have been implemented.

## PROGRAM EVALUATION AND IMPROVEMENT

- Control measures are periodically evaluated for effectiveness.
- Processes are established to monitor program performance, verify program implementation, and identify program shortcomings and opportunities for improvement.
- Necessary actions are taken to improve the program and overall safety and health performance.

## COMMUNICATION AND COORDINATION FOR EMPLOYERS ON MULTIEmployer WORKSITES

- General contractors, contractors, and staffing agencies commit to providing the same level of safety and health protection to all employees.
- General contractors, contractors, subcontractors, and staffing agencies communicate the hazards present at the worksite and the hazards that work of contract workers may create on site.
- General contractors establish specifications and qualifications for contractors and staffing agencies.
- Prior to beginning work, general contractors, contractors, and staffing agencies coordinate on work planning and scheduling to identify and resolve any conflicts that could impact safety or health.

# Core elements of safety & health program recommended practices (OSHA)

- Management leadership
- Worker participation
- Hazard identification and assessment
- Hazard prevention and control
- Education and training
- Program Evaluation and improvement
- Communication and coordination for host employers, contractors, and staffing agencies.

# 10 easy things to get started on a safety program

1. Set safety & health as a top priority
2. Lead by example
3. Implement a reporting system
4. Provide training
5. Conduct inspections
6. Collect hazard control ideas
7. Implement hazard controls
8. Address emergencies
9. Seek input on workplace changes
10. Make improvements

# Effective spill control program (OSHA HAZWOPER)

- Management commitment and employee involvement
- Worksite analysis
  - Baseline worksite surveys; review of processes, materials, equipment; routine JHA; site inspections; communications
- Hazard prevention and control
- Training

# Questions ?

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# A shameless plug for safety training with The New England Consortium

- 40-hour HAZWOPER
- 24-hour emergency responder
- Safety planning for supervisors and managers
- Disaster preparedness
- OSHA 10-hour construction safety
- Confined Space Entry, Rescue, Awareness
- Work Zone Safety
- Hazard Assessment, Mapping and Incident Investigation
- 8-hour HAZWOPER/ER Refresher
- Incident Command
- Infectious Disease Preparedness