Accident Prevention and Risk Management

National Ammonia Safety Day

June 13, 2019
Chemical Accidents Happened

1984
Bhopal, India

1985
Institute, W. Virginia

Congressional Hearings
Click to watch video "EPCRA Jim Makris on Bhopal Accident"
Resulting Federal Laws

1986: Worker
Occupational Safety and Health Administration (OSHA)
Hazard Communication Standard
29 CFR 1910.1200

1986: Community
EPA Superfund Amendments and Reauthorization Act (SARA) – SARA Title III or the Emergency Planning and Community Right-to-Know Act (EPCRA)

1990: Clean Air Act Amendments of 1990
- General Duty Clause
- OSHA Process Safety Management (PSM) – 1992
- EPA Risk Management Program [Section 112(r)] – 1994-96
- U.S. Chemical Safety and Hazard Investigation Board (CSB) – 1998
Requirements Under CAA 112(r)

The Clean Air Act applies to ALL ammonia refrigeration facilities

Less than 10,000 pounds
General Duty Requirements
CAA 112(r)(1)

10,000 pounds or more
Risk Management Program Requirements
CAA 112(r)(7)
Are You an Inspection Candidate?

YES, but you’re more likely to be visited if the facility...

• Has accidents or releases, especially where:
  ▪ Several people need treatment or someone dies
  ▪ Public is impacted
  ▪ Significant off-site environmental impacts
  ▪ The accident is reported in the news

• Missed a five-year RMP submittal update
• Has > 10,000 lbs. ammonia and no RMP
• Deregistered, but appears active
What to Expect During an Inspection

- Arrival
- Opening Conference
- Document Review
- Facility Walk-Through
- Inspector takes time to make preliminary findings
- Closing Conference

*Advanced notification* of inspection is *not required.*
Recent Inspection Findings

- Emergency shower is not working
- Shower is poorly located
- No external emergency shower, or external shower is not located per NFPA standards
- Egress doors open the wrong direction
- “Manual override” that defeats the purpose of safety equipment
Location of Safety Shower, Debris
Missing Ventilation Control Switch
Added Ventilation Control Switch
Door Opens Inward to Machinery Room
Dead Man Valve Tied Open
Maintenance of Equipment

• Equipment/piping has ice
• Insulation not intact
• Paint not intact
• Equipment access and debris
Ice on Piping/Valves by Accumulator
Ice on High-Pressure Receiver
Entire Oil Pot Iced Over
Missing Paint, Rust Developed
Rust on Compressor
Rust on Oil Pot, Peeling Paint
Rust, Peeling Paint, Water & Grass
Ventilation Louvers Blocked
Follow-Through on Action Items

Problems are identified during Process Hazard Analysis (PHAs) or Compliance Audits (CAs) but:
- Action items are not developed
- Action items are not completed
- Schedule has unreasonable time frames

Helpful Resource: EPA’s Risk Management Program Inspection Checklist for Program 3 Processes
Documentation

• Program 3 requires documentation of testing and maintenance activities
General Duty Clause

- Identify hazards that may result in releases, using appropriate hazard assessment techniques
- Design and maintain a safe facility, taking steps to prevent releases
- Minimize consequences of accidental releases that do occur
- Coordinate with local emergency responders

- Facility must follow Recognized and Generally Accepted Good Engineering Practices (RAGAGEP)
Accidents in Refrigeration Systems

Region 7 RMP Facilities and Accidents

% of Facilities as of 3/20/19
% of Accidents: 5-year average

<table>
<thead>
<tr>
<th>Industry</th>
<th>% of Facilities</th>
<th>% of Accidents</th>
</tr>
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<tbody>
<tr>
<td>Agriculture</td>
<td>73%</td>
<td>47%</td>
</tr>
<tr>
<td>Chemical Manufacturing</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Energy</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>12%</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Water &amp; Wastewater</td>
<td>3%</td>
<td>3%</td>
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</tbody>
</table>
EPCRA 304 Release
- Reportable Quantity
  - 100 lbs for ammonia
- Call Local Emergency Planning Committee (LEPC) and State Emergency Response Commission (SERC)
- Within 15 minutes

CERCLA 103 Release
- Reportable Quantity
  - 100 lbs for ammonia
- Call National Response Center (NRC)
- Within 15 minutes

CAA 112(r)(7) Accident
- No reportable quantity
- Involves regulated substance from covered process resulting in specific consequences
- Consequences:
  - Deaths, injuries, hospitalization, property damage
  - Off-site shelter-in-place, evacuation, environmental damage
- Update RMP within 6 months

CAA 112(r)(7) Incident Investigation
- Any incident that resulted in or had the potential to result in a catastrophic release. Could include:
  - EPCRA/CERCLA reportable releases
  - RMP reportable accidents
  - Event where nothing was released
- Determine causes and complete follow-up to prevent recurrence
- Start within 48 hours
Initial Reports of Accidental Releases

When asked the quantity, if the person making the report says...

“Unknown”

or

“100 pounds”

Know that these are not “placeholder” values, but that first responders may follow up to see if the emergency warrants their response.

**Do yourself a favor:** If you truly do not know, speak to general magnitude. Is the release from the High Pressure Receiver and you are in danger of losing the entire system’s contents? Is the leak in an isolated section of piping that holds a small quantity?
Planning for Disasters

Flooding

Severe Weather

Fire
Resources for Disaster Planning

Flood Maps from the Federal Emergency Management Agency (FEMA)
https://msc.fema.gov/portal/home
Local Emergency Planning Committees

- Established under EPCRA
- Conduct emergency planning efforts for the jurisdiction (typically county, but may be multi-county)
- Stewards of information the public has a “right to know”

Charged with:
- Preparing chemical emergency response plan
- Reviewing plan annually or more frequently as necessary
- Coordinating responses to emergency releases
- Serving as a focal point in the community for providing information and holding discussions about chemical risks in the community
- Establishing procedures for processing public information requests
- Conduct at least one exercise per year
LEPCs

Comprised of:
- Elected state and local officials
- Law enforcement
- Civil defense
- Transportation
- Broadcast & print media
- Hospital
- Fire fighters
- First aid
- Local environmental
- Health
- Community groups
- Facility owners and/or operators
Click to watch "EPCRA William Reilly Remarks"
Coordinating with Emergency Responders

- Make sure they know what chemical(s) are on site, the hazards of the chemicals/process, and anything special about handling them or encountering them in an emergency.

- Invite responders to drills, even if you are a responding facility.

- Have joint exercises.
Click to watch "EPCRA Local Emergency Planning Committees (LEPCs) Qualities"
Join Your LEPC

- Provide insight on the chemicals that first responders and emergency personnel may encounter, and the types of chemical-related injuries hospital staff may need to treat
- Better coordination between facility personnel and responders
- Build relationships within the community
Facilities Enhance Local Emergency Planning

- More comprehensive outreach to the public
- Safer for first responders
- Better planning to prevent chemical accidents, including reducing inventories of chemicals; reducing shipments or adjusting transportation routes away from vulnerable populations; and working with adjacent chemical facilities to reduce the potential for “domino” effects from a chemical accident
Best Practices

Planning and Zoning

• Help educate and inform your local planning and zoning commission about your industry

• Reduce likelihood of zoning residential or vulnerable populations in close proximity to industrial areas

Community Right-to-Know

• Maintain connections within the community
  ▪ Help citizens know that industry cares about their well-being and the environment

• Business and good community and environmental stewardship are not mutually exclusive!
R7 LEPC Conference

August 8-10, 2019
Omaha, Nebraska
Half-Day Training Classes
Two Days of Breakouts
Networking and Learn from Others
Sessions Include:

Training (4-hour)
• HAZMAT Awareness
• Chemistry Refresher
• Exercise

Breakouts
• Hazards Associated with Anhydrous Ammonia (GCAP)
• How LEPCs can use RMP and Tier II Data to Plan and Prepare (EPA)
• LEPC Networking
• Developing Your LEPC Exercise (Missouri Emergency Response Commission)
• Lessons Learned from Accidents at Chemical Facilities (U.S. Chemical Safety Board)
• Working with Your LEPC to Protect Your Neighbors (Two Rivers Cooperative)
• DHS Infrastructure Security Division – Information Sharing and Voluntary Resources (U.S. Department of Homeland Security)
STAY IN THE KNOW!

EMERGENCY PREPAREDNESS NEWSLETTER

Subscribe by emailing R7PreparednessNewsletter@epa.gov with the subject “Add Me to Newsletter List.” This newsletter is sent to LEPC members through their state’s SERC coordinator.
Risk Management Program
National Compliance Initiative (NCI)

• Began October 2016 - September 2019; proposed to continue for FY2020-2023
• Greater emphasis on outreach, compliance, and enforcement
• Ammonia refrigeration one of the priority sectors

Resources for Compliance

• List of Online Resources for Ammonia Refrigeration Facilities

• Refrigeration Manual

• List of Important Safety Standards
## Resources: Chemical Accident Prevention

### State Coordinators

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<thead>
<tr>
<th>State</th>
<th>Coordinator</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
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<td>Krystal Stotts</td>
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<td>(913) 551-7013</td>
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Coordinators provide compliance assistance for industry and assist Local Emergency Planning Committees (LEPCs) and State Emergency Response Commission (SERC) on Clean Air Act 112(r) and EPCRA.
Resources: Other Region 7 Federal Contacts

Department of Homeland Security
Chemical Facility Anti-Terrorism Standards (CFATS)

Rodney Lockett
Chief of Regulatory Compliance, Region VII
Cybersecurity and Infrastructure Security Agency
(202) 841-2065 or rodney.lockett@hq.dhs.gov

Department of Labor (DOL)/Occupational Safety and Health Administration (OSHA)

Angela Irwin
Regional Industrial Hygienist
OSHA Region VII Regional Office, Enforcement Programs
(816) 502-9023 or Irwin.Angela@dol.gov
Resources

- EPA EPCRA website: [www.epa.gov/epcra](http://www.epa.gov/epcra)
- EPA Risk Management Program website: [www.epa.gov/rmp](http://www.epa.gov/rmp)
- EPA Emergency Response website: [www.epa.gov/emergency-response](http://www.epa.gov/emergency-response)
- The Right-to-Know Network website: [www.rtk.net](http://www.rtk.net)

Your Presenter:

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