



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 $\geq 10,000$ 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



Safety Shower Non-Operational



Location of Safety Shower, Debris



Missing Ventilation Control Switch



ENGINE ROOM EMERGENCY
VENTILATION CONTROL SWITCH
← AUTO / ON →

Added Ventilation Control Switch



AM
CAUTION
EYE
PROTECTION
IN THE

NOT
RESTRICTED
AUTHORITY
PERSONNEL

REFRIGERATION
MACHINERY ROOM
VENTILATION
EMERGENCY USE
ONLY

REFRIGERATION
MACHINERY
ROOM
EMERGENCY USE ONLY

CAUTION
EYE AND EAR
PROTECTION REQUIRED
IN THIS AREA

CAUTION
AMMONIA
R-717



AMMONIA
1005

DANGER
Alarm - Entry by
Authorized Personnel Only
Amber - With Gas Mask
Red - Responders with SCBA

WARNING



Door Opens Inward to Machinery Room

A photograph of industrial equipment, likely a dead man valve, with a yellow circle highlighting a specific component. The equipment is mounted on a metal frame. A white cylindrical tank is visible in the foreground. A blue bucket is on the ground in the lower foreground. A blue thermos and a metal can are on the metal frame. A chain-link fence is in the background. The text "Dead Man Valve Tied Open" is overlaid on the image.

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



Ice on Piping/Valve/Gages



Entire Oil Pot Iced Over



Missing Paint, Rust Developed



Peeling Paint, Rust



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

Facility/Process: _____



REGION 7 U.S. ENVIRONMENTAL PROTECTION AGENCY CHECKLIST FOR RISK MANAGEMENT INVESTIGATIONS OR AUDITS*

At Program 3 Stationary Sources

Under Title 40 C.F.R. Part 68 - Chemical Accident Prevention Provisions

*The purpose of the reviews are different, but the information needs are similar.

Instructions. For each question answer by checking Yes (Y), No (N), or Not Applicable (NA). Each question is paraphrased from the regulation and the cite given. For every point of clarification or incident of violation list the evidence supporting it in the comment field. (For example, employee interview and name). This document is divided into the Subparts and sections of the regulation -40 CFR Part 68. If a section does not apply to the subject source, indicate so and proceed to the next section. Certain sections may be used more than once, depending on the number of processes at the source.

GENERAL FACILITY INFORMATION

1. Facility Name:	
2. Mailing Address (Street, City, State, Zip):	
3. Physical Address or location description (Street, City, State, Zip):	
4. Latitude: Longitude: Where Taken:	
5. County:	
6. RMP Number: FRS Number:	
7. Facility Contact:	
8. Facility Contact Phone No.	
9. Facility Contact E-mail:	
10. Website (optional):	
11. List and Describe all Covered Processes and indicate which are being inspected/audited:	

Arrive: _____ Leave: _____ Arrive: _____ Leave: _____



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)

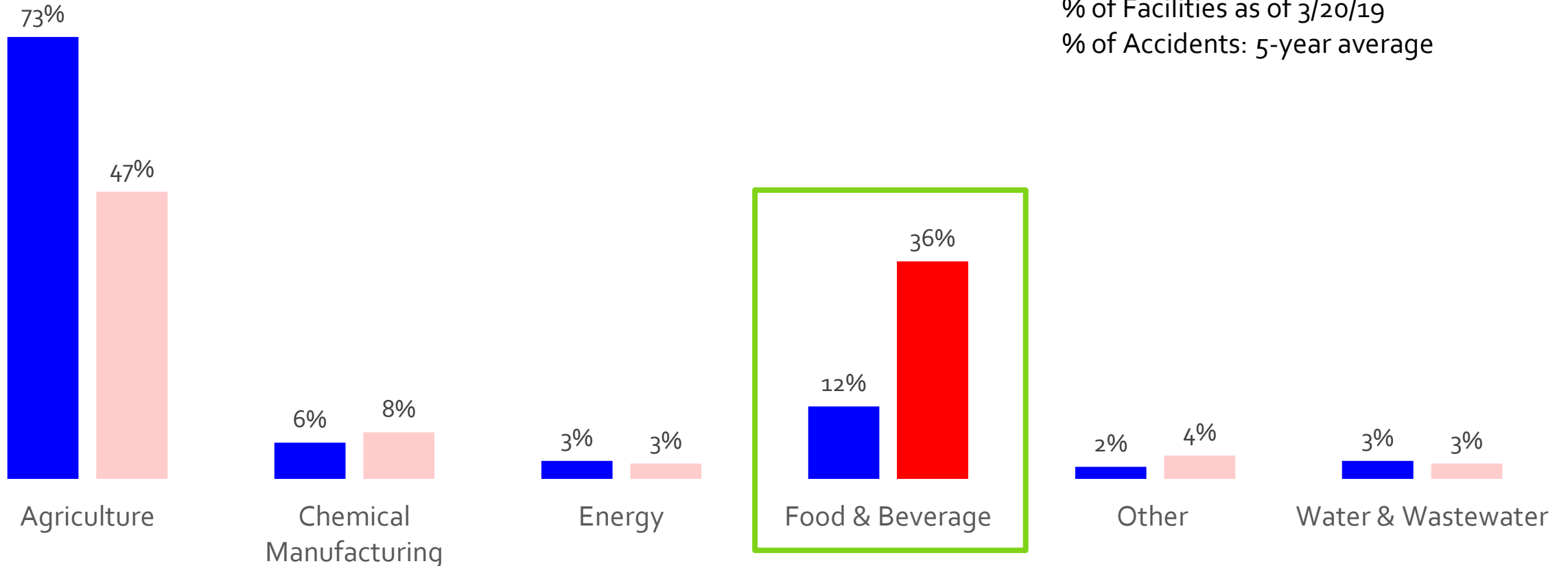


Accidents in Refrigeration Systems

Region 7 RMP Facilities and Accidents

■ % of Facilities ■ % of Accidents

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





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>



[Click to watch video "Caught in the Storm: Extreme Weather Hazards"](#)



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

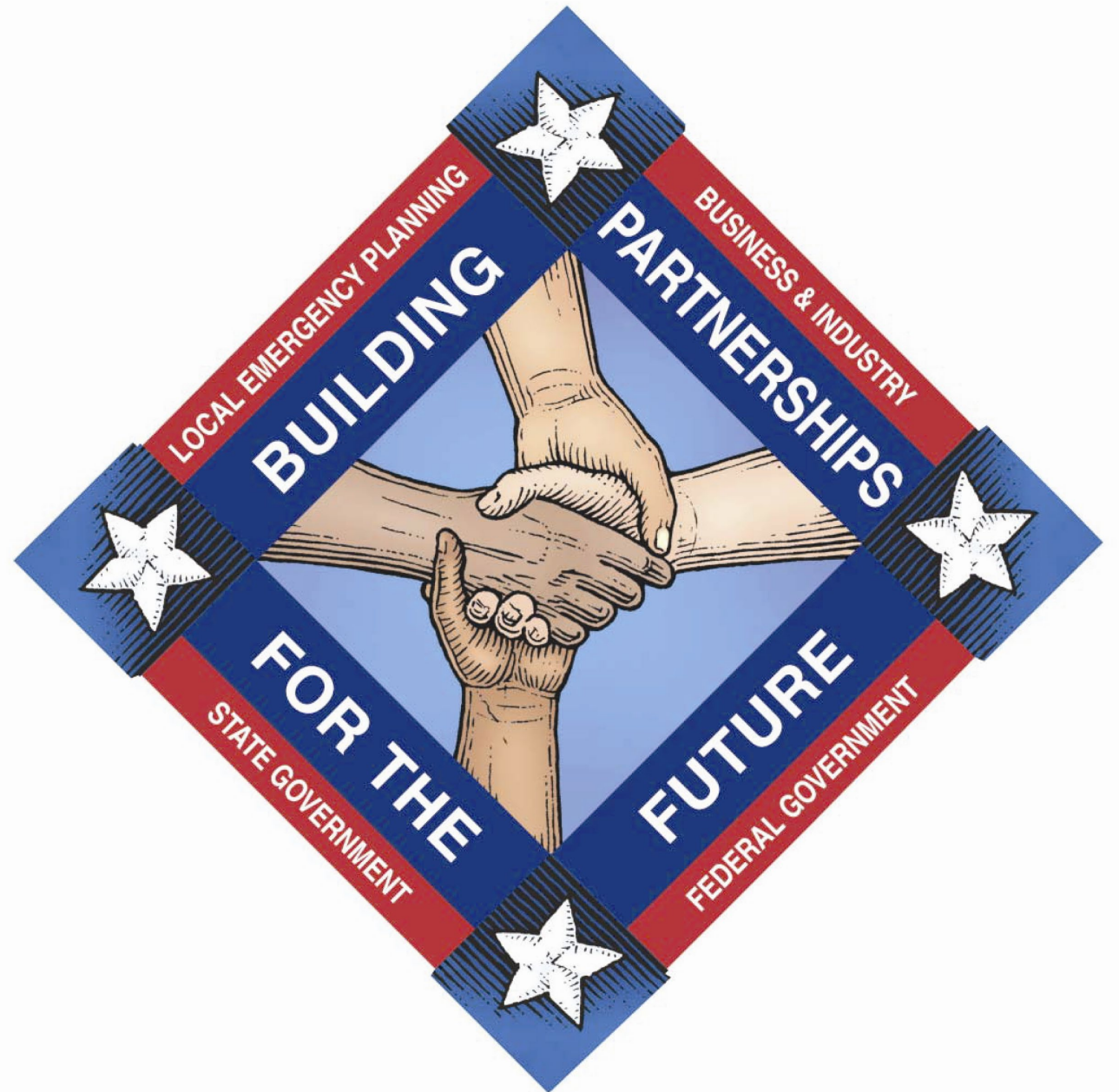
August 8-10, 2019

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)



Participants and presenters from the Mid-America LEPC CFATS Training

U.S. Environmental Protection Agency, Region 7
Iowa, Kansas, Missouri, Nebraska and Nine Tribal Nations



Emergency Preparedness Newsletter

March 2019

Volume 4

LEPC Spotlight

Mid-America LEPC Provides Training on CFATS

On August 16, 2018, the Mid-America LEPC, in conjunction with the U.S. Department of Homeland Security (DHS), hosted a regional workshop addressing



tools and resources provided by federal agencies to the private sector, which are intended to enhance safety and security

- Provide a way for private sector partners who work with chemicals or operate production facilities to learn about regional threats that planners and first responders must consider

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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

www.epa.gov/enforcement/national-compliance-initiative-reducing-accidental-releases-industrial-and-chemical



Resources for Compliance

- List of Online Resources for Ammonia Refrigeration Facilities

www.epa.gov/sites/production/files/2017-11/documents/complianceassistance-ammoniarefrigerationsector0617.pdf

- Refrigeration Manual

www.epa.gov/rmp/accident-prevention-and-response-manual-anhydrous-ammonia-refrigeration-system-operators

- List of Important Safety Standards

www.epa.gov/sites/production/files/2018-05/documents/listofkeymeasurements.pdf



Resources: Chemical Accident Prevention State Coordinators

State	Coordinator	Email	Phone
Iowa	Krystal Stotts	stotts.krystal@epa.gov	(913) 551-7946
Kansas	Jodi Harper	harper.jodi@epa.gov	(913) 551-7483
Missouri	Dave Hensley	hensley.dave@epa.gov	(913) 551-7768
Nebraska	Terri Blunk	blunk.terri@epa.gov	(913) 551-7013

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
- EPA Risk Management Program website: www.epa.gov/rmp
- EPA Emergency Response website: www.epa.gov/emergency-response
- The Right-to-Know Network website: www.rtk.net

Your Presenter:

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