EPA Region 1 Chemical Warehouses and Distribution Facilities

Len Wallace and Janet Bowen

EPA Region 1

Anhydrous Ammonia

- Highly efficient refrigerant, but with some dangerous properties
  - Toxic
  - Highly corrosive
  - Flammable at certain concentrations in air
- Deemed an extremely hazardous substance by Congress
- Anhydrous ammonia releases at facilities have resulted in **property damage, injuries, hospitalizations, and several deaths.**

Source: US EPA Region 7

Source: Len Wallace, US EPA

CAMEO Chemicals: Regulatory Page for Ammonia

Regulatory Information

What is this information?

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112 (r) RMP TQ
Ammonia	7664-41-7	500 pounds	100 pounds	100 pounds			
Ammonia (anhydrous)	7664-41-7	500 pounds	100 pounds	100 pounds	X		10000 pounds
Ammonia (conc 20% or greater)	7664-41-7			see ammonium hydroxide	X		20000 pounds
Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	7664-41-7				313		

"X" indicates that this is a second name for an EPCRA section 313 chemical already included on this consolidated list. May also indicate that the same chemical with the same CAS number appears on another list with a different chemical name.

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

		RELEASE			THEFT			SABOTAGE		
Chemical of Interest	CAS Number	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue
Ammonia (anhydrous)	7664-41-7	1.00 %	10000 pounds	toxic						
Ammonia (conc. 20% or greater)	7664-41-7	20.00 %	20000 pounds	toxic						

(DHS, 2007)

OSHA Process Safety Management (PSM) Standard List

Chemical Name	CAS Number	Threshold Quantity (TQ)
Ammonia solutions (>44% ammonia by weight)	7664-41-7	15000 pounds
Ammonia, Anhydrous	7664-41-7	10000 pounds

(OSHA, 2011)

https://cameochemicals.noaa.gov/

Common Compliance Issues

Common Issues

- Identifying Hazards
- Operating Activities
- Maintenance/Mechanical Integrity
- Emergency Actions
- Consider Risks from Climate Change

Identifying Hazards

Safety deficiencies or releases resulting from

- Failure to identify hazards in design or operation of system
- Failure to complete a process hazard analysis (PHA)

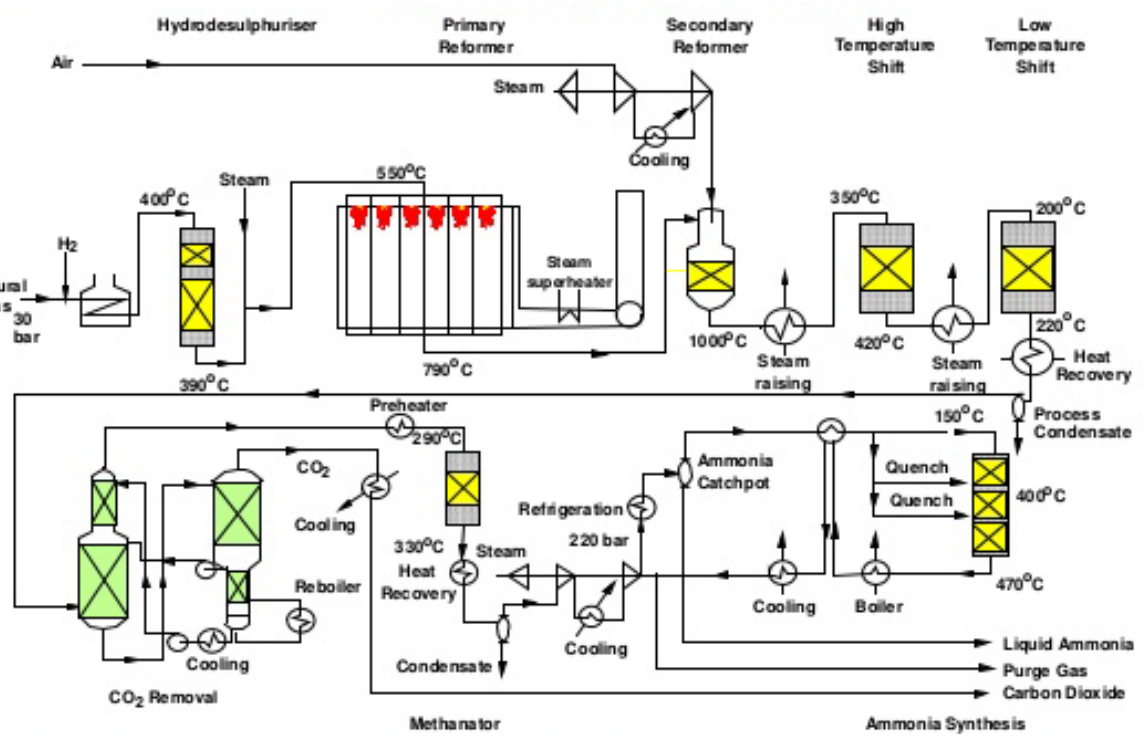
What if	Hazard	Consequences	Safeguards	Recommendations	Target and Actual dates for completion	Completed by
Drain valve open/leaking on lowest vessel	Potential release of ammonia from leak point	Significant volume of ammonia release into engine room	Log vessel operating parameters every 4 hours. Ammonia alarm starts ventilation fans	Ensure operator monthly checks that caps and plugs are placed on system and protected from damage	First check on July 15, 2015	John Smith
Manual valve closed in pump discharge line	Potential for high pump discharge pressures	Over pressurize system, which could lead to ammonia release in engine room	Pressure regulator (vented back to ultra-low vessel) is in pump discharge line. Logs of pressure every 4 hours	Consider providing a PRV on the discharge of pump	September 23, 2015	Jane Doe
Pump stops (due to mechanical failure or low level switch)	Less of ammonia flow to evaporators	No safety or environmental consequences (operation issue)	Preventative maintenance program and operator attention during ammonia system operations	No recommendations	N/A	N/A

EXAMPLE

Source: US EPA Region 7

Have Information Available About the System to Identify Hazards

- Block flow/process flow diagram
- SDS sheet
- Equipment list with design info. such as max. design pressure and capacity
- Desired operating ranges
- Ventilation system capacity
- Industry standards



Source: US EPA Region 7

Prevent Release from Operating Activities

- Facility should have written operating procedures, emergency procedures and maintenance procedures.

- Inadequate secondary containment for chemicals to contain spills or leaks.

Source: Len Wallace, US EPA

Maintenance/Mechanical Integrity

- Storage of flammable chemicals in buildings that are not structurally appropriate for such chemicals or that are not equipped with proper fire protection.

- Failure to periodically inspect tank systems and ensure their integrity.

Source: Len Wallace, US EPA

Corrosion

Unstable

Unstable

Inadequate aisle space, hindering access by facility staff or emergency responders in the event of an accidental release.

Source: Len Wallace, US EPA

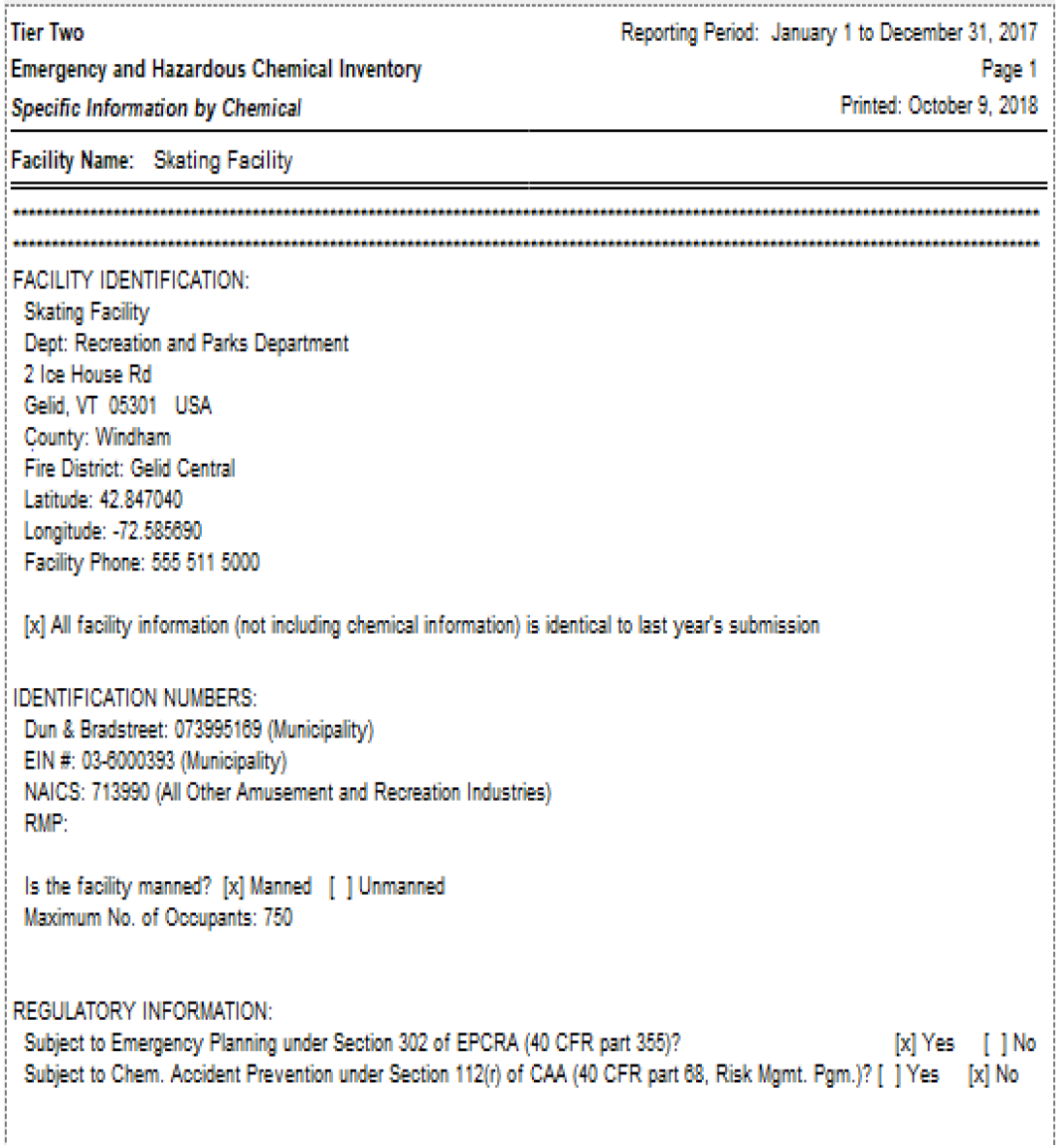
Inadequate aisle space, hindering access by facility staff or emergency responders in the event of an accidental release.

Emergency Actions

- **Emergency plan(s) located so responders can find and use.**

- **Up-to date EPCRA Tier II reports submitted to**
  - **Fire department**
  - **Local Emergency Planning Committees (LEPCs) and Tribal Emergency Planning Committees (TEPCs)**
  - **State Emergency Response Commission (SERCs) and Tribal Emergency Response Commissions (TERCs)**

Common Issue: Failure to submit a Tier II form, Safety Data Sheet (SDS), or TRI Form R, in violation of EPCRA



Tier Two
Reporting Period: January 1 to December 31, 2017
Emergency and Hazardous Chemical Inventory
Page 1
Specific Information by Chemical
Printed: October 9, 2018

Facility Name: Skating Facility

FACILITY IDENTIFICATION:
Skating Facility
Dept: Recreation and Parks Department
2 Ice House Rd
Gelid, VT 05301 USA
County: Windham
Fire District: Gelid Central
Latitude: 42.847040
Longitude: -72.585690
Facility Phone: 555 511 5000

[x] All facility information (not including chemical information) is identical to last year's submission

IDENTIFICATION NUMBERS:
Dun & Bradstreet: 073995169 (Municipality)
EIN #: 03-6000393 (Municipality)
NAICS: 713990 (All Other Amusement and Recreation Industries)
RMP:

Is the facility manned? [x] Manned [ ] Unmanned
Maximum No. of Occupants: 750

REGULATORY INFORMATION:
Subject to Emergency Planning under Section 302 of EPCRA (40 CFR part 355)? [x] Yes [ ] No
Subject to Chem. Accident Prevention under Section 112(r) of CAA (40 CFR part 68, Risk Mgmt. Pgm.)? [ ] Yes [x] No

Source: Len Wallace, US EPA

Lack of attention to solutions or mixtures leads to incorrect calculation of threshold quantities for reporting

Section 3. Composition / Information on Ingredients

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration (%)
Acetic acid	64-19-7	10 - 11
Peroxyacetic acid	79-21-0	5 – 6
Hydrogen peroxide	7722-84-1	21 - 23
Water	7732-18-5	Balance

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Ethaneperoxoic acid	79-21-0	500 pounds	500 pounds		X		10000 pounds
Peracetic acid	79-21-0	500 pounds	500 pounds		313		10000 pounds

"X" indicates that this is a second name for an EPCRA section 313 chemical already included on this consolidated list. May also indicate that the same chemical with the same CAS number appears on another list with a different chemical name.

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

		RELEASE			THEFT			SABOTAGE		
Chemical of Interest	CAS Number	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue
Peracetic acid; [Ethaneperoxic acid]	79-21-0	1.00 %	10000 pounds	flammable						

(DHS, 2007)

OSHA Process Safety Management (PSM) Standard List

Chemical Name	CAS Number	Threshold Quantity (TQ)
Peracetic Acid (concentration >60% Acetic Acid; also called Peroxyacetic Acid)	79-21-0	1000 pounds
Peroxyacetic Acid (concentration >60% Acetic Acid; also called Peracetic Acid)	79-21-0	1000 pounds

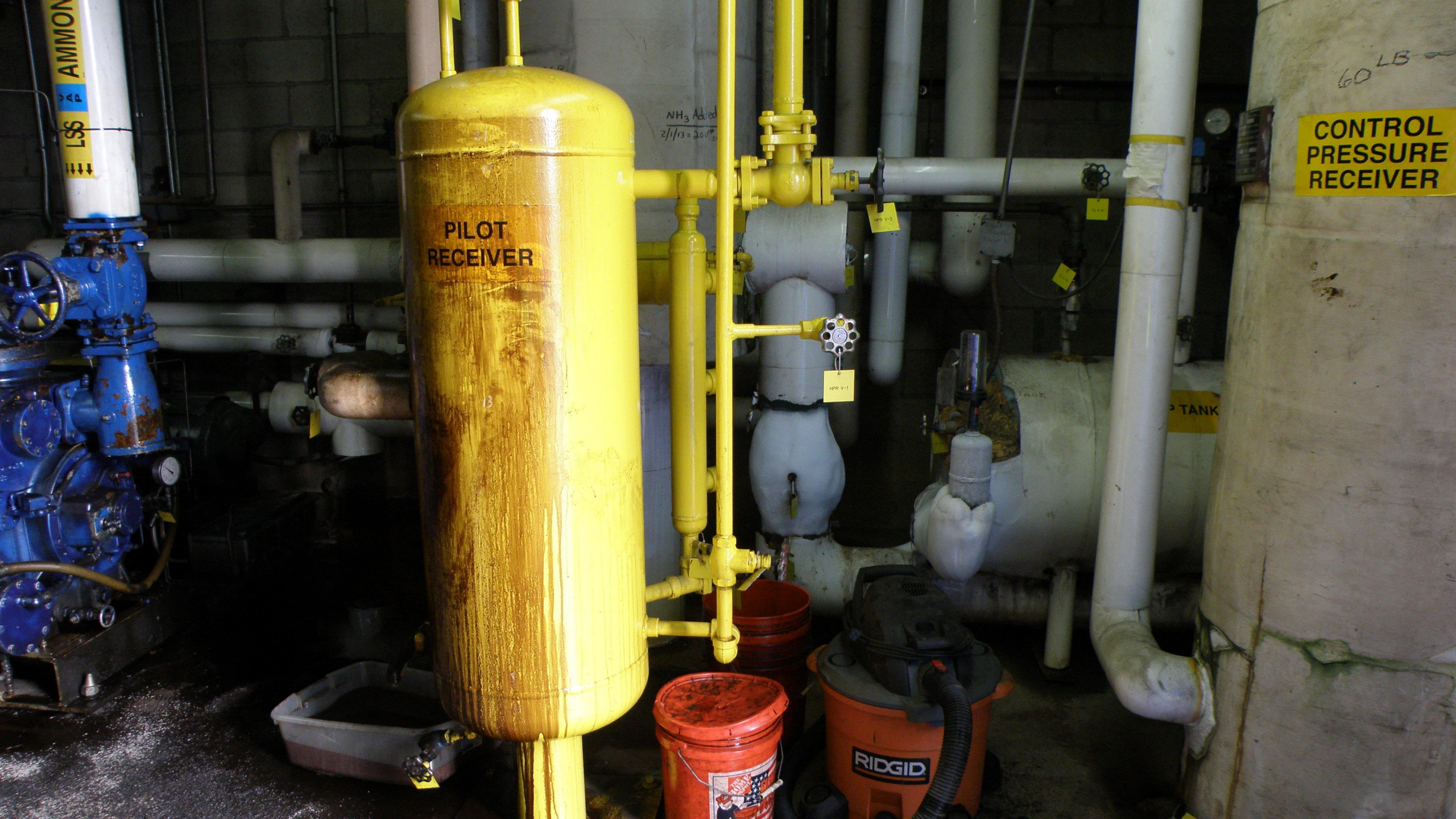
(OSHA, 2011)

Emergency Eye Wash Shower Station

Source: Len Wallace, US EPA

Presence of Combustible Materials and Electrical Hazards in Machinery Rooms

Source: Len Wallace, US EPA


PILOT
RECEIVER
CONTROL
PRESSURE
RECEIVER
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ONIA
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R-20
R-1

Storage of incompatible chemicals in close proximity to each other, creating a risk of fire, explosion, or release of toxic gases and fumes

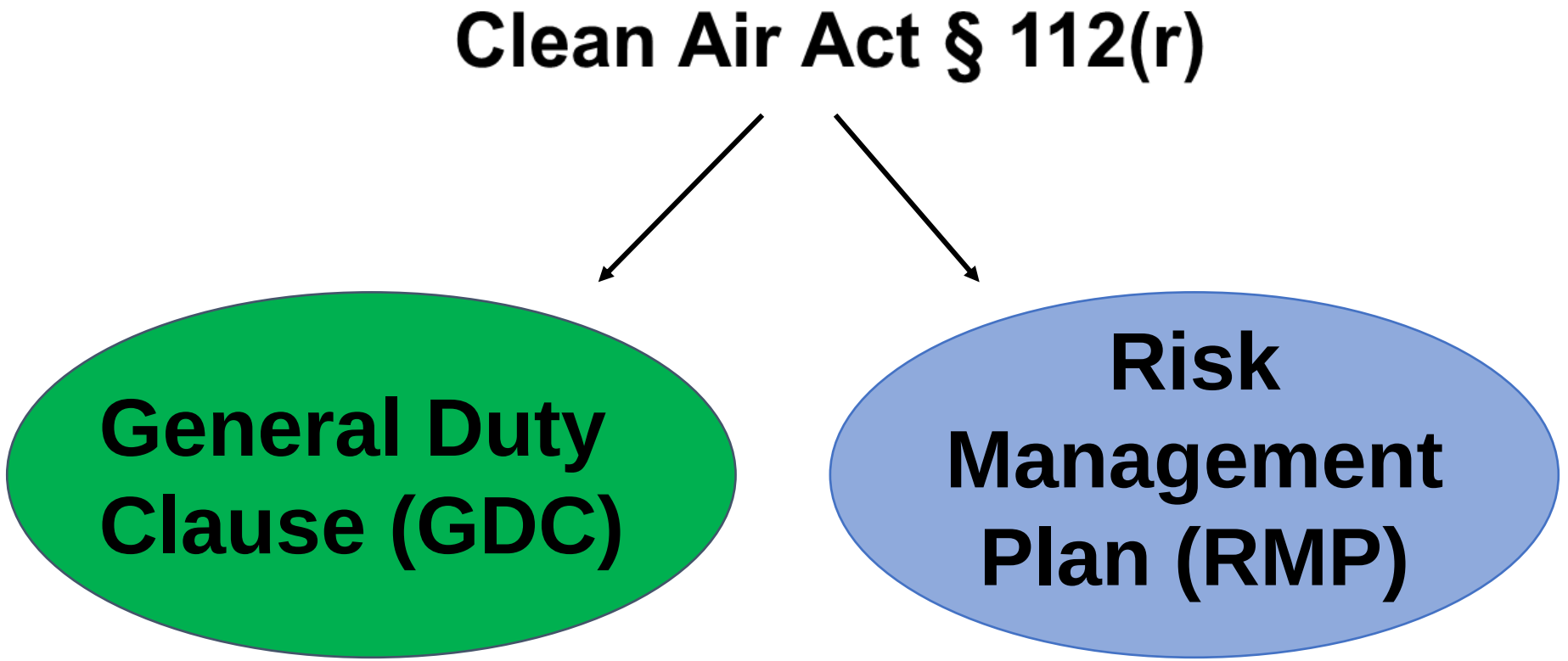
Regulations and Enforcement

Chemical Safety and Preparedness Laws that Could Apply to Chemical Warehouse and Distribution Facilities

Some of the key laws and regulations:

- **Clean Air Act Section 112(r), 42 U.S.C. § 7412(r)**
  - **General Duty Clause, 42 U.S.C. § 7412(r)(1)**
  - **Risk Management Program, 40 C.F.R. Part 68**
- **The Emergency Planning and Community Right-to-Know Act (EPCRA)**
- **OSHA: Process Safety Management Program (PSM), 29 CFR § 1910.119**
- **Department of Homeland Security: Chemical Facility Anti-Terrorism Standards (CFATS), 6 CFR Part 27**
- **Maritime Transportation Security Act (MTSA), 33 CFR Subchapter H Part 105**
- **State fire, building, and mechanical codes**

Background on CAA Section 112(r)



General Duty Clause

Clean Air Act 112(r) requires facilities that manage extremely hazardous substances to:

1. “Identify hazards which may result from such releases using appropriate hazard assessment techniques”
2. Design and maintain safe facility to prevent releases
3. Minimize consequences of accidental releases which do occur

EPA's General Duty Clause website

https://www.epa.gov/rmp/general-duty-clause-under-clean-air-act-section-112r1

Occupational Safety and Health Administration (OSHA)

OSHA Process Safety Management for Storage Facilities:
https://www.osha.gov/Publications/OSHA3909.pdf

OSHA Hazard Communication:

https://www.osha.gov/hazcom

OSHA Chemical Hazards and Toxic Substances:
https://www.osha.gov/chemical-hazards

PSM/RMP Requirements & Threshold Quantities for Each Standard:
https://www.osha.gov/chemical-executive-order/psmterminology

Risk Management Plan (RMP)

General Risk Management Program Guidance: https://www.epa.gov/rmp/guidance-facilities-riskmanagement-programs-rmp#general

RMP Fact sheet: https://www.epa.gov/sites/default/files/2020-03/documents/caa112_rmp_factsheet_march_2020_final.pdf

Chemical Warehouse Risk Management Guidance: https://www.epa.gov/rmp/guidance-facilities-riskmanagement-programs-rmp#warehouses

Chemical Distributors Risk Management Guidance: https://www.epa.gov/rmp/guidance-facilities-riskmanagement-programs-rmp#distributors

Determining Offsite Consequences of Releases website: https://www.epa.gov/rmp/rmp-guidance-offsiteconsequence-analysis

Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency's (CISA) Office of Chemical Security

CISA Chemical Facility Anti-Terrorism Standards Fact sheet:

https://www.cisa.gov/publication/cfats-fact-sheet

Website:

https://www.cisa.gov/cfats

Common Citations at Chemical Warehouses and Distribution Facilities

Len Wallace, US EPA Region 1 Inspector

Common Issues

- Failure to account for the chemicals in all containers (including aerosol cans, cylinders, storage tanks, etc.) that could be affected by the same emergency event, such as a fire.
- Failure to file and implement an RMP, often because insufficient inventory facility management systems failed to flag that chemical inventories had exceeded regulatory thresholds.
- Failure to include the entire weight of a flammable mixture with a National Fire Protection Association (NFPA) flammability rating of 4 in threshold calculations, not just the amounts of Risk Management Program listed chemicals.

Common Issues

- Failure to sufficiently coordinate with local emergency responders; local fire departments had safety concerns about some facilities.
- Failure to complete a CISA CFATS Top-Screen, as well as not utilizing predictive filing to determine all reportable chemicals of interest.

Emergency Planning and Community Right to Know Act: Tier II Reporting

- File Tier II Report

  Note: state and local governments may impose lower thresholds

- Tier II Required annually **by March 1st for the previous calendar year**

  Note: if you bring an Extremely Hazardous Substance (EHS) to facility over threshold for the first time, you will need to report within a shorter timeframe

Tier2 Submit™ software: https://www.epa.gov/epcra/tier2-submit-software

State Tier 2 reporting requirements and procedures:
https://www.epa.gov/epcra/state-tier-ii-reporting-requirements-and-procedures

EPCRA Resources

Tier2 Submit 2021 Software:

https://www.epa.gov/epcra/tier2-submit-software.

State Tier 2 reporting procedures and requirements:

https://www.epa.gov/epcra/state-tier-ii-reporting-requirements-and-procedures.

EPCRA Quick Reference Fact Sheet, Fall 2020

https://www.epa.gov/sites/production/files/2020-10/documents/epcra_quick_reference_fact_sheet.pdf

Guide to EPCRA, Fall 2020

https://www.epa.gov/sites/production/files/2020-10/documents/guide_to_epcra.pdf

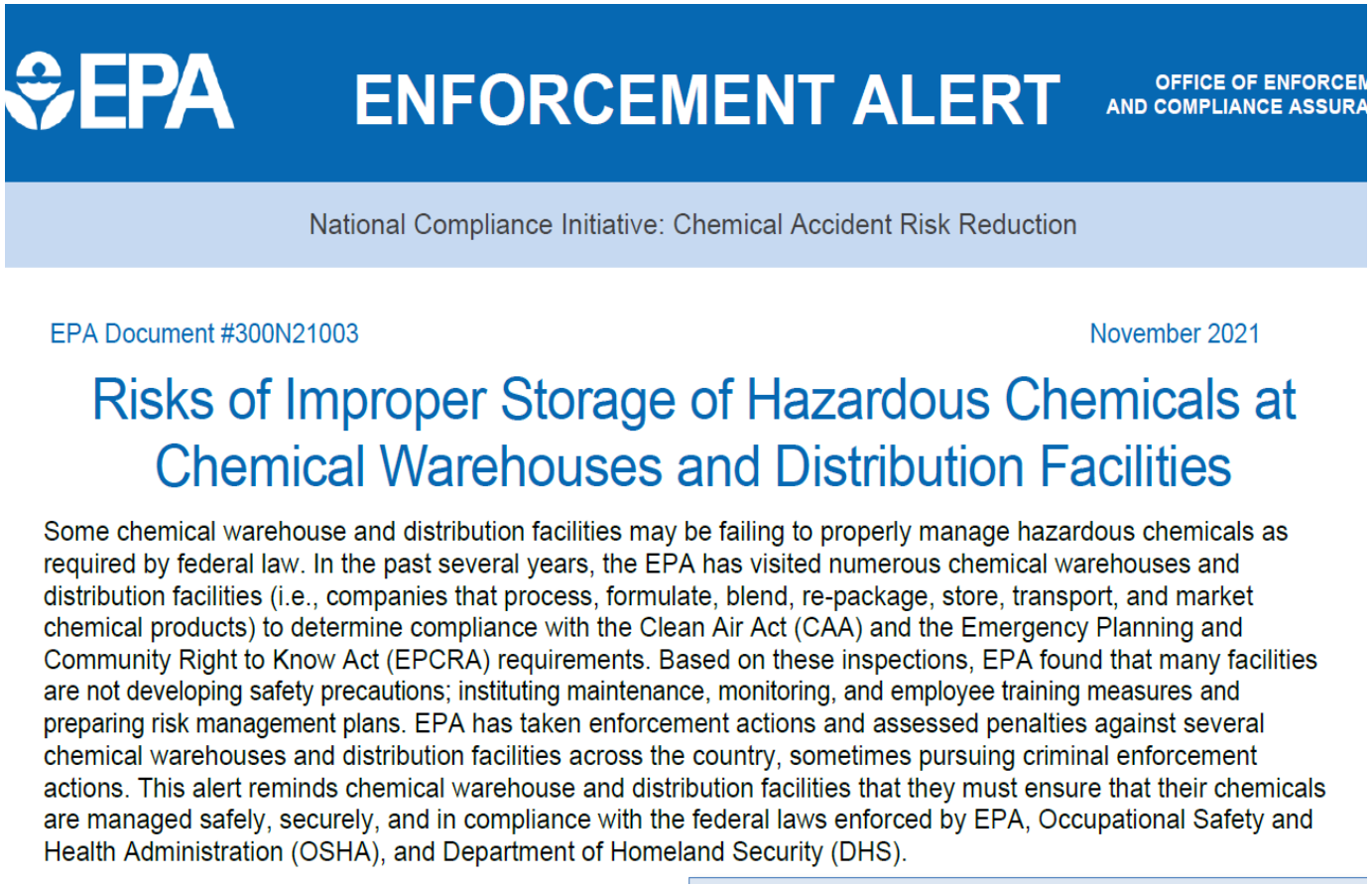
New England EPCRA Webinars and Videos

- EPCRA Tier2 Submit Software Demonstration for Massachusetts and Connecticut Facilities, February 8, 2022 10:30am-12pm ET
- EPCRA Tier2 Submit Software Demonstration for Maine and Rhode Island Facilities, February 10, 2022 10:30am-12pm ET
- EPCRA Tier2 Submit Software Demonstration for Vermont and New Hampshire Facilities, February 15, 2022 1:30-3pm ET

Four recorded videos from EPA New England below provide detailed information about these requirements for covered facilities.

https://www.epa.gov/epcra/emergency-planning-and-community-right-know-act-epcra-workshops-new-england

Enforcement



EPA ENFORCEMENT ALERT OFFICE OF ENFORCEM AND COMPLIANCE ASSURA

National Compliance Initiative: Chemical Accident Risk Reduction

EPA Document #300N21003 November 2021

Risks of Improper Storage of Hazardous Chemicals at Chemical Warehouses and Distribution Facilities

Some chemical warehouse and distribution facilities may be failing to properly manage hazardous chemicals as required by federal law. In the past several years, the EPA has visited numerous chemical warehouses and distribution facilities (i.e., companies that process, formulate, blend, re-package, store, transport, and market chemical products) to determine compliance with the Clean Air Act (CAA) and the Emergency Planning and Community Right to Know Act (EPCRA) requirements. Based on these inspections, EPA found that many facilities are not developing safety precautions; instituting maintenance, monitoring, and employee training measures and preparing risk management plans. EPA has taken enforcement actions and assessed penalties against several chemical warehouses and distribution facilities across the country, sometimes pursuing criminal enforcement actions. This alert reminds chemical warehouse and distribution facilities that they must ensure that their chemicals are managed safely, securely, and in compliance with the federal laws enforced by EPA, Occupational Safety and Health Administration (OSHA), and Department of Homeland Security (DHS).

- Serious deficiencies found on several Region 1 inspections
- Need a way to improve safety
- Owners are likely to improve the safety of their facilities once they recognize the hazards at their facility

  - https://www.epa.gov/system/files/documents/2021-11/chemicalwarehouseenforcementalert_0.pdf

Multi Agency Safety Advisory

EPA United States Environmental Protection Agency

OSHA Occupational Safety and Health Administration

EPA 550F21001

November 2021

SAFETY ADVISORY

Risks of Improper Storage of Hazardous Chemicals at Chemical Warehouses and Chemical Distribution Facilities

Some chemical warehouse and distribution facilities may be failing to properly manage hazardous chemicals as required by Section 112(r) of the Clean Air Act and the Emergency Planning and Community Right to Know Act (EPCRA) Sections 302, 304, 311, 312 and 313, enforced by the U.S. Environmental Protection Agency (EPA); the Process Safety Management (PSM) standard at 29 CFR § 1910.119, enforced by the Occupational Safety and Health Administration (OSHA); and the Chemical Facility Anti-Terrorism Standards (CFATS) regulation at 6 CFR § 27, and the Maritime Transportation Security Act regulation at 33 CFR §105, enforced by the Cybersecurity and Infrastructure Security Agency (CISA) and United States Coast Guard (USCG) respectively. This advisory informs the industry that companies must ensure that their chemicals are managed safely, securely, and in compliance with EPA, OSHA, CISA and USCG programs to help prevent chemical accidents and security incidents.

https://www.epa.gov/system/files/documents/2021-11/11_02_21_jointsafteyaltert_chemicalwarehouse_final.pdf

Contact Us with any Further Questions

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