

WHO'S ON FIRST? EMERGENCY SHUTDOWN RESPONSIBILITY

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Anyone who is a Manager, Supervisor, Director, etc. of a cold storage warehouse or a manufacturing facility that uses ammonia as the refrigerant knows that you have several risk and safety-related regulations that your personnel deal with on a day-to-day basis. You may know that the primary regulations that your personnel deal with are as follows:

- OSHA's Process Safety Management Program (PSM), 29 CFR 1910.119, and
- EPA's Risk Management Program (RMP), 40 CFR Part 68.

You may even know that 10,000 pounds is the magic quantity of ammonia that either puts you in or out of these regulatory programs. You probably even know that your Chief Engineer / Maintenance Supervisor, Lead Refrigeration Technician, etc. make sure that these programs are in working order. But, did you know that the various programs required to be in compliance with PSM and RMP extend far beyond the reaches of the engine room and require input and assistance from many members of the facility team?

This paper will provide a brief overview of the PSM and RMP regulations, ammonia release action planning suggestions, reporting procedures for an ammonia release, state specific information, and compliance strategies.

Regulatory History / Overview

The final text of the OSHA's "Process Safety Management of Highly Hazardous Chemicals" standard was published in the Federal Register on February 24, 1992. This standard was published following a series of major disasters including the most infamous, Bhopal, India where 42 tons of methyl isocyanate gas was released immediately killing over 2,000 people. It has been stated that approximately 8,000 – 10,000 people died within the first 72 hours. In the United States, there was an explosion and ensuing fire at Phillips Petroleum Company in Pasadena, Texas in October 1998 that resulted in 23 deaths and 132 injuries.

Shortly after the publication of the federal OSHA PSM regulation, several state plans were approved, including California's Title 8 §5189, Process Safety Management of Acutely Hazardous Materials. California received authority to regulate PSM in August 1994. *If you have in excess of 10,000 pounds of ammonia in a single process, you need to be in compliance with the PSM standard.*

Note that OSHA will not notify you that your facility must comply with this regulation and there is nothing to submit. Your PSM program is similar to automobile insurance – in the event that you have a release, complaint, or random inspection, an OSHA inspector may request to review your PSM documentation. Are you covered?

Approximately four months after the publication of OSHA's PSM standard, the Clean Air Act Amendments (CAAA) were enacted into law. This law outlined specific duties



for the EPA. These duties included developing a Risk Management Plan for highly hazardous chemicals. On June 20, 1996 the EPA Risk Management Plan was published in the Federal Register. This regulation required that facilities prepare an RMP within three years (June 21, 1999). *If you have in excess of 10,000 pounds of ammonia in a single process, you need to be in compliance with the RMP regulation.*

This is how OSHA's PSM standard got some teeth – EPA included the 13 elements of PSM into its RMP regulation *and* EPA required that facilities register themselves. This submittal requirement was the start of OSHA being able to conduct “random” inspections. You can go to www.rtknet.org to view the EPA RMP registration. The site allows you to search by City / State or Facility name and find out the contact information, address, total charge of ammonia, when the facility last conducted an audit, when they need to conduct their next Process Hazard Analysis, etc.

Here in California, OSHA has set up two PSM Enforcement Offices (Northern and Southern) just to audit PSM facilities. Most of these audits are “random”.

Some of you are thinking – I don't need to read anymore because I only have 8,000 pounds of ammonia. You may not be planning to handle quantities of ammonia in excess of compliance thresholds (i.e., 10,000 pounds) for OSHA's Process Safety Management and EPA's Risk Management Plan (PSM/RMP) regulations, however, the General Duty Clause requires facilities to ‘... *design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur*’.

The Environmental Protection Agency has clarified the General Duty Clause to mean that all facilities handling extremely hazardous chemicals are responsible for ‘...*following codes, standards, or other business practices to ensure the facility is properly constructed and maintained – and the chemical is managed safely*’. Because of this, the International Institute of Ammonia Refrigeration (IIAR) has prepared “The Ammonia Refrigeration Management Program (ARM)” specifically to assist ammonia refrigerated warehouses / facilities to comply with the General Duty Clause. In case you weren't aware, OSHA and EPA consider anything prepared by IIAR and RETA “industry standards” and good “business practices”.

And just in case you think you have a good set of attorneys that can defend your company for not complying with the General Duty Clause, there are many states with their own set of rules:

- California: Regulates facilities that handle in excess of 500 pounds of ammonia.
- Nevada: Regulates facilities that handle in excess of 5,000 pounds of ammonia.
- New Jersey: Regulates facilities that handle in excess of 5,200 pounds of ammonia.



Just to name a few.

Ammonia Release Action Plan

It's 10 pm Saturday night and the ammonia alarm sounds ... are you prepared?

You better be, both the PSM and RMP regulations state that "emergency shutdown, including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner" [REF: 29 CFR 1910.119 (f)(1)(i)(D) and 40 CFR Part 68.69(a)(1)(iv)].

What if you don't have an Emergency Response Team? Many facilities do not have the in-house capabilities to support a full Emergency Response Team.

What if you use an outside refrigeration contractor? Many facilities use outside refrigeration maintenance contractors and do not employ refrigeration operators.

In both of these cases, I have seen the following in the Operating Procedures section of a PSM / RMP document:

"Among the personnel authorized to initiate emergency shutdown are the Shift Supervisor and the Operations Manager".

Have you discussed the conditions that would warrant the Shift Supervisor or the Operations Manager activating the Emergency Kill Switch? Do they know where the Emergency Kill Switch is located? Can they access the Emergency Kill Switch safely? Has anyone tested the Emergency Kill Switch to see what it would do or how long it will take for the system to be brought back on line? Who will bring the system back on line?

It's 10 pm Saturday night, your warehouse is operational and the ammonia alarm sounds ... are you prepared? Chances are, even if you have a staff of refrigeration operators, they only work Monday – Friday.

- Shift Supervisors that are in charge during business hours when you don't have refrigeration operator coverage should participate in or have experience with tasks outlined under Emergency Response – Operations Level (29 CFR 1910.120 (q)(6)) training.
 - "First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property,



or the environment from the effects of the release. They are trained to respond in a **defensive fashion** without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training **or have had sufficient experience** to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

- a) Knowledge of the basic hazard and risk assessment techniques.
- b) Know how to select and use proper personal protective equipment provided to the first responder operational level.
- c) An understanding of basic hazardous materials terms.
- d) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
- e) Know how to implement basic decontamination procedures.
- f) **An understanding of the relevant standard operating procedures and termination procedures.**”

Since many facilities are “non-responding”, which means that you will call 9-1-1 and leave, 29 CFR 1910.120 (q) does not apply – right?

From EPA’s General Guidance on Risk Management Programs for Chemical Accident Prevention, March 2009:

“...it would be inappropriate, and probably unsafe, for an ammonia retailer with only one full-time employee to expect that a tank fire could be handled without the help of the local fire department or other emergency responder. EPA does not intend to force such facilities to develop emergency response capabilities. At the same time, you are responsible for ensuring effective emergency response to any releases at your facility. **If your local public responders are not capable of providing such response, you must take steps to ensure that effective response is available (e.g., by hiring response contractors).**”

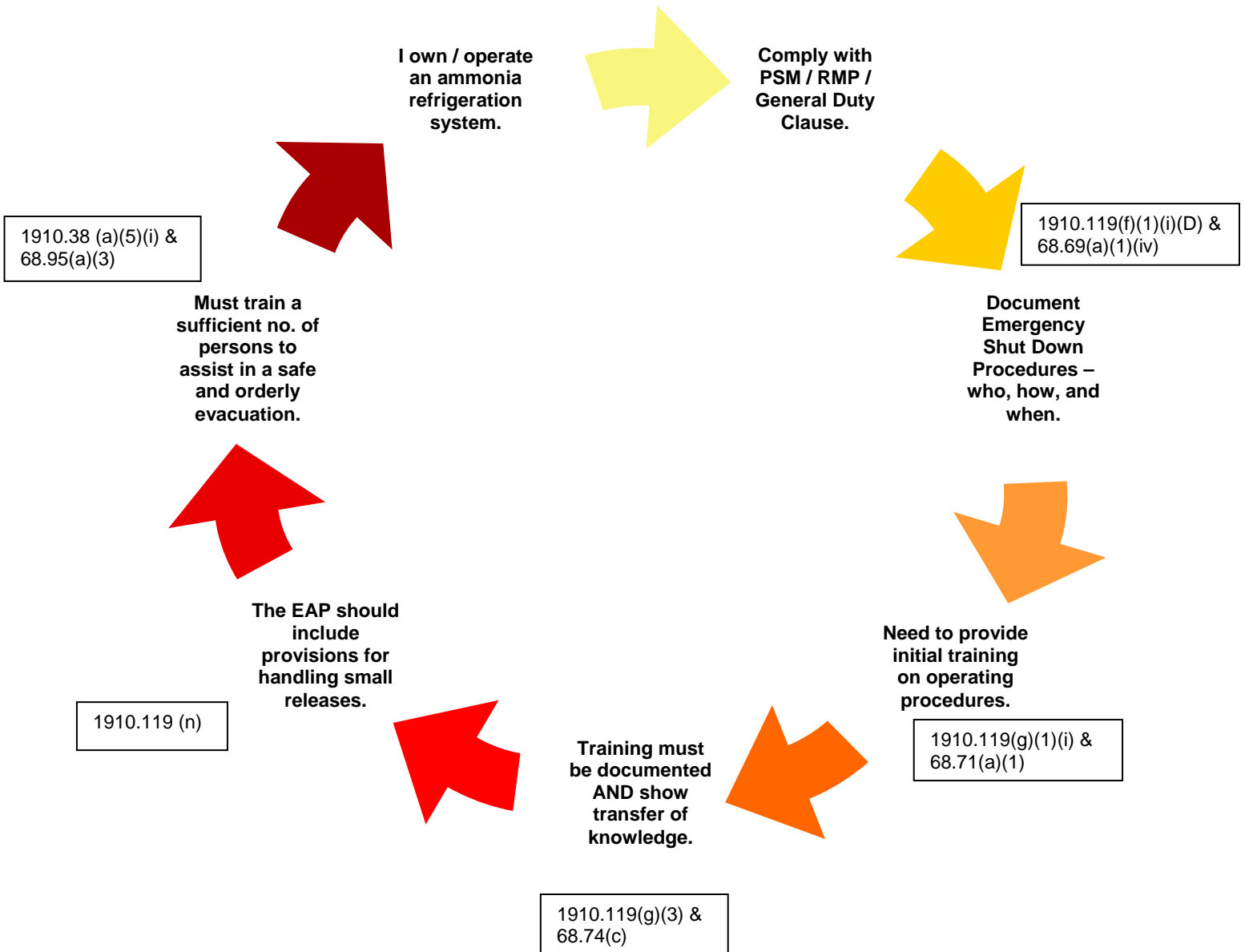
This language has changed since it was originally written in EPA’s guidance document in 2000 – it was previously stated: “for an ammonia refrigerated warehouse with only two full-time employees ...” Many ammonia refrigerated facilities are rethinking their response levels. With newer process controls and code requirements that allow personnel to shut down either the entire system or portions of the system remotely with computer access responding at the Operations Level is manageable.

- Shift Supervisors should know where the Emergency Kill Switch is located and when it should be actuated. Shift Supervisors and your refrigeration chief engineer / lead / contractor should meet periodically to review the following:



- Where the E-Stop is located.
- When the E-Stop should be actuated.
- What happens when the E-Stop is actuated.
- How often the E-Stop is tested and what does it take to bring the system back on line.
- Any meetings, training sessions, evacuation drills, tailgate topics, etc. related to your ammonia refrigeration system should be documented.

Here is how it all ties together:



Ammonia Release Reporting

Let's assume that you have plenty of staff trained on how to shut down the ammonia refrigeration system. Various personnel have been trained and annual evacuation drills are conducted. What are your reporting requirements if there is a release of ammonia? The law states that, in addition to contacting 9-1-1 for emergency assistance, the agencies in the following table must be contacted.

The National Response Center must be notified as soon as the person in charge has knowledge of a release equal to or greater than the release quantity. Recent case law has defined this to be 15 minutes.

Agency	Telephone	Criteria	Timing	Written Follow-up Required
MANDATORY				
National Response Center	800-424-8802	If release exceeds 100 lbs. in 24 hour period	Immediate	Yes
Local Emergency Planning Committee	Varies	If release exceeds 100 lbs. in 24 hour period	Immediate	Yes
State Emergency Response Commission	Varies	Uncontrolled release, especially, if release exceeds 100 lbs. in 24 hour period	Immediate	Yes
VARIES BASED ON CONDITIONS				
United States Coast Guard	Varies	If release enters a waterway	Immediate	No
OSHA Office	Varies	If serious injuries or harmful exposures to workers occur	Immediate	Yes, if injuries occurred
Air Pollution Control District	Varies	If you have permit conditions or potential for odor complaints to occur.	Immediate	Varies
Sewer Authority	Varies	If ammonia is released into the sewer system.	Immediate	No
Poison Control Center	800-342-9293	If ammonia is ingested	Immediate	No

Many states have very specific criteria and should be contacted directly when putting together your emergency call lists.

CALIFORNIA: Per the California Health & Safety Code §25501, all significant releases or threatened releases of a hazardous material (e.g., ammonia), require immediate



emergency notification to government agencies (Certified Unified Program Agency – CUPA). A release is defined as: “Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency”.

The million dollar question is, when should I call? Knowing that EPA is citing/fining facilities \$5,000 and up for failing to “immediately” report a release, this is an important decision. Who will make the call? Chief Engineer? Shift Supervisor? Operations Manager?

Knowing that part of routine maintenance associated with an ammonia refrigeration system includes draining oil and tightening valve packing, makes determining when to contact outside agencies, especially in California a very difficult proposition. Facilities need to define scenarios that require “REPORTING” and those that will be considered maintenance efforts.

An example of a situation that would require a REPORT to the Certified Unified Program Agency - CUPA (for California) is, if an employee, who is not part of the Maintenance / Refrigeration Operations department, reports an ammonia odor to his / her supervisor, who in turn calls Maintenance / Refrigeration Operations department to investigate and repair the source of the odor.

If this same odor is detected and repaired by the Maintenance / Refrigeration Operations department during normal daily rounds, it may be considered “maintenance” and may not require a REPORT to the CUPA. If this “odor” requires the Maintenance / Refrigeration Operations department personnel to exit the area to don PPE and / or obtain assistance, it then becomes a situation that requires a REPORT to the CUPA.

This guideline is further supported by the EPA General Risk Management Program Guidance (March 2009), which states that: *“OSHA defines emergency response as ‘a response effort by employees from outside the immediate release area or by other designated responders ... to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance.’ The key factor here is that responders are designated for such tasks by their employer. This definition excludes ‘responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel’ as well as ‘responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure).’ Thus, if you expect your employees to take action to end a small leak (e.g., shutting a valve) or clean up a spill that does not pose an immediate safety or health hazard, this action could be considered an incidental response and you would not need to develop an emergency response program if your employees are limited to such activities.”*



NOTE: The "immediate release area" can be the entire geographic boundary of the employee's assigned work area.

What information should be available when making the emergency call?

1. *If the release is estimated at more than 100 pounds*, call the **National Response Center** (NRC) at 800-424-8802.
 - a. Provide the following information:
 - i. Name of facility
 - ii. Your name
 - iii. Address and phone number of the facility
 - iv. Brief description of scenario including estimate of amount of ammonia released in pounds (get information from Maintenance person / contractor).
 - v. If required, CAS # for Ammonia = 7664-41-7
 - vi. Time / duration of release
 - vii. Actions being taken on-site to mitigate situation if the release is ongoing.
 - viii. Inform them whether or not your situation requires the assistance of off-site emergency responders (Fire Department / HazMat Team).
 - b. Record name of person you talked with and the NRC case # (if provided).

Contact the applicable local and state agencies and provide them with the same information. Do not assume that one agency will contact another agency on your behalf.

The National Response Center is now allowing facilities to report releases on line:

<http://www.nrc.uscg.mil/nrchp.html>

The On-Line Reporting Tool will allow easy submittal of release reports with a tool that will transmit an email with the tracking number back to the reporting party. The questions required for written follow-up reporting are included at the above referenced website.

Conclusion

There is a lot to think about during an ammonia alarm situation. Who to call? When to call? Whether or not to evacuate or shelter-in-place? Whether or not to shut down the system?



Pre-planning and familiarity with your ammonia refrigeration system and the key personnel operating your refrigeration system is paramount.

