



***Your Compliance Connection™***

# A FOURTH DECADE OF SERVICE

**Industrial Consultants, LLC** is in its fourth decade of serving the training needs of companies like yours, companies which must comply with the health and safety regulations enacted by OSHA and/or the EPA.

**Industrial Consultants, LLC** is focused on the food, petrochemical, power generation and pharmaceutical industries. The comprehensive regulations governing ammonia systems are ever-changing, and are overseen by OSHA and the EPA. Expertise is needed at all levels to ensure compliance. Industrial Consultants, LLC continues to provide this expert assistance and guidance to meet all your compliance needs.

**Industrial Consultants, LLC** is totally dedicated to assisting you in achieving your compliance goals, taking the mystery out of compliance, and helping you gain control of your safety and training needs.





## **Compliance Without Confusion**

Each of our widely differing programs must meet specific Occupational Safety and Health Administration (OSHA) and/or Environmental Protection Agency (EPA) requirements for training your personnel. However, continuing annual compliance is certainly not a simple task. **Industrial Consultants, LLC** will take the mystery out and help you gain control of your safety and training needs.

**Industrial Consultants, LLC** has been training facility personnel for over four decades. Over 100,000 of our students have benefited from current, comprehensive, complete, and accurate training. You may rely on Industrial Consultants, LLC to keep your organization up-to-date on the ever-changing OSHA and EPA training requirements for your facility. One phone call or visit to our website will give you a complete description of all of our products and services.

## **TRAINING PROGRAMS**

✓ **ON-SITE** ✓ **REGIONAL**

**When You Need Them,  
Where You Want Them**



A person wearing a full-body brown hazmat suit with a clear face shield and black gloves. Their arms are raised in a 'V' shape. The background is a dark green, textured surface. A yellow and red diagonal striped banner is at the top.

# HAZMAT

- ✓ **TECHNICIAN LEVEL**
- ✓ **OPERATIONS LEVEL**
- ✓ **ON-SCENE INCIDENT  
COMMANDER TRAINING**
- ✓ **REFRESHER TRAINING**





# EMERGENCY RESPONSE TEAM TRAINING

## Technician Level

Emergency Response Teams must have a minimum of 24 hours (fixed facility with no transportation issues) of training before they are allowed to handle spills and/or leaks of hazardous materials. If there are transportation issues, then 32 hours and/or 40 hours of training may be required.

## Operations Level

Any HAZMAT Team member (other than Technician Level and Incident Commander trained team members) are required to have at least eight hours of operations level training (support staff).



A photograph of a man in a red polo shirt and glasses, likely an instructor, gesturing with his hand while talking to a person in a full-body hazmat suit. The person in the suit is wearing a hood and a respirator mask. They are in an industrial or training facility setting.

# ON-SCENE INCIDENT COMMANDER TRAINING

## **On-Scene Incident Commander**

This training gives all the information needed to handle this complex and demanding function. The role of the Incident Commander is crucial to the successful handling of every emergency response.

## **~~Require Eight Hours of Annual Refresher Training~~**

All HAZMAT Team members (Technician Level, Operations Level and Incident Commander Level) require eight hours of annual refresher training to maintain their certification. Incident Commanders require additional training over and above the eight hour training for the Technician Level and Operations Level Team members.





# REFRIGERATION



**LEVEL I - BASIC**



**LEVEL II - INTERMEDIATE**



**LEVEL III - ADVANCED**



**RETA**

**• CARO**

**• CIRO**

**• REVIEW**

**• CUSTOMIZED**





# AMMONIA REFRIGERATION TRAINING

These programs are designed to help your employees develop a complete understanding of your refrigeration system and its operation. Industrial Consultants, LLC offers these training courses both regionally, or at your site - customized to your specific ammonia refrigeration system.

**Refrigeration Training-Level I** provides an elemental understanding of the principles and components of commercial ammonia refrigeration. Attendees will develop a better understanding of the need for safer operating conditions and how to improve the efficiency of your refrigeration system.

**Refrigeration Training-Level II** provides advanced understanding of single and two-stage systems, as well as basic electricity, control circuits and proper pump-down techniques. This can also serve as a three-year refresher for Process Safety Management training.

# RETA CARO/ CIRO/~~CRES~~

The following courses are taught by a RETA Authorized Instructor (RAI)

- ✓ RETA Certified Assistant Refrigeration Operator (CARO) Course
- ✓ RETA Certified Industrial Refrigeration Operator (CIRO) Course
- ✓ RETA CARO/CIRO Refrigeration Review Course

(The RETA courses above are intended to help the student prepare for, but not walk them through the exam(s).)

Detailed course outlines are available on our **website: [www.ammonia.com](http://www.ammonia.com)** or by contacting our office directly.



# PSM/RMP

- ✓ PROGRAM DEVELOPMENT
- ✓ COMPLIANCE AUDITS
- ✓ PHAs
- ✓ VENTILATION ANALYSIS
- ✓ RELIEF SYSTEM ANALYSIS
- ✓ MECHANICAL INTEGRITY
- ✓ RMP SUBMITTAL
- ✓ RMP HAZARD ASSESSMENT
- ✓ AMMONIA-LITE PROGRAM™



# PROCESS SAFETY MANAGEMENT (PSM)

**Industrial Consultants, LLC** has assisted many companies in the establishment and maintenance of their Process Safety Management program. Many of those companies, while they understood the mission, did not have the personnel or the physical resources necessary to complete the task. The role for Industrial Consultants, LLC in your program can be:

- ✓ Develop your PSM program for you on a turnkey basis, or assist you in the coordination or development of any phase or element
- ✓ We can be your PSM coordinator short or long term. We can be on site weekly, monthly or quarterly, whatever your requirements may be.
- ✓ As your internal operating systems evolve, change, and grow, your PSM program will need periodic evaluation. Industrial Consultants, LLC can provide all the assistance you may need in evaluating your PSM program to determine if it is still in compliance.



## 1910.119 Process Safety Management of Highly Hazardous Chemicals

**Purpose.** This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

(a) Application. (1) This section applies to the following:

(i) A process which involves a chemical at or above the threshold quantities listed in Appendix A to this section;

(ii) A process which involves flammable liquid or gas (as defined in 1910.1200(c) of this part) on site in one location, in a quantity of 10,000 pounds (4535.9kg) or more except for:

(A) Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical covered by this standard;

(B) Flammable liquids or gases which are kept below their normal boiling point without benefit of chilling or refrigeration;

(2) This section does not apply to:

(i) Retail facilities;

(ii) Oil or gas well drilling or servicing operations; or

(iii) Normally unoccupied remote facilities.

(b) Definitions. Atmospheric pressure means a storage tank which has been designed to operate at or below atmospheric pressure, such as 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).

Drawing: n/a

Date: February 11, 2015

Equipment IDs: None

## Compliance Audits


Your Process Safety Management program must pass a required compliance audit every three years to determine if your program is working effectively. Industrial Consultants, LLC conducts these audits and provides the necessary verifications, or recommended changes, for your continued compliance. We currently offer four levels of audits, Baseline (3 Days), Standard (3-4 Days), Technical (4-5 Days) and National Emphasis Program (5 Days).

## Process Hazard Analysis (PHA)

A PHA is required when you install new equipment or modify existing systems. Additionally you are required to reevaluate and revalidate your Process Hazard Analysis every five years. This is the perfect time to call Industrial Consultants, LLC to help you through the process.

No	What If Failure Occurs	How Can It Be Prevented	Consequences	S	L	RR	Safeguards	Recommendations	
1	Valve fails to close on basis.	Release.	Equipment damage, refrigeration systems.	1	3	C	None	Develop PM frequency for cycling the valves (backseated) every six months. Develop a valve cycling program for the function test.	
2	The automatic valve close with excessive force.	Release.	Equipment damage, refrigeration systems.	2	2	C	None	Include on the daily shift logs.	
3	Liquid hammering occurs.	Ammonia release.	Equipment damage, injury.	2	2	C	None	Include on the daily shift logs.	
4	Vapor propelled liquid at the evaporators due to improper defrosting techniques	Ammonia release.	Localized plant evacuation	4	1	C	System has been in operation since a long time with no problems. Any issues or	Document evaporator software is working properly	
5	Equipment fails due to stress corrosion cracking	Ammonia release	Offsite ammonia release.	2	1	D	None	Ensure there is documentation specifically concerning the stress corrosion cracking on the vessels and heat exchangers.	
6	Excessive ice builds up on vessels and piping	Ammonia release.	Humidity.	Annual inspections of the system. On the PMs for evaporators.				Add to daily log sheets.	
7	Insulation has been compromised on piping and vessels	Ammonia release	Humidity.	Implement annual system inspection (internally).					
8	Redundant instrumentation is required	None	Humidity.	Critical instrumentation is not utilized.	1	1	D	Redundant instrumentation not utilized.	None

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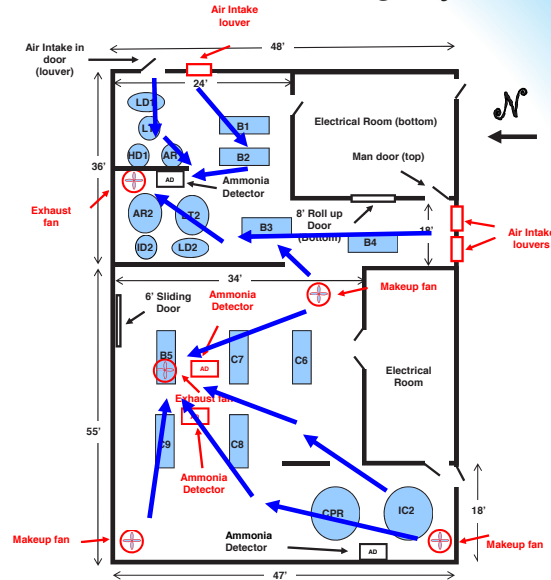
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## Ventilation Analysis

Analysis of the existing ventilation system to ensure adherence to the applicable codes and standards. This will include detector placement, controls, equipment, alarms and air flow patterns. Recommendations will be made to address any shortcomings as necessary.

### Machinery Room Air Flow Pattern Emergency



## Relief System Analysis

Analysis of the existing relief system to ensure adherence to the applicable codes and standards. This will include review of the sizing requirements for each relief valve as well as the discharge piping and header systems. Recommendations will be made to address any shortcomings as necessary.



A full-page background image showing a male worker in a white hard hat and a high-visibility yellow safety vest. He is holding a clipboard and looking down at it while standing next to a large, light green industrial machine. The machine has various pipes, valves, and a blue-handled valve. In the background, there are more industrial components, including a control panel with red lights and a yellow tag hanging from a pipe. A warning sign is visible on the left side of the machine.

# MECHANICAL INTEGRITY INSPECTIONS

A thorough, independent visual inspection of the ammonia refrigeration system must be performed every five years. This inspection will help to ensure that the refrigeration system is being properly maintained and operated.

Further testing, such as Non-Destructive, can be warranted depending on the results of the independent inspection. Industrial Consultants, LLC can perform this visual inspection of your ammonia refrigeration system and assist in developing any further testing resulting from this inspection.



# **RISK MANAGEMENT PROGRAM (RMP)**

EPA regulations stipulate that your Risk Management Program (RMP) has to be in place for new or expanded facilities that exceed 10,000 lbs. of ammonia in their refrigeration systems. Industrial Consultants, LLC can either develop your RMP, and/or update your existing RMP. This includes any portion from complete program development, off-site consequence analysis (OCA) and RMP-submittal. Additionally, we can assist with updating and resubmission of your RMP. Call or visit our website [www.ammonia.com](http://www.ammonia.com) today to discuss your need for compliance with the EPA Risk Management Program.

Federal Register/Vol. 89, No. 48/  
Safer Communities by Chemical Accident Prevention  
Under the Clean Air Act Monday, March 11, 2024/  
Rules and Regulations Safer Communities by  
Chemical Accident Prevention

**U.S. ENVIRONMENTAL  
PROTECTION AGENCY**

# AMMONIA-LITE PROGRAM™

**Less than 10,000 lbs**

When a facility has less than 10,000 pounds of ammonia in the system, both OSHA and EPA use their respective General Duty Clause(GDC) to inspect and generate citations. These clauses describe responsibilities owners and operators have for being diligent in preventing chemical releases. This includes both an employer's recognition of hazards, and **MOST** importantly the **industry's** recognition of hazards! The most prominent ammonia refrigeration consensus standards are issued by IAR and ASHRAE-15.

## **Complying with a General Duty Clause basically involves the following:**

- ✓ Identification and assessment of process hazards
- ✓ Maintaining a safe process system
- ✓ Minimizing consequences of any ammonia release
- ✓ **MOST IMPORTANT!** - Adhering to industry codes and standards  
*(NOTE: This is commonly referred to as "Recognized and Generally Accepted Good Engineering Practice" - RAGAGEP.)*

## **Compiling and updating the following information is essential to GDC compliance:**

- ✓ Process Safety Information (PSI), including current P&ID's
- ✓ Process Hazard Analysis (PHA) with a discussion of potential release scenarios and their impacts
- ✓ Operating Procedures
- ✓ Mechanical Integrity and Preventive Maintenance
- ✓ Incident Investigation
- ✓ Emergency actions, planning, and response
- ✓ Management System / Executive Summary
- ✓ Contractors
- ✓ MOC's
- ✓ Training
- ✓ Self Audits
- ✓ Hazard Assessment



The background of the page is a vibrant, cartoon-style illustration. At the top, there are blue mountains under a light blue sky. Below the mountains is a dense line of green and yellow trees. On the left side, a yellow house with a brown roof sits on a green hill. A winding river flows from the left towards the bottom right. In the middle ground, there's a large, stylized wave or splash of water. The bottom of the page shows several blue fish swimming in the water, along with some orange and yellow rocks or coral.

# ENVIRONMENTAL PROGRAMS

## **SWPPP – Storm Water Pollution Prevention Program**

SWPPP, a requirement of the 1972 amendments to the Federal Water Pollution Control Act (the Clean Water Act) through the National Pollutant Discharge Elimination System (NPDES), addresses a facility's pollutants and helps to identify the Best Management Practices (BMPs) the facility is using to reduce those pollutants in stormwater. Your SWPPP has to be updated regularly to reflect the current site conditions and BMPs. Annual training is required to ensure understanding and adherence to your SWPPP. Industrial Consultants, LLC has the capabilities to handle all aspects of developing, maintaining and training for your SWPPP.

## **SPCC – Spill Prevention, Control and Countermeasures**

Due to the danger spills cause to public health and the environment, every effort must be made to prevent spills and to clean them up promptly once they occur. That's the purpose of the Spill Prevention, Control, and Countermeasure (SPCC) program. The SPCC rule requires facilities to develop, maintain, and implement a spill prevention plan. These Plans help facilities prevent spills, as well as control a spill should one occur. This applies to any facility with the "potential to discharge oil to waters of the U.S.", and who stores oil or petroleum products on-site in excess of 1,320 gallons. Let Industrial Consultants, LLC help you through the process of development and implementation of your SPCC.

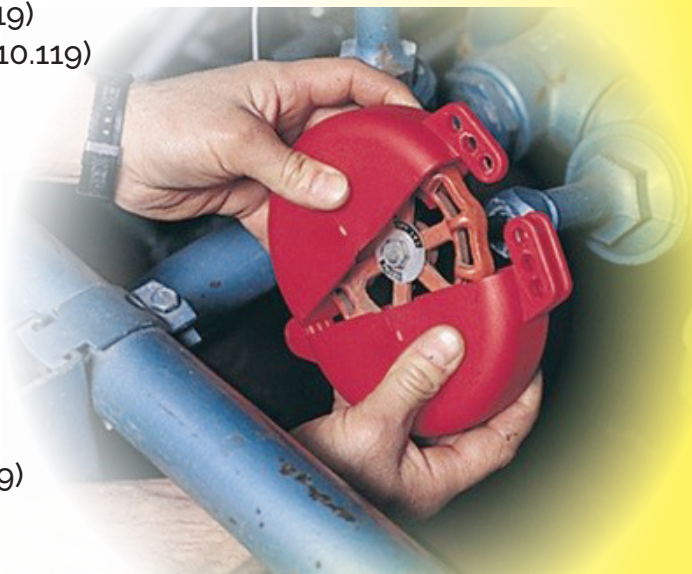
# SAFETY AND SUPPORT SERVICES

**Industrial Consultants, LLC** expertise can be of extra benefit to help create, review, or update any or all of your safety programs and take the confusion out of compliance for you. Industrial Consultants, LLC provides a seamless extension when training your staff for any of the following programs:

Standard Operating Procedures (1910.119)  
Maintenance Operating Procedures (1910.119)  
Emergency Response (1910.120)  
Emergency Action (1910.38)  
Fall Protection (1926.500-503)  
Pre-planning (1910.38/120)  
Confined Space Entry (1910.146)  
Lockout/Tagout (1910.147)  
Hazcom (1910.1200)  
Respiratory Protection (1910.134)  
Incident Command (1910.120)  
Operator Training (40 CFR Part 68)  
Refrigeration Operator Training (1910.119)

## **Other Services**

Boiler Operator Training  
Refrigeration System Energy Analysis and Optimization  
Valve Tagging and Line Labeling





# ABOUT US

Over the years, Industrial Consultants has been working within the ammonia refrigeration community. Remarkably, we have come to realize that our business, our clients and our competitors are more than the net worth presented by the financial spreadsheets.

Our company is a collection of individuals in pursuit of God's purpose for our lives. Additionally, we endeavor to develop our specific gifts for the betterment of **Industrial Consultants**, and the people we meet each and every week.

The bottom line for **Industrial Consultants** is we have adopted the teachings of Jesus Christ and He sums up our company's heart in John 15:11-13, (NIV) *"I have told you this so that my joy may be in you and that your joy may be complete. My command is this: Love each other as I have loved you. Greater love has no one than this: to lay down one's life for one's friends."*



- ✓ **Emergency Response Training**
- ✓ **Ammonia Refrigeration Training**
- ✓ **Process Safety Management**
- ✓ **EPA Risk Management Programs**
- ✓ **Safety Support Services**
- ✓ **Boiler Operator Training**
- ✓ **Environmental Programs**
- ✓ **Mechanical Integrity Inspections**



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