



**CALIFORNIA ACCIDENTAL RELEASE PREVENTION
(CaIARP) PROGRAM**

EPA RISK MANAGEMENT (RMP) PROGRAM

OSHA PROCESS SAFETY MANAGEMENT (PSM)

OUTLINE

- **Introduction**
- **Regulatory Framework and Objectives**
- **Components of CalARP/RMP/PSM Compliance**
 - **Management System**
 - **Hazard Assessment (OCA)**
 - **Prevention Programs**
 - **Emergency Response**
 - **Documentation Requirements**
- **Common Deficiencies**

OUTLINE

- **Regulatory Framework**
 - **California Code of Regulations (CCR), Title 19. Public Safety, Division 2 Office of Emergency Services, Chapter 4.5 CalARP Program**
 - **Federal Clean Air Act Amendments (RMP)**
 - **Occupational Safety and Health Administration Requirements 29 CFR 1910.119 PSM**

OBJECTIVES

- *Administrative and operational programs designed to **prevent** acutely hazardous materials accidents*
- *Design safety review of new and existing equipment and standard operating procedures for the equipment*
- *Emergency response planning to collaboratively determine roles and responsibilities of internal and external responders*

CALARP/RMP/PSM

Who must comply?

- *Facilities that have a process that contains above a threshold quantity (TQ) of a listed acutely hazardous material.*
 - *For example, anhydrous ammonia is a listed chemical; OSHA and Federal EPA TQ is 10,000 pounds. Ammonia in a refrigeration system is considered a “process.” Note: In CA the TQ for ammonia is 500 pounds.*

CALARP/RMP/PSM Program Components

- **REGISTRATION (CalARP/RMP Only)**
- **MANAGEMENT SYSTEM**
- **HAZARD ASSESSMENT (CalARP/RMP Only)**
- **PREVENTION PROGRAMS (All)**
- **DOCUMENTATION (PSM/RMP/CalARP)**

CALARP/RMP REGISTRATION AND UPDATES

- *On or before the date a quantity of a regulated substance exceeds the TQ in the existing process or in a new process*
- *Within 5 years of initial submission and no later than every 5 years thereafter*
- *Within 3 years of the date EPA lists a newly regulated substance*
- *Within 30 days of change in emergency contact information*
- *Within 6 months of a reportable release*
- *Within 6 months of a change that resulted in a revised PHA or hazard review*
- *Within 6 months of a change that resulted in a revised offsite consequence analysis*
- *Within 6 months of a change that alters the Program level which previously applied to a covered process*
- *Within 6 months of a change that makes the facility no longer subject to the requirements to submit a Risk Management Plan*

MANAGEMENT PROGRAM

- *Is plant management aware of the CalARP/RMP/PSM requirements, committed to ensuring CalARP/RMP/PSM programs are being followed / complied with, and providing the funding necessary to address PHA & Audit recommendations in a timely manner?*
 - Do you have a CalARP/RMP/PSM management system?
 - Has a qualified person/position been assigned responsibility for CalARP/RMP/PSM compliance?
 - Can you demonstrate that there is not a conflict of interest in your management program (e.g. is the person responsible for the programs also responsible for minimizing costs)?
 - **Can you demonstrate that ALL PHA, Compliance Audit, and Independent Mechanical Integrity Audit recommendations have been addressed and corrected in a timely manner?**
- *Remember, CalARP/RMP requires that a signed Certification Statement by Plant Management be submitted with the required documentation that must identify the expected or actual completion date of ALL changes from the last PHA and Compliance Audit!*
- *Do you have an Org Chart that shows who is responsible for compliance?*

HAZARD ASSESSMENT

CalARP/RMP

- Worst Case Release Scenario (*prescribed -largest vessel losing its entire contents in 10 minutes*)
- Alternative Release Scenario (*more likely scenario*)
- Offsite Consequence Analysis
 - *Public*
 - *Environment*
- 5 Year Accident History

CALARP/RMP/PSM

Prevention Program Items

- Process Safety Information**
- Process Hazards Analysis**
- Operating Procedures**
- Training**
- Mechanical Integrity**
- Management of Change**
- Pre-Startup Safety Review**
- Compliance Audits**
- Incident Investigation**
- Employee Participation**
- Safety Programs**
- Contractor Safety**

PREVENTION PROGRAMS

Process Safety Information

- *P&IDs*
- *Design Specifications / Calculations*
- *Equipment Manuals*
- *MSDSs*
- *Pressure Vessel Certifications (U1-As)*
- *Permits*
- *Etc.*

PREVENTION PROGRAMS

Process Safety Information

– *Typical Agency Audit Questions resulting in Citations:*

- **Is the PSI up to date?**
 - *P&IDs*
 - *Operating Limits (safe upper & lower limits)*
 - *Safety systems (e.g. detection, alarms, shutdown, etc...)*
- **Were processes designed with good engineering practices?**
- **What standards were used to construct the process and are they documented?**
- **Is information available on-site including?**
 - *electrical classification (engine rooms)*
 - *relief system design and design basis*
 - *ventilation system design*
 - *maximum intended inventory of vessels and system*
 - *material safety data sheets (MSDS) for the process chemicals*
 - *Etc...*

PREVENTION PROGRAMS

Process Safety Information (Continued)

- *Typical Agency Audit Questions resulting in Citations:*
 - Was PSI up to date, and available during PHAs?
 - Was PHA team qualified to perform analysis?
 - Did the PHA team include an hourly employee who works with or operates the process?
 - Were all process components addressed in the PHAs?

PREVENTION PROGRAMS

Process Hazard Analysis

- *A system must be established to promptly address findings and recommendations (schedule and documentation)*
- *Recommendations must be resolved prior to start-up of the new or modified processes*
- *Actions taken and their status must be documented and communicated to employees*
 - **To operating, maintenance and other employees whose work assignments involve the covered process**
 - **Other employees affected by the recommendations or actions including contractors and their employees if they are affected**

PREVENTION PROGRAMS

- *Agencies require appropriate follow-up actions be taken and documented for All PHA and Audit recommendations without regard of the cost required to implement the recommendation.*
- *Owner can justifiably decline to adopt a recommendation where the owner can document, in writing and based upon adequate evidence, that one or more of the following conditions are true;*
 - **analysis contains material factual errors;**
 - **recommendation is not necessary to protect health & safety of employees of owner and/or contractors;**
 - **an alternative measure would provide sufficient level of protection; or**
 - **recommendation is infeasible**
- *Please remember that any PHA or Audit recommendation that says “Consider” must be addressed!*

PREVENTION PROGRAMS

Operating Procedures (*7 modes of operation*)

- *Initial Startup*
- *Normal Startup*
- *Emergency Startup*
- *Normal Operation*
- *Normal Shutdown*
- *Temporary / Emergency Operation*
- *Emergency Shutdown*

PREVENTION PROGRAMS

Operating Procedures (Continued)

- *Consequences of deviation and steps required to avoid /correct deviation*
- *The owner or operator shall ensure that the operating procedures are reviewed annually and updated if necessary or whenever a major change occurs and prior to startup of the changed process.*
- *The owner or operator shall ensure that the operating procedures are available to system operators.*

PREVENTION PROGRAMS

Training

- *Written training program and documentation of training performed*
- *Refresher training is required every 3-years and more often if necessary*
- *Employees should be consulted regarding the appropriate frequency of refresher training*
- *Evidence of Emergency Response Training for Operation, Maintenance, and Other Employees*
- *The owner or operator shall ensure that operators are trained in any updated or new procedures prior to startup of a changed process.*

PREVENTION PROGRAMS

Mechanical Integrity (PM Program)

- *Equipment specifications and evidence that system is operated within intended design parameters*
- *Preventive/predictive/corrective maintenance program and documentation verifying implementation*
- *Demonstrated compliance with industry standards/good engineering practices for safe operation and maintenance of system (e.g., Manufacturer Recommendations or IIAR Guidelines for Ammonia Refrigeration)*
- *Documented equipment history and records of testing and inspection*
- *Are there methods in place to analyze inspection and testing results to assure that equipment deficiencies are corrected when outside acceptable limits?*

PREVENTION PROGRAMS

Mechanical Integrity (PM Program) Continued

– *Is the program documented?*

- Including the date of each inspection or test
- The name of the person who performed the inspection or test
- The serial number or other identifier of the equipment on which the inspection or test was performed
- A description of the inspection or test performed
- The results of the inspection or test
- Actions taken to correct deficiencies
- Is required data collected during normal daily walk around including:
 - *Pressures*
 - *Temperatures*
 - *Levels*
 - *Etc...*

– *5-Year Independent Mechanical Integrity audit for ammonia refrigeration systems (per IIAR guidelines)*

PREVENTION PROGRAMS

Management of Change

- *How the Facility will Manage Changes at the Facility that Could affect the Operation of the “Process”. Examples of Changes Include:*
 - Adding new components to the process
 - Relocating or removing process components
 - Changing operating parameters of the process
 - Replacing existing components with components of different design
- *Is the technical basis for ALL proposed changes, such as but not necessarily limited to, the reasons for performing the work, desired results, technical design, and appropriate implementation instructions documented including but not limited to:*
 - changes in process safety information being updated prior to any change?
 - changes in operating procedures or practices being updated prior to change being put into service?
 - training completed prior to startup of the changed process?
 - maintenance routines developed prior to change being put in to service?

PREVENTION PROGRAMS

Pre-Startup Safety Review

- *Procedures to Ensure that Appropriate Safety Issues have been Considered and that System is Ready for Safe Operation Before System is Operated.*
- *Prior to the introduction of hazardous material (e.g. anhydrous ammonia) to the system are safety, operating, maintenance, training, and emergency procedures in place and adequate?*
- *Have any necessary inspections (e.g. pressure tests, proper anchorage, seismic, etc.) been completed prior to equipment being put into service?*

PREVENTION PROGRAMS

Compliance Audits

- *Audit of Compliance with the CalARP/RMP/PSM requirements by someone knowledgeable in the process and team should include an hourly employee*
- *Required every 3 years to comply with the standards*
- *Audit must include a report of the audit findings including referring to previous PHA and MI Audit recommendations that have yet to be addressed*
- *A system must be established to promptly address the audit findings and recommendations*
- *Must document that deficiencies have been corrected*
- *Owner or operator shall retain the two most recent compliance audit reports.*

PREVENTION PROGRAMS

Compliance Audits (Continued)

- *Actions taken and their status must be documented and communicated to employees*
 - **To operating, maintenance and other employees whose work assignments involve the covered process**
 - **Others employees or contractors affected by the recommendations or actions**
- *Does the person conducting have the responsibility for managing and or operating the process?*
 - *Is there a possible conflict of interest (e.g. is the auditor also responsible for the budget)?*
 - *Does the possibility of the “Rooster Auditing the Hen House” analogy exist?*
 - *Has the person conducting the audit had any formal Audit Training?*

PREVENTION PROGRAMS

Incident Investigation

- *Written Program to Investigate Releases including Minor Releases and “Near Misses” that had the Potential to Cause a Release*
- *Investigations must be started within 48-Hours*
- *Investigation Team should include:*
 - at least one person knowledgeable in the process involved
 - contract employee if the incident involved work of the contractor
 - other persons with appropriate knowledge and experience to investigate and analyze incident
 - management and or safety representative(s) as appropriate
- *Program must Address Procedures to Investigate Incidents and Follow-up to Prevent Reoccurrence.*
- *Findings shall be documented and reviewed with all affected personnel whose job tasks are affected by the findings*
- *Incident summaries / reports shall be retained for 5-years*

PREVENTION PROGRAMS

Employee Participation

- *Program to Ensure Participation of Representatives of All Potentially Affected Employees in the Development and Implementation of the CalARP/RMP/PSM Compliance Programs*
- *System to Ensure Communication of Results of All PSM / RMP / CalARP Studies and Follow-up Actions*
- *Are employees and their representatives consulted in the development of and revisions to PSM and RMP/CalARP elements including but not limited to?*
 - operating procedures and mechanical integrity program
 - content and frequency of refresher training
 - Process Hazard Analysis
 - Compliance Audits
 - Incident Investigations
 - Management of Change
 - Etc.

PREVENTION PROGRAMS

Safety Programs

– Hot Work Permit Program

- **Ensure Hot Work Permit Program Includes Any Acutely Hazardous Materials Processes (e.g. ammonia refrigeration system)**
- **Ensure Hot Work procedures are followed and permits are completed for ALL hot work including contractors hot work**

PREVENTION PROGRAMS

Safety Programs (Continued)

– Lock-Out / Tag-Out Program

- **Ensure Lock-Out / Tag - Out Program Includes Any Acutely Hazardous Materials Processes (e.g. ammonia refrigeration system)**
- **Ensure Lock/Tag/ Try procedures are followed at ALL times including by contractors working on premises**

PREVENTION PROGRAMS

Safety Programs (Continued)

– *Line Break Program*

- **Ensure Line Break Program Includes All Acutely Hazardous Materials Processes (e.g. ammonia refrigeration system)**
- **This Program Applies to Any Breach or Opening of the Process (e.g. Cleaning a strainer, replacing an oil filter, cutting a line, opening the system to atmosphere, draining oil, etc.)**
- **Ensure Line Break procedures are followed at ALL times including contractors working on premises**

PREVENTION PROGRAMS

Safety Programs (Continued)

- *Do Safety Programs Include:*
 - Have hot work permits been issued for all hot work on or near covered process equipment?
 - Does Lockout/Tagout program include all covered process components?
 - Is the Opening Process Equipment Program (i.e. Line Break Permit) consistently used when opening process equipment (e.g. draining oil, rebuilding SOVs, etc.)?
 - Do you have written evaluations and copies of training records
 - Documentation showing the proper maintenance of emergency response equipment and early warning alarm system?
 - Does Medical Surveillance program include: Respiratory protection program, employee pulmonary function test records, and employee respirator fit testing records?
 - Do you have a written HazCom program and training records?
 - Are Confined Spaces identified and does program include:
 - *Confined Space entry permits and training records?*
 - *Rescue training and is a rescue team available on site during confined space entries?*

PREVENTION PROGRAMS

Contractor Safety: Program to Ensure that Contractors Follow Facility Safety Protocols

- *Does the program include ALL contractors who work on or adjacent to covered process(s)?*
- *Have contract employees been periodically audited?*
 - **Been properly trained in and utilizing safe work practices**
 - **Know potential fire, explosion, or toxic release hazards and applicable provisions of the plants emergency action/response plan**
- *Has contract employers' safety performance and programs (e.g. training) been evaluated and documented?*
- *Is the entrance, presence, and exit of contractors and contract employees controlled?*
- *Are any overlapping responsibilities jointly shared by the company and contractors delineated in writing?*

EMERGENCY RESPONSE PROGRAM

- *Facility describes how it will Respond to an Emergency Involving an Acutely Hazardous Material. Must include:*
 - “Response” versus “Evacuation and No Response”
 - Who
 - What
 - When
 - Where
 - How
- *Plan must be exercised with local responding agencies such as:*
 - Fire
 - Police
 - HazMat
- *Training must be kept up to date (e.g., annual refresher training).*
- *Emergency Response equipment, early warning systems, and alarm systems maintenance must be kept up to date.*

DOCUMENTATION

- **RMP / CalARP DOCUMENT**

- *Summary of All Supporting Programs, Studies, etc.*
- *Management Systems*
- *Accident History*
- *PHA (HazOp) Study Sheets and Follow-up Documentation*
- *Existing and Proposed Mitigation Measures*
- *Offsite Consequence Analysis*
- *Certification Statement signed by Plant Management*

- **Facility Documentation to Substantiate All Prevention Program Elements**

- *Process Safety Information*
- *SOPs*
- *Evidence of Implementation of All Safety Programs*
- *Mechanical Integrity (PM Program)*
- *Training*
- *Compliance Audits*
- *Emergency Response/Action Plan*
- *Etc...*

Enforcement PSM/OSHA

- **AB1127 Key Provisions include:**
 - *Penalties for citations up to \$25,000 per citation;*
 - *Employers that fail to abate a violation will face a penalty of up to \$15,000 per day or criminal prosecution;*
 - *Criminal enforcement in cases where a willful violation causes death or serious injury of an employee*
 - **misdemeanor with up to one year incarceration and a fine of up to \$100,000**
 - **felony with up to 3 years imprisonment and a fine up to \$250,000 and a \$2 million fine to the company**
 - *Citizen suits.*

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CONTACT INFORMATION

- Beronia Beniamine, Stanislaus County
 - 209.525.6746, bbeniamine@envres.org
- Robert Job, Condor Earth Technologies, Inc.
 - 209.532.0361, bjob@condorearth.com
- Greg Taylor, Foster Farms
 - 209.656.5089, greg.taylor@fosterfarms.com