



Review of [California Accident Release Prevention \(CalARP\)](#) Program Legal Requirements

By: Luke Hanst

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CalARP applies to stationary sources with more than threshold quantities of a regulated substance. These stationary sources are evaluated to determine the potential for and impacts of accidental releases and may be required to develop a Risk Mitigation Plan (RMP). The implementation of the CalARP Program falls to the Unified Program Agency (UPA) which is the local regulatory authority responsible for overseeing the industrial facility, referred to in this summary as the local regulatory authority. The CalARP program defines 4 program levels depending on the type of hazardous material stored and the type of process it is involved in. This summary investigates these four programs in tandem and focuses on the most stringent requirements from among these programs. CalARP requirements that only affect toxic gasses are excluded from this summary.

Risk Management Plans include the following:

1. Registration information including the facility name, location, chemical and processes covered, the number of employees, etc.
2. A management system to oversee the implementation of the risk management program. This includes the designation of an individual or team designated to provide recommendations to improve process safety. The facility owner or operator must implement these recommendations unless the recommendation is based on factual errors or the recommendation is infeasible, however, a determination of infeasibility shall not be based solely on cost.
3. An offsite consequence analysis for both a worst-case release scenario and an alternative release scenario which defines the impacts to offsite populations and environments:

- a. Alternative release scenarios assume the most likely release scenario based on the five-year accident history and the average meteorological conditions at a facility's location.
 - b. Worst-case release scenarios estimate the greatest distance in any direction to an endpoint (i.e., when the hazard ceases to be harmful). These scenarios assume the following:
 - i. The maximum quantity in a process is released in an instantaneous spill at ground level that spreads according to the material and ground surface characteristics. Including the assumption of urban or rural topography as appropriate.
 - ii. This release scenario may take into account passive mitigation systems (e.g., secondary containment units) as long as that mitigation system is capable of withstanding the release event.
 - iii. CalARP defines the meteorological conditions to be used in this scenario as a wind speed of 1.5 meters per second, atmospheric stability class F, the highest ambient temperature at the facility location in the last three years, and an average humidity for the facility location.
 - iv. Flammable gasses or liquids will be assessed for a worst-case vapor cloud explosion for all materials that evaporated within 10 minutes of the release.
 - c. Offsite impacts to the public are determined by evaluating the public receptors in range of the distribution of the hazard in the worst-case scenario, including: the residential population, the presence of institutions (e.g., schools or hospitals), parks and recreational areas, major commercial, office, and industrial buildings
 - d. Offsite impacts to environmental receptors are determined by listing the environmental receptors within a circle with its center at the point of release and a radius determined by the distance to the endpoint.
4. A five-year accident history with all accidental releases from covered processes that resulted in deaths, injuries, or significant property damage on

site, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage.

5. A Prevention Program (can be understood as a vulnerability assessment and a risk mitigation plan) which includes:

a. Safety information:

- i. Information about the chemical's health impacts and medical response protocol.
- ii. Information on the technology and equipment involved in a process.
- iii. Documentation that the equipment complies with recognized and generally accepted good engineering practices (RAGAGEP).
- iv. For equipment designed and constructed in accordance with outdated codes, standards, or practices, the owner or operator will determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.

b. A Process Hazard Analysis (PHA):

- i. The owner or operator will work closely with the regulating authority to determine which PHA methodology is appropriate. CalARP provides the following methodologies:
 1. What-If
 2. Checklist
 3. What-If / Checklist
 4. Hazard and Operability Study
 5. Fault Tree Analysis
 6. An appropriate equivalent methodology.
- ii. The PHA shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and knowledge specific to the process being evaluated and at least one team member who is knowledgeable in the specific PHA methodology being used.

- iii. "The PHA shall include consideration of external events, including seismic events."
 - iv. The PHA will address: the hazards of the process, the identification of any previous incident which had a likely potential for catastrophic consequences, engineering and administrative controls applicable to the hazards and their interrelationships, the consequences of failure in these engineering and administrative controls, human factors.
 - v. The risk management implementation program established by the facility will address the PHA findings and recommendations, ensure that recommendations are resolved and documents, and develop a written schedule of when these actions are to be completed. Actions are to be completed on a timetable agreed upon with the regulating authority or within 2.5 years of performing the PHA.
 - vi. The PHA will be updated and revalidated at least once every five years.
- c. Operating procedures for processes covered in the RMP.
- d. Facilities must ensure mechanical integrity, maintenance, and inspections which apply to all components involved in a hazardous process:
- i. Inspection and testing to ensure that process equipment complies with RAGAGEP.
 - ii. The frequency of inspections and tests will be consistent with applicable manufacturers' recommendations, industry standards or codes, good engineering practices, and prior operating experience.
 - iii. The owner or operator will correct deficiencies in equipment that are outside acceptable limits before further use, or in a safe and timely manner when necessary means are taken to ensure safe operation.
- e. Training protocol for personnel to ensure safe operation of processes.

- f. Compliance audits to ensure that procedures and practices developed in response to the RMP requirements are being followed will be conducted by at least one person knowledgeable in the process at least every three years.
 - i. The owner or operator will promptly determine and document an appropriate response to each finding of the compliance audit. A timetable for the resolution of these findings will be agreed upon with the regulatory authority or completed within 1.5 years of the audit.
- g. An emergency response program which coordinates with local response agencies.
- h. CalARP provides additional guidance for modifications to processes and requirements around RMP updating when significant changes are made.

Information about review, public comment, and enforcement:

- The designated authority shall review the RMP to ensure all legal requirements are met and inform the facility of deficiencies in the RMP. Facilities have 60 days with a possible 30-day extension to correct the deficiencies.
- Daily costs up to \$25000 or \$50000 (depending on the case) are incurred for owners and operators who fail to meet the RMP requirements and the law holds those operators liable for all costs associated with an emergency during the time that they fail to meet the requirements.
- Once accepted, RMPs undergo a 45-day public comment period.
- The designated authority then performs an evaluation review which considers public comments and which may include inspections and onsite document review. This must be completed within 24-36 months depending on the type of facility being regulated.
- The designated authority shall inspect every stationary source regulated by CalARP at least once every three years to determine compliance.

Discussion of DEQ Questions:

DEQ asked about how regulation address a design level earthquake. CalARP requires that facilities assess for the risk of an earthquake in their process hazard assessment, however the severity of the earthquake is not determined by the regulation. It is likely that the International Building Code design level earthquake is used by the facility, which uses the USGS probabilistic model for a very rare earthquake with the recurrence interval of 2,500 years, and in the case of Oregon, this would include a Cascadia Subduction Zone earthquake.

DEQ asked about definitions of mitigation and minimizing risk. CalARP does not set performance standards at the state level. Local regulatory authorities define these criteria. However, CalARP does require that facilities and ongoing processes are made "safe" and comply with recognized and generally accepted good engineering practices (RAGAGEP). CalARP defines mitigation or mitigation systems as "specific activities, technologies, or equipment designed or deployed to capture or control substances upon loss of containment to minimize exposure of the public or the environment. Passive mitigation means equipment, devices, or technologies that function without human, mechanical, or other energy input. Active mitigation means equipment, devices, or technologies that need human, mechanical, or other energy input to function."

DEQ asked about the vulnerability assessment methodology implemented in law. CalARP leaves it up to the local regulatory authority and the facility to determine the most appropriate methodology for this assessment. The DEQ should likely consider selecting or creating a single consistent methodology to be applied by facilities.

The DEQ asked about cost limitations for facility mitigation efforts. CalARP does not include any cost limitations for actions to improve process safety. On the contrary, CalARP requires that mitigation recommendations be implemented unless they are deemed infeasible, but that determination of infeasibility will not be based solely on cost.

The DEQ asked about the inclusion of off-site impact analysis. CalARP sets stringent requirements for off-site impact analysis which account for impacts to public receptors, defined as “offsite residences, institutions (e.g., schools, hospitals), industrial, commercial, and office buildings, parks, or recreational areas inhabited or occupied by the public at any time,” and environmental receptors, defined as “natural areas such as national or state parks, forests, or monuments; officially designated wildlife sanctuaries, preserves, refuges, or areas; and federal wilderness areas, that could be exposed at any time.” These off-site impact analyses are then shared with the public during the public comment period.