

DESCRIPTION OF PROGRAM 4 ELEMENT & REG SECTION	CAL-ARP PROGRAM 3	CALIFORNIA ACCIDENTAL RISK MANAGEMENT PROGRAM 4	CONTRA COSTA INDUSTRIAL SAFETY ORDINANCE
SECTION 2745.1 Applicable Refinery Operations	N/A	Refineries must submit a revised RMP to address the changes in Program 4 by September 30, 2019	Not present
SECTION 2762.0.1 Applicable Refinery Operations	Only Petroleum Product production areas	All processes of the petroleum refinery including utilities and safety related equipment are covered except the process plant laboratory, warehouses, maintenance shops, office buildings, and change rooms	Similar to Program 4
SECTION 2762.0.2 Purpose	N/A	To prevent major incidents at petroleum refineries in order to protect the health and safety of communities and the environment.	Section 450-8.002 "to protect public health and safety from accidental releases"
SECTION 2762.1 Process Safety Information (PSI) is a data base of information that is available throughtout the refinery via their computer system.	No Program 3 changes	Same as Program 3 except that in Program 4 the refinery must perform an in-depth analysis of the refinery hazards, the refinery must ensure that they have gathered and made available the most current safety information for the review team. The refinery management must document that the process equipment complies with Recognized And Generally Accepted Good Engineering Practiecs (RAGAGEP) .	Same as Program 3

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<p>SECTION 2762.2 Process Hazard Analysis (PHA) is a qualified team approach to identify overall general refinery hazards</p>	<p>Same as previous Program 3, except that in 2015 Program 3 was modified to set 2.5 years (or next refinery turnaround) as the time limit allowed on required refinery corrective actions.</p>	<p>Program 4 requires that all processes (utilities and safety related) that previously were not covered under Program 3 must be thoroughly evaluated by September 30, 2020. The team of qualified experts must include hourly employee participation. The Program 4 PHA has more comprehensive elements such as HCA (Hierarchy Hazard Control Analysis see definition below) which includes Inherently Safer System Analysis (ISSA). ISSA is used as a guideline in the following risk control priority: eliminate risk, reduce risk with passive safeguard, reduce with active safeguards, and reduce with procedural safeguards. The PHA covers over all modes of operation, Human Factors (HF) review via Latent Conditions Checklist (LCC), perform SPA (Safeguard Protection Analysis) for each scenario that identifies major incident potential for existing and recommended safeguards, perform HCA (for all recommendations that identify potential for major incident). See below for Corrective Action Requirements. The refinery must address the recommendations according to the Corrective Actions procedures listed below.</p>	<p>Contra Costa County's Industrial Safety Ordinance (ISO) is similar to Program 3 but it requires a PHA to be performed on all processes not just processes containing threshold quantities of regulated substances. ISO requires a seismic assessment if a process release could have offsite potential. PHA recommendations must be completed within one year or by next turnaround. Human Factors considerations require that a procedural PHA be performed which considers a review of the steps in a procedure to make sure potential to cause incidents are considered. If there are any recommendation with a Major Chemical Accident or Release (MCAR) potential, then the recommendations are due within one year and must consider Human Factors (HF) review of Latent Conditions Checklist (LCC), Safeguard Protection Analysis (SPA)</p>

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<p>SECTION 2762.2.1 Safeguard Protection Anlysis (SPA) is a team approach to review identified major incident refinery hazards and develop prevention tactics.</p>	<p>N/A</p>	<p>This more detailed investigation follows a major refinery hazard that was discovered in a PHA or general review of the refinery hazards. Following discovery of this refinery hazard, the refinery must complete a SPA to mitigate the issue within a six month peroid after the PHJA is completed. The refinery shall have a SPA team the is comprised of people with expertise in engineering and process operations and employee participation. The team shall include a member who is knowledgeable in specific SPA evaluation and who will employ quantative methods such as Layer of Protection Analysis (LOPA) using Individual Protection Layers (IPL) as the building block. The risk reduction will be achived by layering on the independent protection elements to arrive at an additive total. The IPL's numeric safety values shall be based on site history or industry failure rates. The investigation finding must be documented as an appendix and reviewed each time the general refinery hazards review is performed. The SPA report must include the effectiveness of existing individual refinery safety items, the combined effect of all existing safety items and the combined effect of all existing and all additional/ alternative safety items. The SPA report will address any required maintenance and testing to ensure that the IPL's are functioning as designed and will address any SPA identified deficiencies. The refinery must address the recommendations according to the Corrective Actions procedures listed below.</p>	<p>Can be stand alone or incorporated into general refinery safety review. To be Completed by 2019. Must Document the analysis (regulation does not have specific requirements). Update every 5 years.</p>

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<p>SECTION 2762.3 Operating Procedures (OP) are the written documents used to train personnel on how to properly run/operate the part of the refinery that is under their control.</p>	Same as previous	<p>Program 3 requirements plus Program 4 has expanded Safety Considerations to include Safety Procedures for opening process equipment. Emergency operations are expanded to include: response to overpressurizing or overheating of equipment in addition to handling leaks, spills, releases and discharges. Prior to allowing employees in vicinity of a leak, equipment must be shutdown, pressure removed, and isolated from other refinery equipment.</p>	<p>Similar to Program 4 in by including areas outside of process area. Plus inclusion of how people view and use the operating procedres. Operating procedures must consider Inherent Conditions Checklist items during their development.</p>
<p>SECTION 2762.4 Training of employees on refinery operations.</p>	No Program 3 changes	<p>Same as Program 3 for initial training. Prior to being placed in a refinery operating unit, employes must be trained on the new Program 4 elements. A written training program must be developed that documents testing procedures, and certifies trained employees to continue operations work. By September 30, 2019 employees must have received and passed the new training procedures, developed to include all new Program 4 elements. The three year refereshar training now includes maintenance employees.</p>	<p>Same as Program 3, (HF) Human Factor training required (basic, specialized, overall Human Factors Program includes refresher training).</p>
<p>SECTION 2762.5 Mechanical Integrity is the process to verify that the Refinery equipment is suitable for the process operatoin in which it is used</p>	Same as previous	<p>Same as Program 3 but Program 4 now includes DMR for each process for which a damage mechanism exists. Refinery shall document the rational for the DMR. A review of 50% of the refinery DMR are required by September 30, 2020 and the remainder are due by Sepember 30, 2022. Each DMR is required to be reviewed each 5 years. A DMR is required prior to any major change that may introduce or in which a damage mechanism exists; as part of an Incident Investigation and it must be performed by a team of experts. See Section 2762.16 (d) (e) Maintenance procedures require HF review.</p>	<p>Same as Program 3 but includes a HF review requirement for Maintenance Procedures for "specialized equipment". Program 4 adds a DMR requirement</p>

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<p>SECTION 2762.6 Management of Change (MOC) is the process that ensures no process equipment changes occur without being reviewed by a competent team of experts.</p>	<p>No Program 3 changes</p>	<p>Same as Program 3, but Program 4 now requires that prior to making substantial personnel changes (>90 days), the refinery must establish a team that includes impacted employees to assess the Management Of Organizational Change (MOOC), whenever the personnel staffing changes are reduced or personnel responsibilities are increased above 15%. The equipment based MOC process requires the establishment of a team of experts including process operational employees who will perform a detailed review of the requested change in equipment, chemicals or procedures. A written document trail for changes will be prepared and reviewed with the impacted employees. HF assessment is required in the MOOC. Prior to implementation of a major change; the refinery must conduct a HCA and Damage Mechanism Review (DMR). The findings must be included in the MOC documentation. If the MOC identifies changes in PSI or OP, they must be updated promptly.</p>	<p>Similar to program 4 including areas outside of process area. ISO requires a Management Of Organizational Changes (MOOC) but unlike program 4 which has set criteria of 15% increase in dutes, ISO requires a MOOC for a Substantative increase in duties. ISO requires Inherent Safer System Analysis for major changes.</p>
<p>SECTION 2762.7 Pre-Startup Safety Review (PSSR) ensures that proper procedures are followed prior to commencement of refinery unit startup.</p>	<p>No Program 3 changes</p>	<p>Following turnaround work done on a refinery process and prior to the introduction of highly hazardous materials, the refinery will conduct PSSR, which evaluates construction, maintenance and repair work, to ensure it was properly completed and meets design specifications. Operating procedures are in place and employees are trained. If it is a new process unit, then PHA, HCA, DMR and SPA must be performed for new and modified processes.</p>	<p>Same as Program 3, but a PSSR required if significant change occurs which requires a change to Proces Safety Information (PSI)</p>
<p>SECTION 2762.8 Compliance Audit is a team evaluation of the Refinery procedures and responses to recommendations to ensure compliance.</p>	<p>Same as Previous (2015 requires 1.5 year or following next turnarounds for Corrective Actions)</p>	<p>Same as Program 3 but in Program 4 the refinery must retain the three most recent Compliance Audits and shall prepare a written report of the complaince audit that includes findings and recommendations. The refinery must address the recommendations according to the Corrective Actions procedures listed below.</p>	<p>Same as Progam 3 but needs to include additional ISO elements.</p>

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<p>SECTION 2762.9 Incident Investigation (II)</p>	<p>Same as Previous (2015 requires 1.5 year or 2 years from incident or following next Turnaround for Corrective Actions</p>	<p>Same as Program 3, but with Program 4 , a thorough Root Cause Analysis (RCA) must be performed with a team of experts in RCA, process operations, and impacted employee participation. The RCA shall review management systems, DMR's and safety culture of the effected process and in the case of a major incident, the refinery shall perform a HCA. Recommendations will include interim actions that will reduce risk. The refinery must address the II recommendations according to the Corrective Actions procedures listed below. For major incidents, written reports are required within 90 days and every 30 days until the II is completed. Final report is due within 5 months. Withing 30 days of receipt of the final report, the CUPA will post it on it's web site.</p>	<p>Same as Program 3 the ISO requires a RCA -approved by Contra Costa County for MCAR plus must perform a HF using LCC. If there is a near miss then perform a MCAR, ISSA for CalARP qualifying incidents or MCARs in which II requires a major change.</p>
<p>SECTION 2762.10 Employee Participation is the active use of hourly employees on expert safety teams or panels so that the process unit operations are more clearly represented.</p>	<p>Same as previous</p>	<p>Same as Program 3, but in Prgroam 4 there are more investigations in which the employees will participate, such as: PHA, DMR, HCA, MOC MOOC, II, SOA, PSSR, and HF program. Refineries with an authorized collective bargaining agent may select employes to participate in overall Accidental Release Prevention program development and implementaion plan and for employees to participate in each team-based activity</p>	<p>Same as Program 3 but with Program 4 must have employee participation in development and implementation of HF Program and in auditing and revising the Latent Conditions Checklist LCC.</p>
<p>SECTION 2762.11 Hot Work defines the safety procedures utilized when welding, grinding or other spark generation operations that occur in the refinery.</p>	<p>No Program 3 changes</p>	<p>Now includes the entire refinery except for warehouse, office and laboratory</p>	<p>Includes the entire refinery except for warehouse, office and laboratory</p>

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<p>SECTION 2762.12 Contractors</p>	<p>No Program 3 changes</p>	<p>In Program 4 , contractors must be evaluated regarding safety performance and the refinery must require that they use a skilled, trained work force. The refinery must ensure that contractors have informed their employees of safe work practices, the hazards related to their jobs, and refinery safety rules .</p>	<p>Same as Program 3</p>
<p>SECTION 2762.13 Hazard Control Analysis (HCA) uses a team of experts to evaluate and prioritize risks for elimination, or risk reduction via safeguards. Inherent Safety Systems Analysis (ISSA) is an element of HCA.</p>	<p>N/A</p>	<p>HCA for 50% of existing processes must be reviewed by September 29, 2020 and the remaining processes by September 30, 2022. Hierarchy of Hazard Control Analysis (HCA) must be performed by a team of experts that includes refinery hourly staff. Additionally, the HCA must be performed on items identified as potential for major incident, whenever a Management of Change (MOC) identifies a major change item, and for any new Program 4 covered processes. The HCA will use ISSA as a guide line in the following risk control priority: eliminate risk, reduce risk with passive safeguard, reduce with active safeguards, and reduce with procedural safeguards. HCA report is due within 90 days following development of recommendations. The refinery must address the recommendations according to the Corrective Actions procedures listed below. HCA's must be updated every 5 years. HCA for new processes, process units, and new facilities will be made available to Solano County CUPA (Certified Unified Program Agency), and CUPA will make the HCA available to the public within 30 days.</p>	<p>ISSA for new and existing processes, (see above for other ISSA required.) Submit a report to Contra Costa Hazardous Materials Program (CCHMP) within 30 days of completion of the Inherently Safer Systems Analysis (ISSA) for each ISSA. Revalidate ISSA every 5 years. ISSA is used as a guide line in the following risk control priority: eliminate risk, reduce risk with passive safeguard, reduce with active safeguards, and reduce with procedural safeguards.</p>

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<p>SECTION 2762.14 Process Safety Culture Assessment (PSCA)</p>	<p>N//A</p>	<p>By April 1, 2019, the refinery is required to perform a PSCA that reviews the hazard reporting program, response to reports of hazards, incentive programs that do not discourage reporting of hazards, prioritizing safety during emergencies, management commitment, and leadership. Report is due 90 days after assessment, must implement corrective actions 24 months after report completion, followed by a 3 year interim assessment, and 5 year reassessment. Communicate to workforce within 60 days of report completion. Report to include management commitment, individual performance peer perception and accountability and safety programs performance in addition to developing milestone indicators to verify that recommendations are achieving results.</p>	<p>Safety Culture Assessment: Initially due in 2010/2013 (ISO/RISO) must do reassessment every 5 years per guidance not regulations: 6-9 months to report to management and share with workforce. Must start on recommendations within 3 months of report completion.</p>
<p>SECTION 2762.15 Human Factors (HF)</p>	<p>N/A</p>	<p>By March 31, 2019 the refineries must develop and implement a written HF program. The HF Analysis shall use an effective method of evaluating staffing levels, task complexity, employee competency, employee fatigue while on shift work and overtime, etc. LCC must include shift schedules, task complexity, fatigue, control panel display, communications, etc. Process controls shall include error-proof machines, automatic alerts, and shutdowns. HF shall be considered in PHA, II, HCA, OP,and MOC procedures. By September 29, 2020 refinery management shall have completed more than 50% review of the existing operating and maintenance procedures. By September 30, 2022 all procedures must be reviewed. The review documents will be made available to employees and their representatives.</p>	<p>Develop written HF program, perform HF analysis and review facility wide HF performance</p>

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<p>SECTION 2762. 16 Accidental Release Prevention Program Management System.</p>	<p>N/A</p>	<p>The refinery shall develop and implement an effective Accident Release Prevention(ARP) Program Management System, that includes job descriptions of roles and responsibilities, organizational chart of management positions and written procedure ensuring the effective communication of information. The ARP shall be reviewed and updated every 3 years. The system will include procedures to ensure effective communication of safety, operations, maintenance, corrective action, recommendations and findings.</p>	<p>ISO guidance document expands on the ideas and requires roles and responsibilities to be defined and requires reporting of process Safety Performance Indicators; such as. past due inspection, past due PHA recommendations, API Tier 1 or Tier 2 incidents These items must be submitted annually in their safety performance report.</p>
<p>SECTION 2762.16 (d) (e) Corrective Action Work is a process to address findings and recommendations resulting from HCA, DMR, or PHA's.</p>	<p>N/A</p>	<p>Corrective Actions for findings and recommendations will be presented to refinery management, who may reject the recommendations if they are in error, not relevant or infeasible (but not based solely on cost). The owner may modify recommendations, provided a justifiable superior level of protection alternative exists. The DMR team members must be informed and allowed to comment on management changes. Corrective Actions on the recommendations must occur on prioritized basis. Non-shutdown Corrective Actions must be completed within 2.5 years of the analysis or review. Compliance Audit and Incident Investigation corrective actions must be completed within 1.5 years of the analysis or review. Corrective Actions requiring a process shutdown must be completed during the first regularly scheduled shutdown. Delayed Corrective Actions must have interim safeguards to prevent a major incident and a rationale for deferring the Corrective Actions and timelines when Corrective Actions will be implemented. Corrective Actions are to be tracked and documented.</p>	<p>Not specifically addressed in this detailed fashion.</p>

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<p>SECTION 2762.16 (f) (1) Work Stop Procedures is the ability to partially or fully shut down a refinery process without repercussions.</p>	N/A	<p>By January 1, 2018, the refinery must establish the authority of a qualified operator in charge of a refinery unit to partially or completely shut down a process based on process safety hazard(s). Employees and contractors must have the ability to refuse to perform a task that could reasonably result in death or serious injury.</p>	Not specifically addressed.
<p>SECTION 2762.16 (f) (2) Anonymous Hazard Reporting and required response.</p>	N/A	<p>By January 1, 2018, the refinery must develop a system to allow employees and contractors to anonymously report hazards to which the refinery must prioritize and respond to within 30 days. The refinery management must correct hazards that present the potential for death or physical harm.</p>	Not specifically addressed
<p>SECTION 2762.16 (h) Safety Performance Indicators are measurements systems that provide information on the overall safety performance of the refinery.</p>	N/A	<p>Starting in 2019, on June 30th of each year the refinery shall provide a safety report on the prior entire year (Jan 1st to Dec 31). The annual June 30th report will include the following safety performance indicators: Past due piping or pressure vessel inspections, Past due corrective actions, Past due major incident investigation corrective actions, Major incidents, and Temporary repairs.</p>	Not required
<p>SECTION 2765.2 Emergency Response Program concerns training with local agencies to prepare mitigation procedures for accidental releases.</p>	No Program 3 changes	Same as Program 3	Same as Program 3