

Process Safety COMPARISON: CALIFORNIA TITLE 8, DIVISION 1, CHAPTER Section 5189.1 (Process Safety Management for Petroleum Refineries) vs. CHAPTER 296-67 WAC (Process Safety Management of Highly Hazardous Chemicals) Discussion Draft Round 2, Part A

<p>CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD Chapter §5189.1. Process Safety Management for Petroleum Refineries.</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries Discussion Draft 1</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries, Part A Discussion Draft 2</p>	<p>Commentary</p>
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(a) Scope and Purpose	WAC 296-XX-XXX Purpose/Scope	WAC 296-XX-XXX Purpose and Scope	Commentary
<p>This section contains requirements for petroleum refineries to reduce the risk of major incidents and eliminate or minimize process safety hazards to which employees may be exposed.</p>	<p>(1) Purpose. This chapter contains requirements for preventing and minimizing the consequences of releases of toxic, reactive, flammable, or explosive chemicals or materials in the petroleum refining industry.</p> <p>(2) Scope. This part applies to processes within petroleum refineries</p>	<p>This part contains requirements for the prevention, elimination, and minimization of the consequences of releases of toxic, reactive, flammable, and explosive chemicals or materials in the petroleum refining industry.</p>	<p>1. The concept of prevention has been incorporated into this section.</p>
(b) Application.	WAC 296-XX-XXX Application	WAC 296-XX-XXX Application	Commentary
<p>This section shall apply to processes within petroleum refineries. For petroleum refineries, this regulation supersedes California Code of Regulations (CCR) Title 8, Section 5189.</p>	<p>NA</p>	<p>This Part A applies to processes within petroleum refineries. This regulation supersedes chapter 296-67 WAC Part B, with respect to petroleum refineries.</p>	<p>1. The PSM rule will be divided into two separate sections; with Part A devoted to the petroleum refining industry.</p>
(c) Definitions	WAC 296-XX-XXX Definitions	WAC 296-XX-XXX Definitions	Commentary
<p>NA</p>	<p>Acute toxicity. See definition of <i>Acute Toxicity</i> in WAC 296-901-140, Appendix A.</p>	<p>NA</p>	<p>1. This term has been left out of the second draft.</p>
<p>NA</p>	<p>Affected employee. Workers who operate a process or job task in areas that may be impacted by maintenance or operation of a process area. Affected employees include, but are not limited to:</p> <p>(a) Maintenance personnel;</p> <p>(b) Operations personnel;</p> <p>(c) Contractors;</p>	<p>Affected employee. Anyone who controls, manages, or performs job tasks in or near a process. The term, "affected employee" includes, but is not limited to:</p> <p>(a) Maintenance employees and their representatives;</p> <p>(b) Operations employees and their representatives;</p>	<p>1. Vendors have been eliminated in the second draft; laboratory personnel have been added since sampling tasks expose them to process hazards.</p>

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	(d) Staff members; and (e) Vendors providing process-related equipment, or chemicals.	(c) Contract employees and their representatives; and (d) Laboratory employees who perform sampling tasks within a process.	
NA	Best Practice. A method or technique that has been generally accepted as superior to alternative methodologies	NA	1. Best practices can be individually identified in the field.
NA	Boiling Point. See the definition of <i>Boiling Point</i> in WAC 296-901-14024, Appendix B.	NA	1. This term has been eliminated.
Change. Any alteration in process chemicals, technology, procedures, process equipment, facilities or organization that could affect a process. A change does not include replacement-in-kind.	Change. Any alteration in chemistry, technology, procedures, equipment, facilities or organization that could affect a process. A change does not include replacement-in-kind.	Change. Any alteration in process chemicals, technology, procedures, process equipment, facilities or organization that could affect a process. A change does not include replacement-in-kind.	1. Added “process”
NA	Collaboration. The action of working with someone to produce or create something.	NA	1. While the term has been left out of the definitions section in the second draft, it has been retained as a concept within the rule.
NA	Damage Mechanism Hazard Review (DMR). An assessment of potential damage mechanisms that can affect processing equipment, including corrosion, stress cracking, and other material degradation.	NA	1. This term has been removed since it is well described within its own section in the rule language.

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Facility. The plants, units, buildings, containers or equipment that contain(s) or include(s) a process.	NA	Facility. The plants, units, buildings, containers or equipment that contain(s) or include(s) a process	1. This term has been added
Feasible. Capable of being accomplished in a successful manner within a reasonable period of time, taking into account health, safety, economic, environmental, legal, social and technological factors.	Feasible. Capable of being accomplished in a successful manner within a reasonable period, taking into account health, safety, environmental, legal, social and technological factors.	Feasible. Capable of being accomplished in a successful manner within a reasonable period of time, taking into account health, safety, economic, environmental, legal, social, and technological factors. Economic factors must not be the sole basis in determining feasibility.	1. Economic factors have been incorporated into this term.
Hierarchy of Hazard Control. Hazard prevention and control measures, in priority order, to eliminate or minimize a hazard. Hazard prevention and control measures ranked from most effective to least effective are: First Order Inherent Safety, Second Order Inherent Safety, and passive, active and procedural protection layers.	Hierarchy of Hazard Controls Analysis (HCA). Assessing hazard prevention and control measures, in priority order, to eliminate or minimize a hazard. Hazard prevention and control measures ranked from most effective to least effective are: First Order Inherent Safety, Second Order Inherent Safety, and passive, active and procedural protection layers.	Hierarchy of Hazard Controls. Hazard prevention and control measures, in priority order, to eliminate or minimize a hazard. Hazard prevention and control measures ranked from most effective to least effective are: First Order Inherent Safety, Second Order Inherent Safety, and passive, active and procedural protection layers.	1. The term in this second draft has been amended by removing “analysis.” The definition has not been changed.
Highly Hazardous Material. A flammable liquid or flammable gas, or a toxic or reactive substance.	Highly hazardous chemical (or material). A substance possessing toxic, reactive, flammable, or explosive properties.	Hazardous Chemical or Material. A substance possessing toxic, reactive, flammable, or explosive properties.	1. The word “highly” has been removed in the second draft
Human Factors. The design of machines, operations and work environments such that they closely match human capabilities, limitations and needs. Human factors include environmental, organizational and job factors, as well as human and individual characteristics, such	Human Factors. The design of machines, operations and work environments such that they closely match human capabilities, limitations and needs. Human factors include environmental, organizational and job factors, as well as human and individual characteristics, such as fatigue, that can affect job	Human Factors. The design of machines, operations and work environments such that they closely match human capabilities, limitations and needs. Human factors include: (a) Environmental factors;	1. The term has been expanded to include design influences on human factors.

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<p>as fatigue, that can affect job performance, process safety, and health and safety.</p>	<p>performance, process safety, and health and safety.</p>	<p>(b) Organizational and job factors; (c) Human and individual characteristics such as fatigue, that can affect job performance; (d) Process safety; (e) Health and safety, and (f) Potentially adverse consequences created by the design of equipment or systems within a process.</p>	
<p>NA</p>	<p>Integrity Operating Windows (IOWs). Sets of limits used to determine the different variables that could affect the integrity and reliability of equipment within the process.</p>	<p>NA</p>	<p>1. This term has been left out of the second draft definitions section as it may introduce confusion. The concept of IOWs will be applied as necessary in the field.</p>
<p>Isolate. To cause equipment to be removed from service and completely protected against the inadvertent release or introduction of material or energy by such means as blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; implementing a double block and bleed system; or blocking or disconnecting all mechanical linkages.</p>	<p>Isolate. To cause equipment to be removed from service and completely protected against the inadvertent release or introduction of material or energy by such means as blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; implementing a double block and bleed system; or blocking or disconnecting all mechanical linkages.</p>	<p>Isolate. To completely protect workers against the release or introduction of hazardous material or energy by such means as: (a) Blanking, inerting, or blinding; (b) Misaligning or removing sections of lines, pipes, or ducts; (c) Implementing a double block and bleed system; or</p>	<p>1. Added "...so that the process can continue to operate or remain pressurized while discrete sections of the facility are taken out of service for maintenance or inspection..."</p>

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		(d) Blocking or disconnecting all mechanical linkages so that the process can continue to operate or remain pressurized while discrete sections of the facility are taken out of service for maintenance or inspection	
Major Incident. An event within or affecting a process that causes a fire, explosion or release of a highly hazardous material and has the potential to result in death or serious physical harm.	Major Incident. An event within or affecting a process that causes a fire, explosion or release of a highly hazardous material and which has the potential to result in death or serious physical harm.	NA	1. Removed and term has been replaced with “process safety incident.”
NA	Management of Organizational Change (MOOC). An assessment that takes place prior to the reduction of staffing levels, the reduction of classification levels of employees during shift changes, or the increase of employee responsibilities or classification levels.	NA	1. MOOC has been removed since it is well described within the rule language itself.
NA	NA	Must. Must means mandatory.	1. “Must” has replaced “shall” in DOSH rule language.
NA	Outage. Occasions during which a process or part of a process is taken off stream, or in which pressure, heat, or other factor(s) in the process are decreased or removed for purposes of maintenance or other necessary action. An outage does not include a turnaround, which typically involves concerted planning well in	Outage. Any occasion, including scheduled turnarounds, during which a process or part of a process is taken off stream. Outages also include the reduction of temperatures and/or pressures within equipment, and total or partial shutdowns of a process to: (a) Perform maintenance;	1. Turnarounds have been incorporated into this term, which encompasses any process outage.

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	advance of process shutdown and maintenance.	(b) Overhaul or repair of a process and process equipment; or (c) Perform routine and non-routine maintenance, where such maintenance consists of regular, periodic maintenance on one or more pieces of equipment that may require shutdown of such equipment.	
NA	NA	Preventive Maintenance. Preventive maintenance tasks are those activities that are carried out when process equipment is shut down.	1. Prevention is emphasized in the second draft.
Process. Petroleum refinery activities including use, storage, manufacturing, handling, piping or on-site movement that involve a highly hazardous material. Utilities and process equipment shall be considered part of the process if in the event of a failure or malfunction they could potentially contribute to a major incident. For purposes of this definition, any group of vessels that are interconnected, or separate vessels that are located such that an incident in one vessel could affect any other vessel, shall be considered a single process. This definition includes processes under partial or unplanned shutdowns. This definition excludes	Process. Any activity involving a highly hazardous chemical, including: (a) Any use; (b) Storage; (c) Manufacturing; (d) Handling; (e) Piping; (f) Release mitigation; or	Process. Any activity involving a hazardous chemical or material, including: (a) Use; (b) Storage; (c) Manufacturing; (d) Handling; (e) Piping; (f) Release mitigation; (g) Utilities;	1. Added “utilities” at (g) without the incident contribution qualifier

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ancillary administrative and support functions, including office buildings, labs, warehouses, maintenance shops, and change rooms.	(g) The on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any equipment that is interconnected, including separate vessels, which are located such that a highly hazardous chemical or utility could be involved in a potential release, must be considered a single process. This definition excludes ancillary administrative and support functions, including office buildings, labs, warehouses, maintenance shops, and change rooms	(h) The on-site movement of such chemicals, or combination of these activities; or (i) Any equipment that is interconnected, that could be involved in a potential release. This definition excludes ancillary administrative and support functions, including office buildings, labs, warehouses, maintenance shops, and change rooms.	
Process Equipment. Equipment, including pressure vessels, rotating equipment, piping, instrumentation, process control, or appurtenance, related to a process.	Process equipment. Equipment that is part of a process.	Process Equipment. Equipment, including but not limited to pressure vessels, rotating equipment, piping, instrumentation, process control, or appurtenances, related to a process.	1. Aligned with California rule language
Process Safety Culture. A combination of group values and behaviors that reflects whether there is a collective commitment by leaders and individuals to emphasize process safety over competing goals, in order to ensure protection of people and the environment.	Process Safety Culture. A combination of group values and behaviors that reflects whether there is a collective commitment by leaders and individuals to emphasize process safety over competing goals, in order to ensure protection of people and the environment.	Process Safety Culture. A combination of group values and behaviors that reflects whether there is a collective commitment by organizational leadership to emphasize process safety over competing goals, in order to ensure the protection of employees.	1. "Environment" removed
NA	Process Safety Culture Assessment (PSCA). A method to objectively define process safety values and beliefs.	NA	1. "Assessment" has been removed as it is well described within the rule language.

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NA	NA	Process Safety Incident. A near miss, unplanned release, process equipment failure, or other event within or affecting a process that could cause a fire, explosion, or release of a hazardous chemical or material.	1. This term has replaced “major incident” in the second draft. Encompasses near misses and non-injurious equipment failure in order to reflect field experience and emphasize prevention.
Process Safety Performance Indicators. Measurements of the refinery’s activities and events that are used to evaluate the performance of process safety systems.	NA	Process Safety Performance Indicators. Measurements of the refinery’s activities and events that are used to evaluate the performance of process safety systems.	1. Added in second draft for alignment with the California language.
NA	Promptly. With little or no delay.	NA	1. This term has been removed.
Qualified Operator. A person designated by the employer who, by fulfilling the requirements of the training program defined in subsection (g), has demonstrated the ability to safely perform all assigned duties.	Qualified Operator. A person designated by the employer who, by fulfilling the requirements of the employer’s training program, has demonstrated the ability to safely perform all assigned duties.	Qualified. Any employee, who by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated their ability to solve, collaborate, or resolve problems relating to the subject matter, the work, or the project	1. Expanded the term to include more than just operators and added more descriptors
Reactive Substance. A self-reactive chemical, as defined in CCR Title 8, Section 5194, Appendix B.	Reactive Substance. See the definition of <i>Reactive substance</i> in WAC 296-901-14024, Appendix B.	NA	1. Removed this term
Recognized and Generally Accepted Good Engineering Practices (RAGAGEP). Engineering, operation or maintenance activities established in codes, standards, technical reports or recommended practices, and published by recognized	Recognized and Generally Accepted Good Engineering Practices (RAGAGEP). Engineering, operation or maintenance provisions established in codes, standards, technical reports or recommended practices, and published by recognized and generally	Recognized and Generally Accepted Good Engineering Practices (RAGAGEP). Engineering, operation or maintenance activities established in codes, standards, technical reports or recommended practices, and published by recognized and generally accepted organizations	1. Removed last phrase since internal policies and practices are not meant to be RAGAGEP sources.

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<p>and generally accepted organizations such as the American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), American Society of Mechanical Engineers (ASME), American Society of Testing and Materials (ASTM), National Fire Protection Association (NFPA), and Instrument Society of America (ISA). RAGAGEP does not include standards, guidelines or practices developed for internal use by the employer</p>	<p>accepted organizations such as, the American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), American Society of Mechanical Engineers (ASME), American Society of Testing and Materials (ASTM), National Fire Protection Association (NFPA), and Instrument Society of America (ISA). RAGAGEP does not include standards, guidelines or practices developed for internal use by the employer, unless they are documented as meeting or exceeding external provisions.</p>	<p>such as the American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), American Society of Mechanical Engineers (ASME), American Society of Testing and Materials (ASTM), National Fire Protection Association (NFPA), and Instrument Society of America (ISA). RAGAGEP does not include standards, guidelines or practices developed for internal use by the employer.</p>	
<p>Replacement-in-kind. A replacement that satisfies the design specifications.</p>	<p>Replacement in kind. A replacement which satisfies the design specification.</p>	<p>Replacement-in-kind. A replacement that satisfies the design specifications of the item it is replacing.</p>	<p>1. This term has been corrected; the last phrase had been left out previously.</p>
<p>NA</p>	<p>Safeguard Protection Analysis (SPA). A method for evaluating the risk of hazard scenarios and comparing it with risk tolerance criteria to decide if existing safeguards are adequate, and whether additional safeguards are needed.</p>	<p>NA</p>	<p>1. Left out since it's well-described in rule language</p>
<p>Safety Instrumented Systems. Systems designed to achieve or maintain safe operation of a process in response to an unsafe process condition.</p>	<p>Safety Instrumented System. Systems designed to achieve or maintain safe operation of a process in response to an unsafe process condition</p>	<p>Safety System. Engineered systems designed to achieve or maintain safe operation of a process in response to an unsafe process condition.</p>	<p>1. Safety systems are not exclusive to instrumentation; broadened the term (to include suppression systems, for example)</p>

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<p>Temporary Pipe or Equipment Repair. A temporary repair of an active or potential leak from process piping or equipment. This definition includes active or potential leaks in utility piping or utility equipment that affect a process, and that could result in a major incident.</p>	<p>Temporary Pipe or Equipment Repair. A temporary repair of an active or potential leak from process piping or equipment. This definition includes active or potential leaks in utility piping or utility equipment that affect a process, and flange or valve packing leaks that could result in a major incident.</p>	<p>Temporary Pipe or Equipment Repair. A temporary repair of an active or potential leak from process piping or equipment. This definition includes active or potential leaks in utility piping or utility equipment, and flange or valve packing leaks that could result in a process safety incident</p>	<p>1. Used the term “process safety incident” in place of “major incident”</p>
<p>Turnaround. A planned total or partial shutdown of a petroleum refinery process unit or plant to perform maintenance, overhaul or repair of a process and process equipment, and to inspect, test and replace process materials and equipment. Turnaround does not include unplanned shutdowns that occur due to emergencies or other unexpected maintenance matters in a process unit or plant. Turnaround also does not include routine maintenance, where routine maintenance consists of regular, periodic maintenance on one or more pieces of equipment at a refinery process unit or plant that may require shutdown of such equipment.</p>	<p>Turnaround. A planned total or partial shutdown of a petroleum refinery process unit or plant to perform maintenance, overhaul or repair of a process and process equipment, and to inspect, test and replace process materials and equipment. Turnaround does not include outages, or unplanned shutdowns that occur due to emergencies or other unexpected maintenance matters in a process unit or plant. Turnaround also does not include routine maintenance, where routine maintenance consists of regular, periodic maintenance on one or more pieces of equipment at a refinery process unit or plant that may require shutdown of such equipment.</p>	<p>NA</p>	<p>1. Turnarounds are now incorporated into “outages.”</p>

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<p>Utility. A system that provides energy or other process-related services to enable the safe operation of a refinery process. This definition also includes water, steam and asphyxiants, such as nitrogen and carbon dioxide, when used as part of a process.</p>	<p>Utility. A system that provides energy or other process-related services to enable the safe operation of a refinery process. This definition includes water, steam and asphyxiants, such as nitrogen and carbon dioxide, when used as part of a process.</p>	<p>Utility. A system that provides energy or other process-related services to enable the safe operation of a refinery process. This definition includes water, steam and asphyxiants, such as nitrogen and carbon dioxide, when used as part of a process, fire suppression, emergency washing, and hazard mitigation equipment</p>	<p>1. The term has been broadened to include all utilities.</p>
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<p>(v) Process Safety Management Program.</p>	<p>WAC 296-67-XXXX Process safety management program.</p>	<p>WAC 296-67-XXXX Process safety management program.</p>	<p>Commentary</p>
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This section has been moved to the front of the rule. No conceptual changes

<p>(q) Employee Participation</p>	<p>WAC 296-67-XXXX Employee Collaboration</p>	<p>WAC 296-67-XXXX Employee Collaboration</p>	<p>Commentary</p>
<p>(1) In consultation with employees and employee representatives, the employer shall develop, implement and maintain a written plan to effectively provide for employee participation in all PSM elements, pursuant to this section. The plan shall include provisions that provide for the following:</p> <p>(A) Effective participation by affected operating and maintenance employees and employee representatives, throughout all phases, in performing PHAs, DMRs, HCAs, MOCs, Management of Organizational Change assessments</p>	<p>(1) In consultation with employees and employee representatives, the employer must develop, implement, and maintain an effective written plan to effectively provide for employee collaboration in all PSM elements. The plan must include the following:</p> <p>(a) Collaboration by affected operating and maintenance employees and employee representatives, throughout all phases, in performing process hazard analyses (PHAs), damage mechanism reviews (DMRs), hierarchy of hazard controls analyses (HCAs), management of change (MOCs), management of organizational change (MOOCs), process</p>	<p>(1) In consultation with employees and employee representatives, the employer must develop, implement, and maintain a written plan to effectively provide for employee collaboration in all PSM elements. The plan must include at least the following:</p> <p>(a) Effective collaboration by affected operating and maintenance employees, throughout all phases, in performing:</p> <p>(i) Process hazard analyses (PHAs);</p> <p>(ii) Damage mechanism reviews (DMRs);</p> <p>(iii) Hierarchy of hazard controls analyses (HCAs);</p>	<p>1. The term “change management” at (1)(a)(iv) indicates MOCs and MOOCs.</p> <p>2. At (4)(a)(i) added “death”</p> <p>3. At (4)(a)(ii) added “qualified” before “operator.”</p> <p>4. At (4)(b): Language provides for feedback responding to a report of a hazard that may already be addressed.</p>

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<p>(MOOCs), Process Safety Culture Assessments (PSCAs), Incident Investigations, SPAs and PSSRs;</p> <p>(B) Effective participation by affected operating and maintenance employees and employee representatives, throughout all phases, in the development, training, implementation and maintenance of the PSM elements required by this section; and,</p> <p>(C) Access by employees and employee representatives to all documents or information developed or collected by the employer pursuant to this section, including information that might be subject to protection as a trade secret.</p> <p>(2) Authorized collective bargaining agents may select (A) employee(s) to participate in overall PSM program development and implementation planning and (B) employee(s) to participate in PSM teams and other activities, pursuant to this section.</p> <p>(3) Where employees are not represented by an authorized collective bargaining agent, the employer shall establish</p>	<p>safety culture assessment (PSCAs), incident investigations, safeguard protection analyses (SPAs), and process safety startup reviews (PSSRs);</p> <p>(b) Collaboration by affected operating and maintenance employees and employee representatives, throughout all phases, in the development, training, implementation and maintenance of the PSM elements required by this section; and,</p> <p>(c) Access by employees and employee representatives to all documents or information developed or collected by the employer pursuant to this section, including information that might be subject to protection as a trade secret.</p> <p>(2) Authorized collective bargaining agents may select employee(s) to participate in overall PSM program development and implementation planning; and employee(s) to participate in PSM teams and other activities.</p> <p>(3) Where employees are not represented by an authorized collective bargaining agent, the employer must establish effective procedures</p>	<p>(iv) Change management;</p> <p>(v) Process safety culture assessment (PSCAs),</p> <p>(vi) Incident investigations;</p> <p>(vii) Safeguard protection analyses (SPAs); and</p> <p>(viii) Process safety startup reviews (PSSRs).</p> <p>(b) Effective collaboration by affected employees and employee representatives, throughout all phases, in the development, training, implementation, and maintenance of the PSM elements required by this part; and,</p> <p>(c) Access by employees and employee representatives to all documents or information developed or collected by the employer, including information that might be subject to protection as a trade secret.</p> <p>(2) Authorized collective bargaining agents may select employee(s) to engage in overall PSM program development and implementation planning; and employee(s) to participate in PSM teams and other activities, pursuant to this part.</p>	

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<p>effective procedures in consultation with employees for the selection of employee representatives.</p> <p>(4) Nothing in this subsection shall preclude the employer from requiring an employee or employee representative to whom information is made available under subsection (q)(1)(C) to enter into a confidentiality agreement prohibiting him or her from disclosing such information, as set forth in CCR Title 8, Section 5194(i).</p> <p>(5) Within ninety (90) calendar days of the effective date of this section, the employer in consultation with employee and employee representatives, shall develop and implement the following:</p> <p>(A) Effective Stop Work procedures that ensure:</p> <p>1. The authority of all employees, including employees of contractors, to refuse to perform a task where doing so could reasonably result in death or serious physical harm;</p>	<p>in consultation with employees for the selection of employee representatives.</p> <p>(4) Within ninety calendar days of the effective date of this section, the employer must, in consultation with employee and employee representatives, develop, implement, and maintain the following:</p> <p>(a) Effective Stop Work procedures that ensure:</p> <p>(i) The authority of all employees, including employees of contractors, to refuse to perform a task where doing so could reasonably result in death or serious physical harm;</p> <p>(ii) The authority of all employees, including employees of contractors, to recommend to the operator in charge of a unit that an operation or process be partially or completely shut-down, based on a process safety hazard;</p> <p>(iii) The authority of the qualified operator in charge of a unit to partially or completely shut-down an operation or process, based on a process safety hazard; and (iv) Measures to ensure that employees who exercise stop work</p>	<p>(3) Where employees are not represented by an authorized collective bargaining agent, the employer must establish effective procedures in consultation with affected employee(s) for the selection of employee representatives.</p> <p>(4) Within ninety calendar days of the effective date of this part, the employer, in consultation with employees and employee representatives, must develop, implement, and maintain the following:</p> <p>(a) Effective Stop Work procedures that ensure:</p> <p>(i) The authority of all affected employees, including employees of contractors, to refuse or delay the performance of a task that they believe could reasonably result in serious physical harm or death;</p> <p>(ii) The authority of all affected employees, including employees of contractors, to recommend the qualified operator in charge of a unit that an operation or process be partially or completely shut-down, based on a process safety hazard;</p> <p>(iii) The authority of the qualified operator in charge of a unit to partially or completely shut</p>	

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<p>2. The authority of all employees, including employees of contractors, to recommend to the operator in charge of a unit that an operation or process be partially or completely shut-down, based on a process safety hazard; and,</p> <p>3. The authority of the qualified operator in charge of a unit to partially or completely shut-down an operation or process, based on a process safety hazard.</p> <p>(B) Effective procedures to ensure the right of all employees, including employees of contractors, to anonymously report hazards. The employer shall respond in writing within thirty (30) calendar days to written hazard reports submitted by employees, employee representatives, contractors, employees of contractors and contractor employee representatives. The employer shall prioritize and promptly respond to and correct hazards that present the potential for death or serious physical harm.</p> <p>(6) The employer shall document the following:</p>	<p>authority as described in this part are protected from intimidation, retaliation, or discrimination.</p> <p>(b) Effective procedures to ensure the right of all employees, including employees of contractors, to anonymously report hazards. The employer must respond in writing within thirty calendar days to written hazard reports submitted by employees, employee representatives, contractors, employees of contractors and contractor employee representatives. The employer must prioritize and promptly respond to and correct hazards that present the potential for death or serious physical harm.</p> <p>(5) The employer must document the following:</p> <p>(a) Recommendations to partially or completely shut down an operation or process;</p> <p>(b) Partial or complete shut down of an operation or process; and</p> <p>(c) A written log documenting instances when stop work authority was activated, and the action taken by the employer to address the circumstances under which that authority was exercised.</p>	<p>down an operation or process, based on a process safety hazard; and</p> <p>(iv) Employees who exercise stop work authority as described in this part are protected from intimidation, retaliation, or discrimination.</p> <p>(b) Effective procedures to ensure the right of all employees, including employees of contractors, to anonymously report hazards. The employer must respond in writing within thirty calendar days to written hazard reports submitted by employees, employee representatives, contractors, employees of contractors and contractor employee representatives. The employer must prioritize and promptly respond to and correct hazards that present the potential for death and serious physical harm. If the employer determines that an anonymous report does not constitute a hazard, or that the hazard is being corrected by some other means, a written response must be prepared and made available that provides this information to affected employees.</p> <p>(5) The employer must document the following:</p> <p>(a) Recommendations to partially or completely shut down an operation or process, pursuant to subsection XXXX;</p>	

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<p>(A) Recommendations to partially or completely shut-down an operation or process, pursuant to subsection (q)(5)(A)(2);</p> <p>(B) Partial or complete shut-down of an operation or process, pursuant to subsection (q)(5)(A)(3); and,</p> <p>(C) Written reports of hazards, and the employer's response, pursuant to subsection (q)(5)(B).</p>		<p>(b) The partial or complete shutdown of an operation or process, pursuant to subsection XXXX; and</p> <p>(c) Written reports of hazards, and the employer's response, pursuant to subsection XXXX.</p>	
(d) Process Safety Information.	WAC 296-XX-XXX Process Safety Information.	WAC 296-67-XXXX Process safety information.	Commentary
<p>(1) The employer shall develop and maintain a compilation of written Process Safety Information (PSI) before conducting any Process Hazard Analysis (PHA), Hierarchy of Hazard Controls Analysis (HCA), Safeguard Protection Analysis (SPA) or Damage Mechanism Review (DMR), pursuant to this Section. The compilation of written PSI shall be sufficient to enable the employer and employees involved in operating or maintaining a process to identify and understand the hazards posed by the process.</p>	<p>The employer must develop, implement, and maintain a compilation of written process safety information (PSI) before conducting any process hazard analysis (PHA), hierarchy of hazard controls analysis (HCA), safeguard protection analysis (SPA), or damage mechanism review (DMR) required by the rule. The compilation of written process safety information shall be sufficient to enable the employer and the employees involved in operating the process the hazards posed by those processes involving highly hazardous chemicals.</p>	<p>(1) The employer must develop, implement, and maintain a compilation of written process safety information (PSI) before conducting any:</p> <p>(a) Process hazard analysis (PHA);</p> <p>(b) Hierarchy of hazard controls analysis (HCA);</p> <p>(c) Safeguard protection analysis (SPA); or</p> <p>(d) Damage mechanism review (DMR).</p> <p>The compilation of written PSI must be sufficient to enable the employer and employee involved in</p>	<p>1. Language is more consistent to the California rule; and has been reformatted for ease of reading.</p> <p>2. At (5)(a), removed "Piping and instrumentation diagram"; replaced with "block flow diagram."</p>

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<p>(2) The PSI shall include information pertaining to the following:</p> <p>(A) The hazards of highly hazardous materials used in or produced by the process;</p> <p>(B) The technology of the process;</p> <p>(C) Process equipment used in the process; and,</p> <p>(D) Results of previous DMRs.</p> <p>(3) The employer shall provide for employee participation, pursuant to subsection (q). The PSI shall be made available to all employees and relevant PSI shall be made available to affected employees of contractors. Information pertaining to the hazards of the process shall be effectively communicated to all affected employees.</p> <p>(4) Information pertaining to hazards of highly hazardous materials used in, present in or produced by the process shall include at least the following:</p>	<p>(1) Information pertaining to the hazards of the highly hazardous chemicals used in, present in, or produced by the process. This information must consist of at least the following:</p> <p>(a) Toxicity information; including acute and chronic health hazards;</p> <p>(b) Permissible exposure limits in accordance with WAC 296-841-20025;</p> <p>(c) Physical data</p> <p>(d) Reactivity data;</p> <p>(e) Process-specific damage mechanisms;</p> <p>(f) Temperature, thermal and chemical stability data; and</p> <p>(g) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur.</p> <p><i>Note: Safety Data Sheets meeting the requirements of WAC 296- 901- 14014 may be used to comply with this requirement to the extent they contain the information required by this section.</i></p> <p>(2) Information pertaining to the technology of the process.</p>	<p>operating or maintaining a process to identify and understand the hazards posed by the process.</p> <p>(2) The PSI must include accurate, verified, and complete information pertaining to the following:</p> <p>(a) The hazards of hazardous materials used in or produced by the process;</p> <p>(b) The technology of the process;</p> <p>(c) Process equipment used in the process; and,</p> <p>(d) Results of previous DMRs.</p> <p>(3) The employer must provide for employee collaboration, pursuant to section XXXX. The PSI must be made available to all employees and relevant PSI must be made available to affected employees of contractors. Information pertaining to the hazards of the process must be effectively communicated to all affected employees.</p> <p>(4) Information pertaining to the hazardous chemicals or materials used in, present in, or produced by the process, must include at least the following:</p>	

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<p>(A) Toxicity information, including acute and chronic health hazards;</p> <p>(B) California Permissible Exposure Limits (PELs), as listed in CCR Title 8, Section 5155;</p> <p>(C) Physical data;</p> <p>(D) Corrosion data;</p> <p>(E) Thermal and chemical stability data;</p> <p>(F) Reactivity data; and,</p> <p>(G) Hazardous effects of incompatible mixtures that could foreseeably occur. NOTE TO (d)(4)(A) – (G): Safety Data Sheets meeting the requirements of CCR Title 8, Section 5194(g) may be used to comply with this requirement to the extent that they meet the information provisions.</p> <p>(5) Information pertaining to the technology of the process shall include at least the following:</p> <p>(A) A block flow diagram or simplified process flow diagram;</p>	<p>(a) Information concerning the technology of the process must include at least the following:</p> <p>(i) Piping and instrumentation diagram or simplified process/block flow diagram;</p> <p>(ii) Process chemistry;</p> <p>(iii) Maximum intended inventory;</p> <p>(iv) Safe upper and lower limits for such items as temperatures, pressures, flows, or compositions; and</p> <p>(v) An evaluation of the consequences of deviations, including those affecting the safety and health of employees.</p> <p>(b) Where the original technical information no longer exists, such information must be developed in conjunction with the process hazard analysis in sufficient detail to support the analysis.</p> <p>(3) Information pertaining to the equipment in the process.</p>	<p>(a) Toxicity information; including acute and chronic health hazards;</p> <p>(b) Permissible exposure limits in accordance with WAC 296-841-20025;</p> <p>(c) Physical data;</p> <p>(d) Corrosion data</p> <p>(e) Temperature, thermal and chemical stability data;</p> <p>(f) Reactivity data;</p> <p>(g) Hazardous effects of incompatible mixtures that could foreseeably occur; and</p> <p>(h) Process-specific damage mechanisms.</p> <p>(5) Information pertaining to the technology of the process must include at least the following:</p> <p>(a) A block flow diagram or simplified process flow diagram;</p> <p>(b) Process chemistry;</p> <p>(c) Maximum intended inventory;</p>	

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<p>(B) Process chemistry;</p> <p>(C) Maximum intended inventory;</p> <p>(D) Safe upper and lower limits for process variables, such as temperatures, pressures, flows, levels and compositions; and,</p> <p>(E) The consequences of deviations, including chemical mixing and reactions that may affect the safety and health of employees.</p> <p>(6) Information pertaining to process equipment shall include at least the following:</p> <p>(A) Materials of construction;</p> <p>(B) Piping and instrumentation diagrams;</p> <p>(C) Electrical classification;</p> <p>(D) Relief system design and design basis;</p> <p>(E) Ventilation system design;</p>	<p>(a) Information pertaining to the equipment in the process must include:</p> <p>(i) Materials of construction;</p> <p>(ii) Piping and instrument diagrams (P&IDs);</p> <p>(iii) Electrical classification; supply, and distribution systems;</p> <p>(iv) Relief system design and design basis;</p> <p>(v) Ventilation system design;</p> <p>(vi) Design codes and standards employed;</p> <p>(vii) Safety systems (e.g., interlocks, detection, or suppression systems);</p> <p>(viii) The consequences of deviations, including chemical mixing and reactions that may affect the safety and health of employees; and</p> <p>(ix) Results of prior damage mechanism reviews (DMRs).</p> <p>(b) The employer must document that equipment complies with recognized and generally accepted good engineering practices</p>	<p>(d) Safe upper and lower limits for process variables, such items as temperatures, pressures, flows, levels, and compositions; and</p> <p>(e) The consequences of deviations, including chemical mixing and reactions that may affect the safety and health of employees.</p> <p>(6) Information pertaining to the equipment in the process must include at least the following:</p> <p>(a) Materials of construction;</p> <p>(b) Piping and instrument diagrams (P&IDs);</p> <p>(c) Electrical classification;</p> <p>(d) Relief system design and design basis;</p> <p>(e) Ventilation system design;</p> <p>(f) Design codes and standards employed, including design conditions and operating limits;</p> <p>(g) Material and energy balances for processes built after September 1, 1992;</p>	

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<p>(F) Design codes and standards employed, including design conditions and operating limits;</p> <p>(G) Material and energy balances for processes built after September 1, 1992;</p> <p>(H) Safety systems, such as interlocks and detection and suppression systems; and,</p> <p>(I) Electrical supply and distribution systems.</p> <p>(7) The employer shall document that process equipment complies with RAGAGEP, where RAGAGEP has been established for that process equipment, or with more protective internal practices that ensure safe operation.</p> <p>(8) If the employer installs new process equipment for which no RAGAGEP exists, the employer shall document that this equipment is designed, constructed, installed, maintained, inspected, tested and operating in a safe manner.</p> <p>(9) If existing process equipment was designed and constructed in accordance</p>	<p>or with more protective internal practices that ensure safe operation.</p> <p>(c) For existing equipment designed and constructed in accordance with codes, standards or practices that are no longer in general use, the employer must determine and document that the equipment is designed, maintained, inspected, tested and operating in a safe manner.</p> <p>(4) The employer must provide for employee collaboration. The process safety information (PSI) must be made available to all employees, and relevant process safety information must be made available to affected employees of contractors. Information pertaining to the hazards of the process must be effectively communicated to all affected employees</p>	<p>(h) Safety systems, such as interlocks and detection and suppression systems;</p> <p>(i) Electrical supply and distribution systems; and</p> <p>(j) Results of prior damage mechanism reviews (DMRs).</p> <p>(7) The employer must document that process equipment complies with recognized and generally accepted good engineering practices (RAGAGEP), where RAGAGEP has been established for that process equipment, or with more protective internal practices that ensure safe operation.</p> <p>(8) If the employer installs new process equipment for which no RAGAGEP exists, the employer must determine and document that the equipment is designed, maintained, inspected, tested and operating in a safe manner.</p> <p>(9) If existing process equipment was designed and constructed in accordance with codes, standards or practices that are no longer in general use, the employer must determine and document that the process equipment is designed, installed, maintained, inspected, tested</p>	

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with codes, standards or practices that are no longer in general use, the employer shall document that the process equipment is designed, installed, maintained, inspected, tested and operating in a safe manner for its intended purpose.		and operating in a safe manner for its intended purpose. <i>Note: Safety Data Sheets meeting the requirements of WAC 296-901-14014 may be used to comply with this requirement to the extent they contain the information required by this section.</i>	
(e) Process Hazard Analysis.	WAC 296-XX-XXX Process Hazard Analysis.	WAC 296-67-XXXX Hazard analyses.	Commentary
(1) The employer shall perform and document an effective Process Hazard Analysis (PHA) appropriate to the complexity of each process, in order to identify, evaluate and control hazards associated with each process. All initial PHAs for processes not previously covered by CCR Title 8, Section 5189 shall be completed within three years of the effective date of this Section, in accordance with this subsection. PHAs performed in accordance with the requirements of CCR Title 8, Section 5189 shall satisfy the initial PHA requirements of this Section. All modes of operations pursuant to subsection (f) shall be covered by the PHA.	(1) The employer must perform and document an initial process hazard analysis (PHA) on processes covered by this standard. The process hazard analysis must be appropriate to the complexity of the process and must identify, evaluate, and control the hazards associated with the process. Employers must determine and document the priority order for conducting process hazard analyses based on a rationale which includes, but is not limited to, such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. (2) The employer must use process hazard analysis methodologies that are appropriate to the size, complexity, toxicity, and catastrophic	(1) Process hazard analysis. (a) The employer must perform and document an effective Process Hazard Analysis (PHA) appropriate to the complexity of each process, in order to identify, evaluate and control hazards associated with each process. All initial PHAs for processes not covered by chapter 296-67WAC, must be completed within three years of the effective date of this chapter. PHAs performed in accordance with the requirements of WAC 296-67-017 must satisfy the initial PHA requirements of this chapter. All modes of operations pursuant to subsection XXXX must be covered by the PHA (b) The employer must determine and document the priority order for conducting PHAs based on the extent of process hazards, the number of potentially affected employees, the age of the	1. Hierarchy of hazard controls analysis has been incorporated into this section; which is now titled "Hazard Analyses."

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<p>(2) The employer shall determine and document the priority order for conducting PHAs based on the extent of process hazards, the number of potentially affected employees, the age of the process and the process operating history. The employer shall use at least one of the following methodologies:</p> <p>(A) What-If;</p> <p>(B) Checklist;</p> <p>(C) What-If/Checklist;</p> <p>(D) Hazard and Operability Study (HAZOP);</p> <p>(E) Failure Mode and Effects Analysis;</p> <p>(F) Fault-Tree Analysis; or,</p> <p>(G) Other PHA methods recognized by engineering organizations or governmental agencies.</p> <p>(3) The PHA shall address:</p> <p>(A) The hazards of the process;</p>	<p>potential of the process. These methodologies may include:</p> <p>(a) What-If;</p> <p>(b) Checklist;</p> <p>(c) What-If/Checklist;</p> <p>(d) Hazard and Operability Study (HAZOP);</p> <p>(e) Failure Mode and Effects Analysis (FMEA);</p> <p>(f) Fault Tree Analysis; or</p> <p>(g) An appropriate equivalent methodology.</p> <p>(3) The process hazard analysis must address:</p> <p>(a) The hazards of the process;</p> <p>(b) The findings of incident investigations relevant to the process;</p> <p>(c) Engineering and administrative controls associated with the process;</p> <p>(d) Potential consequences of failure of engineering and administrative controls;</p>	<p>process and the process operating history. The employer must use at least one of the following methodologies:</p> <p>(i) What-If;</p> <p>(ii) Checklist;</p> <p>(iii) What-If/Checklist;</p> <p>(iv) Hazard and Operability Study (HAZOP);</p> <p>(v) Failure Mode and Effects Analysis (FMEA);</p> <p>(vi) Fault Tree Analysis; or</p> <p>(vii) Other PHA methods recognized by engineering organizations or governmental agencies.</p> <p>(c) The PHA must address:</p> <p>(i) The hazards of the process;</p> <p>(ii) Previous publicly documented major incidents in the petroleum refinery and petrochemical industry sectors that are relevant to the process;</p>	

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<p>(B) Previous publicly documented major incidents in the petroleum refinery and petrochemical industry sectors that are relevant to the process;</p> <p>(C) DMR reports that are applicable to the process units, pursuant to subsection (k);</p> <p>(D) HCA reports that are applicable to the process units, pursuant to subsection (l);</p> <p>(E) Potential consequences of failures of process equipment;</p> <p>(F) Facility siting, including the placement of processes, equipment, buildings, employee occupancies and work stations, in order to effectively protect employees from process safety hazards;</p> <p>(G) Human Factors, pursuant to subsection (s);</p> <p>(H) A qualitative evaluation of the types, severity and likelihood of possible incidents that could result from a failure of the process or of process equipment;</p>	<p>(e) Facility siting, including the placement of processes, process equipment, buildings, and employee occupancies and work stations, in order to effectively protect employees from process safety hazards;</p> <p>(f) Human factors;</p> <p>(g) Previous publicly documented major incidents in the petroleum refinery and petrochemical industry sectors that are relevant to the process;</p> <p>(h) Damage mechanism review (DMR) reports that are applicable to process equipment;</p> <p>(i) Hierarchy of hazard controls analysis (HCA) reports that are applicable to the process units;</p> <p>(j) The potential effects of external events, including seismic events, if applicable;</p> <p>(k) An evaluation of the types, severity and likelihood of possible incidents that could result from a failure of the process or of process equipment; and</p>	<p>(iii) DMR reports that are applicable to the process units, pursuant to section XXXX;</p> <p>(iv) HCA reports that are applicable to the process units, pursuant to section XXXX</p> <p>(v) Potential consequences of failures of process equipment;</p> <p>(vi) Facility siting, including the placement of processes, equipment, buildings, employee occupancies and work stations, in order to effectively protect employees from process safety hazards;</p> <p>(vii) Human Factors, pursuant to section XXXX;</p> <p>(viii) A qualitative evaluation of the types, severity and likelihood of possible incidents that could result from a failure of the process or of process equipment;</p> <p>(ix) The potential effects of external events, including seismic events, if applicable;</p> <p>(x) The findings of incident investigations relevant to the process, pursuant to section XXXX;</p>	

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<p>(I) The potential effects of external events, including seismic events, if applicable;</p> <p>(J) The findings of incident investigations relevant to the process, pursuant to subsection (o); and,</p> <p>(k) A review of applicable Management of Change (MOCs) documents completed since the last PHA, pursuant to subsection (n).</p> <p>(4) The PHA shall be performed by a team with expertise in engineering and process operations, and shall include at least one refinery operating employee who currently works in or provides training in the unit, and who has experience and knowledge specific to the process being evaluated. The team shall also include one member with expertise in the specific PHA methodology being used. The employer shall provide for employee participation pursuant to subsection (q). As necessary, the team shall consult with individuals with expertise in damage mechanisms, process chemistry, SPA and control systems.</p>	<p>(I) A review of applicable management of change (MOC) documents completed since the most recent PHA.</p> <p>(4) The process hazard analysis must be performed by a team with expertise in engineering and process operations, and the team must include at least one employee who has experience and knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used. The employer must provide for employee collaboration. As appropriate, the team must consult with individuals with expertise in damage mechanisms, process chemistry, safeguard protection analyses (SPA), control systems, or other such relevant skills.</p> <p>(5) For each scenario in the PHA that identifies the potential for a major incident, the employer must perform:</p> <p>(a) An effective written safeguard protection analysis (SPA) to determine the effectiveness of existing individual safeguards;</p>	<p>(xi) A review of applicable Management of Change (MOCs) documents completed since the last PHA, pursuant to section XXXX; and</p> <p>(xii) Engineering and administrative controls associated with the process.</p> <p>(d) The PHA must be performed by a team with expertise in engineering and process operations, and must include at least one refinery operating employee who currently works in, or provides training in the unit, and who has experience and knowledge specific to the process being evaluated. The team must also include one member with expertise in the specific PHA methodology being used. The employer must provide for employee collaboration pursuant to section XXXX. As necessary, the team must consult with individuals with expertise in damage mechanisms, process chemistry, Safeguard Protection Analysis, control systems.</p> <p>(e) The team must document its findings and recommendations in a PHA report, which must be available in the respective work area for review by any affected employees working in that area.</p> <p>(f) The PHA report must include:</p>	

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<p>(5) For each scenario in the PHA that identifies the potential for a major incident, the employer shall perform an effective written SPA to determine the effectiveness of existing individual safeguards, the combined effectiveness of all existing safeguards for each failure scenario in the PHA, the individual and combined effectiveness of safeguards recommended in the PHA, and the individual and combined effectiveness of additional or alternative safeguards that may be needed.</p> <p>(A) All independent protection layers for each failure scenario shall be independent of each other and independent of initiating causes.</p> <p>(B) The SPA shall utilize a quantitative or semi-quantitative method, such as Layer of Protection Analysis, or an equally effective method to identify the most protective safeguards. The risk reduction obtainable by each safeguard shall be based on site-specific failure rate data, or in the absence of such data, industry failure rate data for each device, system or human factor.</p>	<p>(b) The combined effectiveness of all existing safeguards for each failure scenario in the PHA;</p> <p>(c) The individual and combined effectiveness of safeguards recommended in the PHA;</p> <p>(d) The individual and combined effectiveness of additional or alternative safeguards that may be needed; and</p> <p>(e) The employer must complete all SPAs within six months of completing the PHA.</p> <p>(6) The employer must conduct an HCA in a timely manner, for all recommendations made by a PHA team for each scenario that identifies the potential for a major incident. The employer must attach the HCA report to the PHA report.</p> <p>(7) All independent protection layers for each failure scenario must be independent of each other and independent of initiating causes.</p> <p>(8) The SPA must utilize a method, such as layer of protection analysis (LOPA), or an equally effective method to identify the most protective safeguards. The risk reduction obtainable by each safeguard must be based on site-specific failure rate data, or in the</p>	<p>(i) The methodologies, analyses and factors considered by the PHA team;</p> <p>(ii) The findings of the PHA team; and</p> <p>(iii) The PHA team's recommendations, including additional safeguards to address any deficiencies identified by the SPA.</p> <p>(g) The employer must make the report available to affected employees whose work assignments are in the petroleum refinery and who may be affected by the findings and recommendations.</p> <p>(h) At least every five years, the written PHA must be updated and revalidated in accordance with the requirements of this section to ensure that the PHA is consistent with the current process.</p> <p>(2) Safeguard protection analysis</p> <p>(a) For each scenario in the PHA that identifies the potential for a process safety incident, the employer must perform:</p> <p>(i) An effective written safeguard protection analysis (SPA) to determine the effectiveness of existing individual safeguards;</p>	

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<p>(C) The SPA shall be conducted by at least one individual with expertise in the specific SPA methodology being used. The SPA may be performed as part of the PHA or as a stand-alone analysis. The employer shall provide for employee participation in the performance of all SPAs, pursuant to subsection (q).</p> <p>(D) The SPA shall document the likelihood and severity of all potential initiating events, including equipment failures, human errors, loss of flow control, loss of pressure control, loss of temperature control, loss of level control, excess reaction, and other conditions that may lead to a loss of containment. The SPA shall document the risk reduction achieved by each safeguard for all potential initiating events.</p> <p>(E) The employer shall complete all SPAs within six (6) months of completion of the PHA.</p> <p>(6) The employer shall conduct an HCA in a timely manner, pursuant to subsection (f), for all recommendations made by a</p>	<p>absence of such data, industry failure rate data for each device, system or human factor.</p> <p>(9) The SPA must include at least one individual with expertise in the specific SPA methodology being used. The SPA may be performed as part of the PHA or as a stand-alone analysis. The employer must provide for employee collaboration in the performance of all SPAs.</p> <p>(10) The SPA must document the likelihood and severity of all potential initiating events, including equipment failures, human factors, loss of flow control, loss of pressure control, loss of temperature control, loss of level control, excess reaction, and other conditions that may lead to a loss of containment. The SPA must document the risk reduction achieved by each safeguard for all potential initiating events.</p> <p>(11) The employer must complete all SPAs within six months of the revalidation or change of any PHA based on its next evaluation date.</p> <p>(12) The team must document and promptly address its findings and recommendations in a PHA report, which must be available in the</p>	<p>(ii) The combined effectiveness of all existing safeguards for each failure scenario in the PHA;</p> <p>(iii) The individual and combined effectiveness of safeguards recommended in the PHA; and</p> <p>(iv) The individual and combined effectiveness of additional or alternative safeguards that may be needed.</p> <p>(b) All independent protection layers for each failure scenario must be independent of each other and independent of initiating causes.</p> <p>(c) The SPA must utilize a quantitative or semi-quantitative method, such as layer of protection analysis (LOPA), or an equally effective method to identify the most protective safeguards. The risk reduction attainable by each safeguard must be based on site-specific failure rate data, or in the absence of such data, industry failure rate data for each device, system, or human factor.</p> <p>(d) The SPA must be conducted by at least one qualified individual with expertise in the specific SPA methodology being used. The SPA may be performed as part of the PHA or as a stand-alone analysis.</p>	

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<p>PHA team for each scenario that identifies the potential for a major incident. The employer shall append the HCA report to the PHA report.</p> <p>(7) The team shall document its findings and recommendations in a PHA report, which shall be available in the respective work area for review by any person working in that area.</p> <p>(8) The PHA report shall include:</p> <p>(A) The methodologies, analyses and factors considered by the PHA team;</p> <p>(B) The findings of the PHA team; and,</p> <p>(C) The PHA team's recommendations, including additional safeguards to address any deficiencies identified by the SPA.</p> <p>(9) The employer shall make the report available to operating, maintenance and other persons whose work assignments are in the petroleum refinery and who may be affected by the findings and recommendations.</p>	<p>respective work area for review by any person working in that area.</p> <p>(13) The PHA report must include:</p> <p>(a) The methodologies, analyses and factors considered by the PHA team;</p> <p>(b) The findings of the PHA team; and</p> <p>(c) The PHA team's recommendations, including additional safeguards to address any deficiencies identified by the SPA.</p> <p>(14) The employer must make the report available to operating, maintenance and other persons whose work assignments are in the petroleum refinery and who may be affected by the findings and recommendations.</p> <p>(15) At least every five years after the completion of the initial process hazard analysis, after a major incident or when changes to the process warrant a more timely revision, the process hazard analysis must be updated and revalidated by a team meeting the requirements of this section, to ensure that the process hazard analysis is consistent with the current process.</p>	<p>(e) The SPA must document the likelihood and severity of all potential initiating events, including equipment failures, human factors, loss of flow control, loss of pressure control, loss of temperature control, loss of level control, excess reaction, and other conditions that may lead to a loss of containment. The SPA must document the risk reduction achieved by each safeguard for all potential initiating events.</p> <p>(f) The employer must complete all SPAs within six months of the completion or revalidation of the PHA.</p> <p>(3) Hierarchy of hazard controls analysis.</p> <p>(a) The employer must conduct a hierarchy of hazard controls analysis (HCA) as a stand-alone analysis for all existing processes. For the HCA on existing processes, the team must review the PHA while conducting the HCA. The HCA for existing processes must be performed in accordance with the following schedule, and may be performed in conjunction with the PHA schedule:</p> <p>(i) No less than 50 percent of existing processes within three years of the effective date of this chapter;</p>	

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<p>(10) Except as required in subsection (e)(6), the employer shall implement all PHA recommendations in accordance with subsection (x).</p> <p>(11) At least once every five (5) years, the written PHA shall be updated and revalidated in accordance with the requirements of this subsection to ensure that the PHA is consistent with the current process.</p> <p>(12) The employer shall retain all PHAs and SPAs for the life of the process, including updates and revalidations. This information shall include the documented resolution of all recommendations developed pursuant to this subsection.</p>	<p>(16) Employers must retain the initial, updated or revalidation of process hazard analyses and SPAs for each process covered by this part, as well as the documented resolution of recommendations described in this section for the life of the process.</p>	<p>(ii) Remaining processes within five years of the effective date of this chapter;</p> <p>(iii) All HCAs for existing processes must be updated and revalidated as standalone analyses at least every five years.</p> <p>(b) The employer must also conduct an HCA in a timely manner as follows:</p> <p>(i) For all recommendations made by a PHA team for each scenario that identifies the potential for a process safety incident, pursuant to section XXXX;</p> <p>(ii) For all recommendations that result from the investigation of a process safety incident, pursuant to section XXXX;</p> <p>(iii) As part of managing changes, whenever a major change is proposed, pursuant to section XXXX; and</p> <p>(iv) During the design and review of new processes, new process units and new facilities, and their related process equipment.</p> <p>(c) HCAs must be documented, performed, updated and revalidated by a team with expertise</p>	

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		<p>in engineering and process operations. The team must include one member knowledgeable in the HCA methodology being used, and at least one operating employee who currently operates the process and has expertise and experience specific to the process being evaluated. As necessary, the team must consult with individuals with expertise in damage mechanisms, process chemistry, and control systems.</p> <p>(d) The HCA team must:</p> <p>(i) Compile or develop all risk-relevant data for each process or recommendation;</p> <p>(ii) Identify, characterize, and prioritize risks posed by each process safety hazard;</p> <p>(iii) Identify, analyze, and document all inherent safety measures and safeguards for each process safety hazard in the following sequence and priority order, from most preferred to least preferred:</p> <p>(A) First order inherent safety measures;</p> <p>(B) Second order inherent safety measures;</p> <p>(C) Passive safeguards;</p>	

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		<p>(D) Active safeguards; and</p> <p>(E) Procedural safeguards.</p> <p>(iv) For purposes of this section, first order inherent safety measures are considered to be most effective and procedural safeguards are considered to be least effective.</p> <p>(v) Identify, analyze, and document relevant, publicly available information on inherent safety measures and safeguards. This information must include inherent safety measures and safeguards that have been:</p> <p>(A) Achieved in practice by the petroleum refining industry and related industrial sectors; and</p> <p>(B) Required or recommended for the petroleum refining industry and related industrial sectors, by a federal or state agency, or local agency, in a regulation or report.</p> <p>(vi) For each process safety hazard identified, develop written recommendations in the following sequence and priority order:</p>	

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		<p>(A) Eliminate hazards to the greatest extent feasible using first order inherent safety measures;</p> <p>(B) Reduce any remaining hazards to the greatest extent feasible using second order inherent safety measures;</p> <p>(C) Effectively reduce remaining risks using passive safeguards</p> <p>(D) Effectively reduce remaining risks using active safeguards; and,</p> <p>(E) Effectively reduce remaining risks using procedural safeguards.</p> <p>(e) The HCA team must complete an HCA report within ninety calendar days of developing the recommendations. The employer must append the HCA report to the PHA report. The report must include:</p> <p>(i) A description of the composition, experience and expertise of the team;</p> <p>(ii) A description of the HCA methodology used by the team;</p>	

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		<p>(iii) A description of each process safety hazard analyzed by the team;</p> <p>(iv) A description of the inherent safety measures and safeguards analyzed by the team; and</p> <p>(v) The rationale for the inherent safety measures and safeguards recommended by the team for each process safety hazard.</p> <p>(4) The employer must implement all recommendations in accordance with WAC 296-67-XXXX Corrective action program.</p> <p>(5) The employer must provide for employee collaboration in conducting process hazard analyses (PHAs), safeguard protection analyses (SPAs), and hierarchy of hazard controls analyses (HCAs).</p> <p>(6) Employers must retain the initial, updated and revalidation of process hazard analyses (PHAs), safeguard protection analyses (SPAs), and hierarchy of hazard controls analyses (HCAs) for each process covered by this part, as well as the documented resolution of recommendations described in this section, for the life of the process.</p>	
<p>(f) Hierarchy of Hazard Controls Analysis.</p>	<p>WAC 296-XX-XXX Hierarchy of Hazard Controls Analysis</p>	<p>WAC 296-XX-XXX Hierarchy of Hazard Controls Analysis</p>	<p>Commentary</p>

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Merged into "Hazard Analyses."			
(f) Operating Procedures	WAC 296-XX-XXX Operating Procedures.	WAC 296-XX-XXX Operating Procedures.	Commentary
<p>(1) The employer shall develop and implement effective written Operating Procedures. The Operating Procedures shall provide clear instructions for safely conducting activities involved in each process. The Operating Procedures shall be consistent with the PSI and, at a minimum, shall address the following:</p> <p>(A) Steps for each operating phase or mode of operation.</p> <ol style="list-style-type: none"> 1. Start-up; 2. Normal operation; 3. Temporary operations as needed; 4. Emergency shutdown, including the conditions under which emergency shutdown is required; provisions granting the authority of the qualified operator to partially or completely shut down the operation or process; and the assignment of responsibilities to qualified operators in 	<p>(1) The employer must develop, implement, and maintain effective written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and must address at least the following:</p> <p>(a) Steps for each operating phase:</p> <ol style="list-style-type: none"> (i) Start up; (ii) Normal operations; (iii) Temporary operations; (iv) Emergency shutdown, including the conditions under which emergency shutdown is required; provisions granting the authority of the qualified operator to partially or completely shut down the operation or process; and the assignment of responsibilities to qualified operators in order to ensure that emergency shutdown is executed in a safe and timely manner; 	<p>(1) The employer must develop, implement, and maintain effective written operating procedures. The operating procedures must provide clear instructions for safely conducting activities involved in each process. The operating procedures must be consistent with the PSI and, at a minimum, must address the following:</p> <p>(a) Steps for each operating phase or mode of operation:</p> <ol style="list-style-type: none"> (i) Start up; (ii) Normal operations; (iii) Temporary operations as needed; (iv) Emergency operations; (v) Emergency shutdown, including the conditions under which emergency shutdown is required; provisions granting the authority of the qualified operator to partially or completely shut down the operation or process; and the assignment of responsibilities to qualified operators in order to 	<ol style="list-style-type: none"> 1. Added "Emergency operations" at (1)(a)(iv) 2. Added "Non-routine work" at (1)(a)(viii) 3. "Human factors" added at (1)(c)(viii)

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<p>order to ensure that emergency shutdown is executed in a safe and timely manner; 5. Normal shutdown; and, 6. Start-up following a turnaround, or planned or unplanned shutdown, or after an emergency shutdown. (B) Operating limits. 1. Consequences of deviations; and, 2. Steps required to avoid or correct deviations. (C) Safety and health considerations. 1. Properties of, and hazards presented by, the chemicals used in the process; 2. Precautions necessary to prevent exposure, including passive, active and procedural safeguards, and personal protective equipment; 3. Protective measures to be taken if physical contact or inhalation exposure occurs;</p>	<p>(v) Normal shutdown; and (vi) Start-up following a turnaround, or planned or unplanned shutdown, or after an emergency shutdown. (b) Operating limits: (i) Consequences of deviation; and (ii) Steps required to correct or avoid deviation. (c) Safety and health considerations: (i) Properties of, and hazards presented by, the chemicals used in the process; (ii) Precautions necessary to prevent exposure, including engineering controls, administrative controls, active and passive controls and personal protective equipment; (iii) Protective measures to be taken if physical contact or airborne exposure occurs; (iv) Verification of the composition and properties of raw materials and control of hazardous chemical inventory levels; (v) Any special or specific hazards;</p>	<p>ensure that emergency shutdown is executed in a safe and timely manner; (vi) Normal shutdown; (vii) Start-up following a turnaround, or planned or unplanned shutdown, or after an emergency shutdown; and (viii) Non-routine work. (b) Operating limits: (i) Consequences of deviations; and (ii) Steps to correct or avoid deviations. (c) Safety and health considerations: (i) Properties of, and hazards presented by, the chemicals used in the process; (ii) Precautions necessary to prevent exposure, including passive, active and procedural safeguards, personal protective equipment, engineering controls, and administrative controls; (iii) Protective measures to be taken if physical contact or airborne exposure occurs;</p>	

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<p>4. Safety procedures for opening process equipment;</p> <p>5. Verification of the composition and properties of raw materials and control of hazardous chemical inventory levels; and,</p> <p>6. Any special or unique hazards.</p> <p>(D) Safety systems and their functions.</p> <p>(2) A copy of the Operating Procedures shall be readily accessible to employees who work in or near the process area and to any other person who works in or near the process area or who maintains a process.</p> <p>(3) The Operating Procedures shall be reviewed and updated as often as necessary to ensure that they reflect current, safe operating practices. The Operating Procedures shall include any changes that result from alterations in process chemicals, technology, personnel, process equipment or other changes to the facility. Changes to Operating Procedures shall be managed in accordance with the requirements of subsection (n).</p>	<p>(vi) The minimum number of personnel required to safely execute the procedure; and</p> <p>(vii) The safety procedures for opening process equipment.</p> <p>(d) Safety systems and their functions.</p> <p>(2) Operating procedures must be readily accessible to employees who work in or maintain a process, and to any other person who works in or near the process area.</p> <p>(3) The operating procedures must be reviewed and updated as often as necessary to ensure that they reflect safe, current operating practices, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities and personnel.</p> <p>(4) The employer must develop, implement, and maintain effective safe work practices to prevent or control hazards during operations applicable to both host employer employees and contractor employees. Safe work practices must be established for specific activities that include:</p>	<p>(iv) Safety procedures for opening process equipment;</p> <p>(v) Verification of the composition and properties of raw materials and control of hazardous chemical inventory levels;</p> <p>(vi) Any special or unique hazards;</p> <p>(vii) The minimum number of employees required to safely execute the procedure; and</p> <p>(viii) Human factors.</p> <p>(d) Safety systems and their functions.</p> <p>(2) Written operating procedures must be readily accessible to all affected employees, including the employees of contractors, and any other affected employee who works in or near the process.</p> <p>(3) Written operating procedures must be reviewed and updated as often as necessary to ensure that they reflect current, safe operating practices. The operating procedures must include any changes that result from alterations in process chemicals, technology, personnel, process equipment or other changes to the facility.</p>	

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<p>(4) The employer shall certify annually that Operating Procedures are current and accurate.</p> <p>(5) The Operating Procedures shall include emergency procedures for each process, including any response to the over-pressurizing or overheating of equipment or piping, and the handling of leaks, spills, releases and discharges of highly hazardous materials. These procedures shall provide that only qualified operators may initiate these operations, and that prior to allowing employees in the vicinity of a leak, release or discharge, the employer shall, at a minimum, do one of the following:</p> <p>(A) Define conditions for handling leaks, spills or discharges that provide a level of protection that is functionally equivalent to, or safer than, shutting down or isolating the process;</p> <p>(B) Isolate any vessel, piping and equipment where a leak, spill or discharge is occurring; or,</p>	<p>(a) Lockout/tagout;</p> <p>(b) Confined space entry;</p> <p>(c) Opening process equipment or piping;</p> <p>(d) Control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel;</p> <p>(e) Response to the over-pressurizing or overheating of equipment or piping;</p> <p>(f) The handling of leaks, spills, releases, or discharges of highly hazardous materials.</p> <p>(i) Define the conditions for handling leaks, spills, or discharges that provide a level of protection that is functionally equivalent to, or safer than, shutting down or isolating the process;</p> <p>(ii) Isolate any vessel, piping, and equipment where a leak, spill, or discharge is occurring;</p> <p>(iii) Shutdown and depressurize all process operations where a leak, release, or discharge is occurring.</p>	<p>Changes to operating procedures must be managed in accordance with the requirements of WAC 296-67-XXXX.</p> <p>(4) The employer must annually certify and document that written operating procedures are current and accurate.</p> <p>(5) The employer must develop, implement, and maintain effective written safe work practices applicable to all affected employees. Safe work practices must be established for specific activities that include, but are not limited to:</p> <p>(a) Opening process equipment or piping;</p> <p>(b) Tasks requiring lock-out/tag-out procedures;</p> <p>(c) Confined space entry;</p> <p>(d) Handling, controlling and stopping leaks, spills, releases and discharges;</p> <p>(e) Control over entry into hazardous work areas by maintenance, contractor, laboratory or other support personnel.</p>	

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<p>(C) Shutdown and depressurize all process operations where a leak, release or discharge is occurring.</p> <p>(6) The employer shall develop, implement and maintain safe work practices to prevent or control hazards during specific activities, such as: opening process equipment or piping; tasks requiring lockout/ tag-out procedures; confined space entry; handling, controlling and stopping leaks, spills, releases and discharges; and control over entry into hazardous work areas by maintenance, contractor, laboratory or other support personnel. Safe work practices shall apply to employees and employees of contractors.</p>	<p>(g) Any other hazard that requires the documentation of safe work practices.</p> <p>(5) The employer must annually certify and document that these operating procedures are current and accurate.</p>	<p>(6) The written operating procedures must include emergency procedures for each process, including any responses to the over-pressurizing or overheating of equipment or piping, and the handling of leaks, spills, releases and discharges of hazardous materials. These written operating procedures must provide that only qualified operators may initiate these operations, and that prior to allowing employees in the vicinity of a leak, release or discharge, the employer must, at a minimum, do one of the following:</p> <p>(a) Define the conditions for handling leaks, spills, or discharges that provide a level of protection that is functionally equivalent to, or safer than, shutting down or isolating the process;</p> <p>(b) Isolate any vessel, piping, and equipment where a leak, spill, or discharge is occurring; or</p> <p>(c) Shutdown and depressurize all process operations where a leak, release, or discharge is occurring.</p> <p>(8) The employer must provide for employee collaboration, pursuant to WAC 296-67-XXXX</p>	
<p>(g) Training.</p>	<p>WAC 296-XX-XXX Training.</p>	<p>WAC 296-67-XXXX Training.</p>	<p>Commentary</p>
<p>(1) Initial training.</p>	<p>(1) Initial training. Each employee, including contract employees presently involved in or</p>	<p>(1) Initial training.</p>	<p>1. Used term “affected employee” at (1)(a)</p>

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<p>(A) Each employee involved in the operation of a process, and each employee prior to working in a newly assigned process, shall be trained in an overview of the process and in the Operating Procedures, pursuant to subsection (f).</p> <p>(B) Each employee involved in the maintenance of a process, and each maintenance employee prior to working in a newly assigned process, shall be trained in an overview of the process and in the relevant hazards and safe work practices, pursuant to subsection (f)(6).</p> <p>(C) The training shall include the following material applicable to the employee's job tasks: safety and health hazards; procedures, including emergency operations and shut-down; and safe work practices.</p> <p>(2) Refresher and supplemental training.</p> <p>(A) At least once every three years, and more often if necessary, the employer shall provide effective refresher and supplemental training to each operating</p>	<p>maintaining a process, and each employee before being involved in operating or maintaining a newly assigned process, must be trained in an overview of the process and in the operating procedures. The training must include emphasis on specific safety and health hazards, emergency operations, and safe work practices applicable to the employee's job tasks.</p> <p>(2) Refresher and supplemental training. Effective refresher and supplemental training must be provided at least every three years, and more often if necessary, to each maintenance and operations employee involved in operating a process to ensure that the employee understands and adheres to the current maintenance and operating procedures of the process. The employer, in consultation with the employees involved in operating the process, must determine the appropriate frequency of refresher training.</p> <p>(3) Training certification. The employer must ensure that each employee involved in operating and maintaining a process has received, understood and successfully completed training. The employer, after the initial or refresher training, must prepare a</p>	<p>(a) Each affected employee involved in the operation of a process, and each employee prior to working in a newly assigned process, including employees of contractors, must be trained in an overview of the process and in the operating procedures, pursuant to WAC 296-67-XXXX.</p> <p>(b) Each affected employee involved in the maintenance of a process, and each maintenance employee prior to working in a newly assigned process, including employees of contractors, must be trained in an overview of the process and in the relevant hazards and safe work practices, pursuant to section WAC 296-67-XXXX.</p> <p>(c) The training must include the following material applicable to the employee's job tasks: safety and health hazards; procedures, including emergency operations and shut-down; and safe work practices.</p> <p>(2) Refresher and supplemental training.</p> <p>(a) At least once every three years, and more often if necessary, the employer must provide effective refresher and supplemental training to each operating employee to ensure that each employee understands and adheres to current operating procedures.</p>	

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<p>employee to ensure that each employee understands and adheres to current operating procedures.</p> <p>(B) At least once every three years, and more often if necessary, the employer shall provide effective refresher and supplemental training to each maintenance employee to ensure that each employee understands and adheres to current maintenance procedures.</p> <p>(C) The employer, in consultation with the employees involved in operating or maintaining a process, shall determine the appropriate frequency and content of refresher training.</p> <p>(3) Training certification.</p> <p>(A) The employer shall ensure that each employee involved in the operation or maintenance of a process has received, understood and successfully completed training as specified by this subsection.</p> <p>(B) The employer, after the initial or refresher training, shall prepare a certification record containing the identity of the employee, the date(s) of training, the</p>	<p>certification record, which contains the identity of the employee, the date of training, the signature(s) of the person(s) who administered the training, and the means used to verify that the employee understood the training.</p> <p>(4) The employer must develop, implement, and maintain an effective written program that includes the following:</p> <p>(a) The requirements that an employee must meet in order to be designated as qualified; and,</p> <p>(b) Employee testing procedures to verify understanding and to ensure competency in job skill levels and work practices that protect employee safety and health.</p> <p>(5) The employer must develop, implement, and maintain an effective training program to ensure that all affected employees are aware of and understand all PSM elements described in this section. Employees and employee representatives participating in a team must be trained in the PSM elements relevant to that team.</p>	<p>(b) At least once every three years, and more often if necessary, the employer must provide effective refresher and supplemental training to each maintenance employee to ensure that each employee understands and adheres to current maintenance procedures.</p> <p>(c) The employer, in consultation with the employees involved in operating or maintaining a process, must determine the appropriate frequency and content of refresher training.</p> <p>(3) Training certification.</p> <p>(a) The employer must ensure that each affected employee involved in operating or maintaining a process has received, understood and successfully completed training as specified by this section.</p> <p>(b) The employer, after the initial or refresher training, must prepare a certification record containing the identity of the employee, the date(s) of training, the means used to verify that the employee understood the training, and the signature(s) of the person(s) who administered the training.</p>	

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<p>means used to verify that the employee understood the training, and the signature(s) of the person(s) administering the training.</p> <p>(4) The employer shall develop and implement an effective written program that includes the following:</p> <p>(A) The requirements that an employee must meet in order to be designated as qualified; and,</p> <p>(B) Employee testing procedures to verify understanding and to ensure competency in job skill levels and work practices that protect employee safety and health.</p> <p>(5) Within twenty-four (24) months of the effective date of this section, the employer shall develop and implement an effective training program to ensure that all affected employees are aware of and understand all PSM elements described in this section. Employees and employee representatives participating in a team pursuant to this section shall be trained in the PSM elements relevant to that team.</p>	<p>(6) The employer must provide for employee collaboration in developing and implementing the training program.</p>	<p>(4) The employer must develop, implement, and maintain an effective written program that includes the following:</p> <p>(a) The requirements that an employee must meet in order to be designated as qualified; and</p> <p>(b) Employee testing procedures to verify understanding and to ensure competency in job skill levels and work practices that protect employee safety and health.</p> <p>(5) Within twenty-four months of the effective date of this chapter, the employer must develop, implement, and maintain an effective written training program to ensure that all affected employees are aware of and understand all PSM elements described in this chapter. Employees and employee representatives participating in a team pursuant to this chapter must be trained in the PSM elements relevant to that team.</p> <p>(6) The employer must provide for employee collaboration in developing, implementing, and maintaining the training program, pursuant to WAC 296-67-XXXX.</p>	

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<p>(6) The employer shall provide for employee participation in developing and implementing the training program, pursuant to subsection (q).</p>			
<p>(h) Contractors</p>	<p>WAC 296-XX-XXX Contractors</p>	<p>WAC 296-XX-XXX Contractors</p>	<p>Commentary</p>
<p>(1) This section applies to contractors performing maintenance or repair, supply services, turnaround, major renovation or specialty work on or adjacent to a process. It does not apply to contractors providing incidental services that do not affect process safety, such as janitorial work, food and drink services, laundry, delivery or other supply services.</p> <p>(2) Refinery employer responsibilities.</p> <p>(A) When selecting a contractor, the refinery employer shall obtain and evaluate information regarding the contractor's safety performance, including programs used to prevent employee injuries and illnesses, and shall require that its contractors and any subcontractors use a skilled and trained workforce pursuant to Health and Safety Code Section 25536.7.</p>	<p>(1) Application. This section applies to contractors performing maintenance, repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services, which do not influence process safety, such as janitorial work, food and drink services, laundry, delivery, or other supply services.</p> <p>(2) Employer responsibilities.</p> <p>(a) The employer, when selecting a contractor, must obtain and evaluate information regarding the contract employer's safety performance, including programs used to prevent employee injuries and illnesses, and must require that its contractors and any subcontractors use a skilled and trained workforce.</p> <p>(b) The employer must inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process. The</p>	<p>(1) Application. This section applies to contractors performing maintenance, repair, supply services, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services that do not affect process safety, such as janitorial work, food and drink services, laundry, delivery or other supply services.</p> <p>(2) Refinery employer responsibilities.</p> <p>(a) When selecting a contractor, the refinery employer must obtain and evaluate information regarding the contract employer's safety performance, including programs used to prevent employee injuries and illnesses, and must require that its contractors and any subcontractors use a skilled and trained workforce.</p> <p>(b) The refinery employer must inform the contractor, and must ensure that the contractor has informed each of its employees of the following:</p>	<p>1. Used "refinery employer" for clarification</p>

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<p>(B) The refinery employer shall inform the contractor, and shall ensure that the contractor has informed each of its employees, of the following:</p> <ol style="list-style-type: none"> 1. Potential process safety hazards associated with the contractor’s work; 2. Applicable refinery safety rules; and, 3. Applicable provisions of this section, including the provisions of the Emergency Action Plan, pursuant to subsection (p). <p>(C) The refinery employer shall develop and implement effective written procedures in order to ensure the safe entry, presence and exit of the contractor and employees of the contractor in process areas.</p> <p>(D) The refinery employer shall periodically evaluate the performance of contractors in fulfilling their obligations, as specified in this subsection. The refinery employer shall ensure and document that the requirements of this subsection are performed and completed by the contractor.</p>	<p>employer must ensure that the contractor has informed each of its employees of the following:</p> <ol style="list-style-type: none"> (i) Potential process safety hazards associated with the contractor’s work; (ii) Applicable refinery safety rules; and (iii) Applicable provisions of this section, including the provisions of WAC 296-XX-XXX, Emergency Planning and Response Plan. <p>(c) The employer must develop, implement and maintain effective written procedures and safe work practices, to control the entrance, presence and exit of contract employers and contract employees in covered process areas.</p> <p>(d) The employer must periodically evaluate the performance of contract employers in fulfilling their obligations as specified in this section. The employer must ensure and document that the requirements of this subsection are performed and completed by the contractor.</p> <p>(e) The employer must maintain a contract employee injury and illness log related to the contractor’s work in process areas.</p>	<ol style="list-style-type: none"> (i) Potential process safety hazards associated with the contractor’s work; (ii) Applicable refinery safety rules; (iii) Applicable provisions of this chapter, including the requirements of WAC 296-67-XXXX Emergency planning and response, and WAC 296-24-567 Employee emergency plans and fire prevention plans. <p>(c) The refinery employer must develop, implement, and maintain effective written procedures and safe work practices to ensure the safe entry, presence and exit of the contractor and employees of the contractor process areas.</p> <p>(d) The refinery employer must periodically evaluate the performance of contractors in fulfilling their obligations as specified in this section. The refinery employer must ensure and document that the requirements of this section are performed and completed by the contractor.</p> <p>(e) The refinery employer must obtain and make available to the Division of Occupational Safety and Health (DOSH) upon request, a copy of the contractor’s injury and illness log related to the contractor’s work in the process area.</p>	

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<p>(E) The refinery employer shall obtain and make available to the Division of Occupational Safety and Health (Division) upon request a copy of the contractor's injury and illness log related to the contractor's work in the process areas.</p> <p>(3) Contractor responsibilities.</p> <p>(A) The contractor shall ensure that it meets the requirements of Health and Safety Code Section 25536.7, and that all of its employees are effectively trained, pursuant to subsection (g), in the work practices necessary to safely perform their jobs, including:</p> <ol style="list-style-type: none"> 1. Potential process safety hazards related to their jobs; 2. Applicable refinery safety rules; and, 3. Applicable provisions of this section, including the provisions of the Emergency Action Plan, pursuant to subsection (p). <p>(B) The contractor shall document that each of its employees has successfully</p>	<p>(3) Contract employer responsibilities.</p> <p>(a) The contract employer must ensure that each contract employee is trained in the work practices necessary to safely perform his/her job, including:</p> <ol style="list-style-type: none"> (i) Potential process safety hazards related to their jobs; (ii) Applicable refinery safety rules; (iii) The specific actions to take in an emergency; and (iv) Other applicable provisions of this section, including the provisions of the emergency action or response plan. <p>(b) The contract employer must document that each contract employee has received and understood the training required by this subsection. The contract employer must prepare a record, which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.</p> <p>(c) The contract employer must advise the employer of any specific hazards presented by</p>	<p>(3) Contractor responsibilities.</p> <p>(a) The contractor must ensure that all of its employees are effectively trained pursuant to WAC 296-67-XXXX in the work practices necessary to safely perform their jobs, including:</p> <ol style="list-style-type: none"> (i) Potential process safety hazards related to their jobs; (ii) Applicable refinery safety rules; (iii) The specific actions to take in an emergency; and (iv) Applicable provisions of this chapter, including the provisions of the Emergency Action Plan, pursuant to WAC 296-67-XXXX. <p>(b) The contractor must document that each contract employee has received and understood the training required by this section. The contractor must prepare a record that contains the identity of the contract employee, the date and subject of training, and the means used to verify that the employee understood the training.</p>	

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<p>completed the training required by this subsection by maintaining a record identifying :</p> <ol style="list-style-type: none"> 1. Each employee who has received training; 2. The date(s) and subject(s) of training each employee has received; and, 3. The means used to verify that the employee understood the training received. <p>(C) The contractor shall ensure that each of its employees understands and follows the safety and health procedures of the refinery employer and the contractor.</p> <p>(D) The contractor shall advise the refinery employer of specific hazards presented by the contractor's work, as well as any hazards identified by the contractor while performing work for the refinery.</p> <p>(4) Nothing in this subsection shall preclude the employer from requiring a contractor or an employee of a contractor to whom information is made available under this section to enter into a</p>	<p>the contract employer's work, or of any hazards identified by the contractor while performing work for the host employer.</p>	<p>(c) The contractor must advise the refinery employer of any specific hazards presented by the contractor's work, as well as any hazards identified by the contractor while performing work for the refinery employer.</p> <p>(4) The refinery employer and contract employer must provide for employee collaboration, pursuant to WAC 296-67-XXXX.</p>	

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<p>confidentiality agreement prohibiting him or her from disclosing such information, as set forth in CCR Title 8, Section 5194(i).</p>			
<p>(i) Pre-Start-Up Safety Review</p>	<p>WAC 296-XX-XXX Prestartup Safety Review.</p>	<p>WAC 296-67-XXXX Pre-startup safety review.</p>	<p>Commentary</p>
<p>(1) The employer shall perform a Pre-Start-Up Safety Review (PSSR) for new processes and for modified processes if the modification necessitates a change in the PSI, pursuant to subsection (d) and for partial or unplanned shutdowns. The employer shall also conduct a PSSR for all turnaround work performed on a process.</p> <p>(2) The PSSR shall confirm all of the following prior to the introduction of highly hazardous materials to a process:</p> <p>(A) Construction, maintenance and repair work has been performed in accordance with design specifications;</p> <p>(B) Process equipment has been maintained and is operable in accordance with design specifications;</p> <p>(C) Effective safety, operating, maintenance and emergency procedures are in place;</p>	<p>(1) The employer must perform a prestartup safety review (PSSR) for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information (PSI). The employer must not move forward with a process startup until all prestartup safety review items have been resolved and processing systems and components are in place and in appropriate condition for that startup.</p> <p>(2) The prestartup safety review must confirm that prior to the introduction of highly hazardous chemicals to a process:</p> <p>(a) Construction, maintenance and repair work has been performed in accordance with design specifications;</p> <p>(b) Effective safety, operating, maintenance, and emergency procedures are in place and are adequate</p>	<p>(1) The employer must perform a pre-startup safety review (PSSR) for new processes and for modified processes if the modification necessitates a change in the PSI, pursuant to section XXXX and for partial or unplanned shutdowns. The employer must conduct a PSSR for all turnaround work performed on a process.</p> <p>(2) The pre-startup safety review must confirm all of the following prior to the introduction of hazardous materials to a process:</p> <p>(a) Construction, maintenance, and repair work has been performed in accordance with design specifications;</p> <p>(b) Process equipment has been maintained and is operable in accordance with design specifications;</p> <p>(c) Effective safety, operating, maintenance and emergency procedures are in place:</p>	<p>1. Removed last sentence of (1) and referred to turnaround language for better clarity.</p> <p>2. Added language at (2)(b)</p>

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<p>(D) For new processes, a PHA, HCA, DMR, and SPA have each been performed, as applicable pursuant to this section, and recommendations have been implemented or resolved before start-up. For new or modified processes, all changes have been implemented pursuant to the requirements of subsection (n); and,</p> <p>(E) Training of each operating employee and maintenance employee affected by the change has been completed.</p> <p>(3) The employer shall involve operating or maintenance employees in the PSSR who have expertise and experience in the operations and engineering of the process being started. An operating employee who currently works in the unit and who has expertise and experience in the process being started shall be designated as the employee representative, pursuant to subsection (q).</p>	<p>(c) For new processes, a process hazard analysis (PHA), hierarchy of hazard controls analysis (HCA), damage mechanism review (DMR), and safeguard protection analysis (SPA) have been performed and recommendations have been resolved or implemented before startup; and modified facilities meet the requirements contained in management of change;</p> <p>(d) Training of each operations, maintenance, or other affected employee involved in operating a process has been completed.</p> <p>(3) The employer must involve operating or maintenance employees in the PSSR who have expertise and experience in the operations and engineering of the process being started. An operating employee who currently works in the unit and who has expertise and experience in the process being started must be designated as the employee representative.</p>	<p>(d) For new processes, a PHA, HCA, DMR, and SPA have each been performed, as applicable, pursuant to this section and recommendations have been implemented or resolved before start up. For new or modified processes, all changes have been implemented pursuant to the requirements of section XXXX; and</p> <p>(e) Training of all affected employees has been completed.</p> <p>(3) The employer must involve affected employees in the PSSR who have expertise and experience in the operations and engineering of the process being started. An operating employee who currently works in the unit and who has expertise, and experience in the process being started must be designated as the employee representative, pursuant to section XXXX.</p>	
<p>(j) Mechanical Integrity.</p>	<p>WAC 296-XX-XXX Mechanical Integrity.</p>	<p>WAC 296-67-XXXX Mechanical integrity.</p>	<p>Commentary</p>

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<p>(1) Written procedures.</p> <p>(A) The employer shall develop, implement and maintain effective written procedures to ensure the ongoing integrity of process equipment.</p> <p>(B) The procedures shall provide clear instructions for safely conducting maintenance activities on process equipment, consistent with the PSI, pursuant to subsection (d).</p> <p>(C) The procedures and inspection documents developed under this subsection shall be readily accessible to employees and employee representatives, pursuant to subsection (q).</p> <p>(2) Inspection and testing.</p> <p>(A) Inspections and tests shall be performed on process equipment using procedures that meet or exceed RAGAGEP.</p> <p>(B) The frequency of inspections and tests shall be consistent with:</p>	<p>(1) Application. This section applies to all process equipment.</p> <p>(2) Written procedures. The employer must develop, implement, and maintain effective written procedures to ensure the ongoing integrity of process equipment. These procedures must include a documented review of industry leading factors.</p> <p>(a) The procedures must provide clear instructions for safely conducting maintenance activities on process equipment, consistent with the PSI.</p> <p>(b) The procedures and inspection documents developed under this subsection must be readily accessible to employees and employee representatives.</p> <p>(3) Training for process maintenance activities. The employer must train each employee involved in maintaining the ongoing integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to ensure that the employee can perform the job tasks in a safe manner.</p>	<p>(1) Written procedures.</p> <p>(a) The employer must develop, implement, and maintain effective written procedures to ensure the ongoing integrity of process equipment.</p> <p>(b) The procedures must provide clear instructions for safely conducting maintenance activities on process equipment, consistent with the PSI for the process, pursuant to section XXX</p> <p>(c) The procedures and inspection documents developed under this section must be readily accessible to employees and employee representatives.</p> <p>(2) Training for process maintenance activities. The employer must train affected employees involved in maintaining the ongoing integrity of process equipment in an overview of that process and its corresponding hazards; and in the procedures applicable to the employee's job tasks, to ensure that the employee can perform the job tasks in a safe manner.</p> <p>(3) Inspection and testing.</p>	<ol style="list-style-type: none"> 1. Removed language at the end of the previous (2) 2. Simplified the temporary repair language at the end of (4)(a) 3. Added language at end of (3)(c) 4. At (5)(d) added "maintenance materials and spare parts" 5. At (5)(f) stipulation that equipment that is substantially similar to failed equipment must be evaluated for a similar hazard. 6. Removed (6)(c); concept covered in section language

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<p>(1) the applicable manufacturer's recommendations,</p> <p>(2) RAGAGEP or</p> <p>(3) internal practices that are more protective than (1) or (2).</p> <p>Inspections and tests shall be conducted more frequently if necessary, based on the operating experience with the process equipment.</p> <p>(C) The employer shall retain a certification record to document that each inspection and test has been performed in accordance with this subsection. The certification record shall identify the date of the inspection, the name of the person who performed the inspection or test, a description of the inspection or test performed, the results of the inspection or test, and the serial number or other identifier of the process equipment.</p> <p>(3) Equipment deficiencies.</p> <p>(A) The employer shall correct deficiencies to ensure safe operation of process</p>	<p>(4) Inspection and testing.</p> <p>(a) Inspections and tests must be performed on process equipment.</p> <p>(b) Inspection and testing procedures must meet or exceed recognized and generally accepted good engineering practices (RAGAGEP).</p> <p>(c) The frequency of inspections and tests of process equipment must be consistent with:</p> <p>(i) The applicable manufacturers' recommendations;</p> <p>(ii) Recognized and generally accepted good engineering practices (RAGAGEP);</p> <p>(iii) Operating history of process equipment; and</p> <p>(iv) Internal practices that are at least as or more protective than (i), (iii) or (iii) of this subsection.</p> <p>(v) Inspections must be done more frequently if determined to be necessary by prior operating experience.</p>	<p>(a) Inspections and tests must be performed on process equipment using procedures that meet or exceed RAGAGEP.</p> <p>(b) The frequency of inspections and tests of process equipment must be consistent with:</p> <p>(i) The applicable manufacturer's recommendations;</p> <p>(ii) Recognized and generally accepted good engineering practices (RAGAGEP);</p> <p>(iii) Operating history of process equipment; and</p> <p>(iv) Internal practices that are more protective than (i),(iii) or (iii) of this subsection.</p> <p>(c) Inspections and tests must be performed more frequently if determined to be necessary by prior operating or equipment maintenance experience.</p> <p>(d) The employer must retain documentation for each inspection and test that has been performed on process equipment. The documentation must identify the date of the inspection or test, the name of the person who performed the inspection or test, the assigned number or other such identifier of the equipment on which the inspection or test</p>	

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<p>equipment. Repair methodologies shall be consistent with RAGAGEP or more protective internal practices.</p> <p>(4) Quality assurance.</p> <p>(A) The employer shall ensure that all process equipment at a minimum complies with the criteria established by the PSI, pursuant to subsection (d). The employer shall ensure that all process equipment is:</p> <ol style="list-style-type: none"> 1. Suitable for the process application for which it is or will be used; 2. Fabricated from the proper materials of construction; and, 3. Designed, constructed, installed, maintained, inspected, tested, operated and replaced in compliance with manufacturer's and other design specifications and all applicable codes and standards. <p>(B) If the employer installs new process equipment or has existing process equipment for which no RAGAGEP exists, the employer shall document and ensure</p>	<p>(d) The employer must retain documentation for each inspection and test that has been performed on process equipment. The documentation must identify the date of the 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, and the results of the inspection or test.</p> <p>(5) Equipment deficiencies.</p> <p>(a) The employer must correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information (PSI)) before further use or in a safe and timely manner when necessary means are taken to ensure safe operation. For purposes of this section, "Safe and timely" is defined as the first outage after the deficiency is detected or when a temporary repair fails one time, whichever occurs first.</p> <p>(b) Repair methodologies must be consistent with RAGAGEP or more protective methodologies.</p>	<p>was performed, a description of the inspection or test performed, and the results of the inspection or test.</p> <p>(4) Equipment deficiencies.</p> <p>(a) The employer must correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information (PSI)) before further use or in a safe and timely manner when necessary means are taken to ensure safe operation. For purposes of this section, "safe and timely" is defined as the first outage after the deficiency is detected. If a temporary repair fails, the employer did not take necessary means to ensure safe operation.</p> <p>(b) Repair methodologies and preventive maintenance must be consistent with recognized and generally accepted good engineering practices (RAGAGEP) or more protective internal practices.</p> <p>(5) Quality assurance.</p> <p>(a) The employer must ensure that all process equipment at a minimum complies with the criteria established by the PSI, pursuant to section</p>	

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<p>that this equipment is designed, constructed, installed, maintained, inspected, tested and operating in a safe manner.</p> <p>(C) The employer shall conduct regularly scheduled checks and inspections as necessary to ensure that the requirements of subsection (j)(4)(A) are met.</p> <p>(D) The employer shall ensure that maintenance materials, spare parts and equipment meet design specifications and applicable codes.</p> <p>(E) The employer shall establish a process for evaluating new or updated codes and standards and implementing changes as appropriate to ensure safe operation</p>	<p>(6) Quality assurance.</p> <p>(a) In construction of new plants and equipment, the employer must ensure that equipment, as it is fabricated, is suitable for the process application for which they will be used. If the employer installs new process equipment or has existing process equipment for which no RAGAGEP exists, the employer must document and ensure that this equipment is designed, constructed, installed, maintained, inspected, tested and operated in a safe manner.</p> <p>(b) Once an equipment deficiency is identified, substantially similar equipment throughout other areas of the facility must be evaluated for the same deficiency.</p> <p>(c) Vessels, piping, and all affected equipment must be inspected after each power outage, emergency shut down, emergency operation, or other detrimental processing event. The service life of the equipment must be re-evaluated in order to identify any deficiencies that may have adversely impacted its original service life.</p>	<p>XXXX. The employer must ensure that all process equipment is:</p> <p>(i) Suitable for the process application for which it is or will be used;</p> <p>(ii) Fabricated from the proper materials of construction; and,</p> <p>(iii) Designed, constructed, installed, maintained, inspected, tested, operated and replaced in compliance with manufacturer’s and other design specifications and all applicable codes and standards.</p> <p>(b) If the employer installs new process equipment or has existing process equipment for which no RAGAGEP exists, the employer must document and ensure that this equipment is designed, constructed, installed, maintained, inspected, tested and operating in a safe manner.</p> <p>(c) The employer must conduct regularly scheduled checks and inspections as necessary to ensure that the requirements of subsection XXXX are met.</p>	

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	<p>(d) The employer must establish a process for evaluating new or updated codes and standards and implementing changes as appropriate to ensure safe operation.</p> <p>(e) The employer must ensure that all process equipment at a minimum complies with the criteria established by the PSI. The employer must ensure that all process equipment is:</p> <p>(i) Suitable for the process application for which it is or will be used;</p> <p>(ii) Fabricated from the proper materials of construction; and</p> <p>(iii) Designed, constructed, installed, maintained, inspected, tested, operated and replaced in compliance with manufacturer's and other design specifications and all applicable codes and standards.</p>	<p>(d) The employer must ensure that maintenance materials, spare parts and equipment meet design specifications and applicable codes.</p> <p>(e) The employer must establish a process for evaluating new or updated codes and standards and implementing changes as appropriate to ensure safe operation.</p> <p>(f) Once an equipment deficiency or failure mechanism is identified, substantially similar equipment in similar service must be evaluated for the same deficiency or failure mechanism.</p>	
(k) Damage Mechanism Review.	WAC 296-67-XXXX Damage mechanism review.	WAC 296-67-XXXX Damage mechanism review.	Commentary
No Change			
(m) Hot Work.	WAC 296-XX-XXX Hot Work Permit.	WAC 296-67-XXXX Hot work.	Commentary
(1) The employer shall develop, implement and maintain an effective written	(1) The employer must issue a hot work permit prior to the commencement of hot work	(1) The employer must issue a hot work permit prior to the commencement of hot work operations within or near a covered process.	1. Added WAC code reference back in

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<p>procedure for the issuance of hot work permits.</p> <p>(2) The permit shall:</p> <p>(A) Certify that the applicable portions of the fire prevention and protection requirements contained in CCR Title 8, Section 4848 and CCR Title 8, Section 6777 have been implemented prior to the initiation of hot work;</p> <p>(B) Indicate the date(s) and time(s) during which hot work is to be performed;</p> <p>(C) Identify the equipment or process on which hot work is to be performed; and,</p> <p>(D) Identify the name and employer of the party performing the hot work.</p> <p>(3) All hot work permits shall be kept on file for one (1) year.</p>	<p>operations conducted on or near a covered process.</p> <p>(2) The permit must document that fire prevention and protection requirements were implemented prior to beginning the hot work operations. The permit must:</p> <p>(a) Indicate the date(s) and time(s) authorized for hot work;</p> <p>(b) Identify the object on which hot work is to be performed;</p> <p>(c) Identify the name and employer of the party performing the hot work.</p> <p>(d) Document an expiration date.</p> <p>(3) The employer must develop, implement and maintain an effective written procedure for the issuance of hot work permits.</p> <p>(4) The permit must be kept on file for one year.</p>	<p>(2) The permit must document that fire prevention and protection requirements found in WAC 296-24-695 have been implemented prior to beginning the hot work operations. The permit must:</p> <p>(a) Indicate the date(s) and time(s) authorized for hot work, including the designated expiration of the permit;</p> <p>(b) Identify the location and equipment (including the equipment identifier, if applicable) where hot work is to be performed;</p> <p>(c) Identify the name and employer of the party performing the hot work.</p> <p>(3) The employer must develop, implement and maintain effective written procedures for the issuance of hot work permits.</p> <p>(4) Hot work permits must be kept on file for one year.</p> <p>(5) The employer must provide for employee collaboration, pursuant to section XXX</p>	
<p>(n) Management of Change.</p>	<p>WAC 296-XX-XXX Management of Change.</p>	<p>WAC 296-67-XXXX Management of change.</p>	<p>Commentary</p>

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<p>(1) The employer shall develop, implement and maintain effective written MOC procedures to manage changes (except for replacements-in-kind) in process chemicals, technology, procedures, process equipment and facilities. The MOC procedure shall include provisions for temporary repairs, including temporary pipe repairs.</p> <p>(2) The MOC procedures shall ensure that the following are addressed and documented prior to any change:</p> <p>(A) The technical basis for the proposed change;</p> <p>(B) Potential process safety impacts of the change;</p> <p>(C) Modifications to operating and maintenance procedures or development of new operating and maintenance procedures;</p> <p>(D) The time period required for the change; and,</p> <p>(E) Authorization requirements for the proposed change.</p>	<p>(1) The employer must develop, implement, and maintain effective written procedures to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process. The management of change (MOC) procedure must include provisions for temporary repairs, including temporary pipe repairs.</p> <p>(2) The MOC procedures must ensure that the following considerations are documented and addressed prior to any change:</p> <p>(a) The technical basis for the proposed change;</p> <p>(b) Impact of change on safety and health;</p> <p>(c) Modifications to operating and maintenance procedures, or development of new operating and maintenance procedures;</p> <p>(d) Necessary time period for the change; and</p> <p>(e) Authorization requirements for the proposed change.</p>	<p>(1) The employer must develop, implement, and maintain effective written MOC procedures to assess and manage changes (except for replacements-in-kind) in process chemicals, technology, procedures, process equipment and facilities. The MOC procedure must include provisions for temporary repairs, including temporary pipe repairs.</p> <p>(2) The MOC procedures must ensure that the following are addressed and documented prior to any change:</p> <p>(a) The technical basis for the proposed change;</p> <p>(b) Potential process safety impacts of the change.</p> <p>(c) Modifications to operating and maintenance procedures or development of new operating and maintenance procedures;</p> <p>(d) The time period required for the change; and,</p> <p>(e) Authorization requirements for the proposed change.</p> <p>(3) Prior to implementing a major change, the employer must review or conduct a DMR pursuant</p>	<p>1. Removed (7)</p>

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<p>(3) Prior to implementing a major change, the employer shall review or conduct a DMR pursuant to subsection (k) and perform an HCA pursuant to subsection (l). The findings of the DMR and recommendations of the HCA shall be included in the MOC documentation.</p> <p>(4) The employer shall use qualified personnel and appropriate methods for all MOCs, based upon hazard, complexity and type of change.</p> <p>(5) The employer shall provide for employee participation pursuant to subsection (q).</p> <p>(6) Employees involved in the process, as well as maintenance workers whose job tasks will be affected by a change, shall be informed of, and effectively trained in, the change in a timely manner, prior to implementation of the change. For contractors and employees of contractors who are operating the process and whose job tasks will be affected by a change, the employer shall make the MOC documentation available and require</p>	<p>(3) Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process must be informed of, and effectively trained in, the change prior to start-up of the process or affected part of the process.</p> <p>(4) For contractors and employees of contractors who are operating the process and whose job tasks will be affected by a change, the employer must make the MOC documentation available and require effective training in the change in a timely manner, prior to implementation of the change.</p> <p>(5) If a change covered by this section results in a change in the process safety information, such information must be updated accordingly.</p> <p>(6) If a change covered by this section results in a change in the operating procedures or practices, such procedures or practices must be updated accordingly.</p> <p>(7) The author, staff member, employer representative, or manager who is responsible for the management of change (MOC) document must participate in the MOC exercise</p>	<p>to section XXXX and perform an HCA pursuant to section XXXX. The findings of the DMR and recommendations of the HCA must be included in the MOC documentation.</p> <p>(4) The employer must use qualified personnel and appropriate methods for all MOCs, based upon hazard, complexity and type of change.</p> <p>(5) The employer must provide for employee collaboration pursuant to section XXXX.</p> <p>(6) Affected employees must be informed of, and effectively trained in, the change in a timely manner, prior to implementation of the change.</p> <p>(7) If a change covered by this section results in a change to the PSI, such information must be amended and updated in a timely manner, in accordance with section XXX.</p> <p>(8) If a change covered by this section results in a change to the Operating Procedures, the procedures must be amended and updated in a timely manner, in accordance with section XXXX.</p>	

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<p>effective training in the change in a timely manner, prior to implementation of the change, pursuant to subsection (h).</p> <p>(7) If a change covered by this subsection results in a change to the PSI, such information shall be amended and updated in a timely manner, in accordance with subsection (d).</p> <p>(8) If a change covered by this subsection results in a change to the Operating Procedures, the procedures shall be amended and updated in a timely manner, in accordance with subsection (f).</p>	<p>with affected personnel; and certify in writing that the MOC evaluation is safe, complete, and all action items are completed prior to executing the change.</p> <p>(8) Prior to implementing a major change, the employer must review or conduct a damage mechanism review (DMR) and perform a hierarchy of hazard controls analysis (HCA). The findings of the DMR and recommendations of the HCA must be included in the MOC documentation.</p> <p>(9) The employer must use qualified personnel and appropriate methods for all MOCs based upon hazard, complexity and type of change.</p> <p>(10) The employer must provide for employee collaboration.</p>		
(t) Management of Organizational Change	WAC 296-XX-XXX Management of Organizational Change.	WAC 296-67-XXXX Management of organizational change.	Commentary
No Change			
(o) Incident Investigation – Root Cause Analysis	WAC 296-XX-XXX Incident Investigation— Root Cause Determination.	WAC 296-67-XXXX Incident investigation - root cause analysis	Commentary
(1) The employer shall develop, implement and maintain effective written procedures for promptly investigating and reporting	(1) The employer must develop, implement and maintain effective written procedures for promptly investigating and reporting any	(1) The employer must develop, implement and maintain effective written procedures for promptly investigating and reporting any incident that	1. Written report due in 90 days; final report due in four

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<p>CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD Chapter §5189.1. Process Safety Management for Petroleum Refineries.</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries Discussion Draft 1</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries, Part A Discussion Draft 2</p>	<p>Commentary</p>
<p>any incident that results in, or could reasonably have resulted in, a major incident.</p> <p>(2) The written procedures shall include an effective method for conducting a thorough Root Cause Analysis.</p> <p>(3) The employer shall initiate the incident investigation as promptly as possible, but no later than 48 hours following an incident. As part of the incident investigation, the employer shall conduct a Root Cause Analysis.</p> <p>(4) The employer shall establish an Incident Investigation Team, which at a minimum shall consist of a person with expertise and experience in the process involved; a person with expertise in the employer's Root Cause Analysis method; and a person with expertise in overseeing the investigation and analysis. The employer shall provide for employee participation pursuant to subsection (q). If the incident involved the work of a contractor, a representative of the contractor's employees shall be included on the investigation team.</p>	<p>incident that results in, or could reasonably have resulted in, a major incident. The written procedures must include an effective method for determining the root cause of an incident.</p> <p>(2) An incident investigation must be initiated as promptly as possible, but not later than forty-eight hours following the incident.</p> <p>(3) An incident investigation team must be established and consist of at least:</p> <p>(a) One person with expertise and experience in the process involved;</p> <p>(b) A contract employee if the incident involved work of the contractor;</p> <p>(c) A person with expertise in determining root causes of incidents;</p> <p>(d) A person with expertise in facilitating the investigation and analysis; and</p> <p>(e) Any other persons with appropriate expertise and experience to thoroughly investigate and analyze the incident.</p>	<p>results in, or could reasonably have resulted in, a process safety incident. The written procedures must include an effective method for conducting a thorough root cause analysis, including identification of management system failures and organizational and safety culture deficiencies.</p> <p>(2) The employer must initiate the incident investigation as promptly as possible, but no later than forty-eight hours following the incident.</p> <p>(3) The employer must establish an incident investigation team, which at a minimum must consist of a person with expertise and experience in the process involved; a person with expertise in the employer's root cause analysis method; and a person with expertise in overseeing the investigation and analysis. The employer must provide for employee collaboration pursuant to section XXX. If the incident involved the work of a contractor, a representative of the contractor's employees must be included on the investigation team.</p> <p>(4) The incident investigation team must implement the employer's root cause analysis method to determine the initiating and underlying causes of the incident. The analysis must include identification of management system failures,</p>	<p>months. Removed provision for 30-day updates</p> <p>2. Removed (3)(e); overly broad</p> <p>3. Added language at new (11) requiring submission of report to the Department.</p> <p>4. Added language at (4) to align with California</p>

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<p>(5) The Incident Investigation Team shall implement the employer's Root Cause Analysis method to determine the initiating and underlying causes of the incident. The analysis shall include identification of management system failures, including organizational and safety culture deficiencies.</p> <p>(6) The Incident Investigation Team shall develop recommendations to address the findings of the Root Cause Analysis. The recommendations shall include interim measures that will prevent a recurrence or similar incident until final corrective actions can be implemented.</p> <p>(7) The team shall prepare a written investigation report within ninety (90) calendar days of the incident. If the team demonstrates in writing that additional time is needed due to the complexity of the investigation, the team shall prepare a status report within ninety (90) calendar days of the incident and every thirty (30) calendar days thereafter until the investigation is complete. The team shall</p>	<p>(f) The employer must provide for employee collaboration.</p> <p>(4) A written report must be prepared at the conclusion of the investigation, which includes, at a minimum:</p> <p>(a) Date and time of the incident;</p> <p>(b) Date and time the investigation began;</p> <p>(c) A detailed description of the incident;</p> <p>(d) The factors that contributed to the incident including direct causes, indirect causes and root causes;</p> <p>(e) A list of any DMR(s), PHA(s), SPA(s), and HCA(s) that were reviewed as part of the investigation;</p> <p>(f) Documentation of relevant findings from the review of DMR(s), PHA(s), SPA(s) and HCA(s);</p> <p>(g) Any recommendations resulting from the investigation; and</p> <p>(h) Interim safety measures implemented by the employer.</p>	<p>including organizational and safety culture deficiencies.</p> <p>(5) The incident investigation team must develop recommendations to address the findings of the root cause analysis. The recommendations must include interim measures that will prevent a recurrence or similar incident until final corrective actions can be implemented.</p> <p>(6) The incident investigation team must prepare a written investigation report within ninety calendar days of the incident. The team must prepare a final investigation report within four months of the incident.</p> <p>(7) Investigation reports must include:</p> <p>(a) The date and time of the incident;</p> <p>(b) The date and time the investigation began;</p> <p>(c) A detailed description of the incident;</p> <p>(d) The factors that caused or contributed to the incident, including direct causes, indirect causes and root causes, determined through the root cause analysis.</p>	

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<p>prepare a final investigation report within five (5) months of the incident.</p> <p>(8) Investigation reports shall include:</p> <p>(A) The date and time of the incident;</p> <p>(B) The date and time the investigation began;</p> <p>(C) A detailed description of the incident;</p> <p>(D) The factors that caused or contributed to the incident, including direct causes, indirect causes and root causes, determined through the Root Cause Analysis;</p> <p>(E) A list of any DMR(s), PHA(s), SPA(s), and HCA(s) that were reviewed as part of the investigation;</p> <p>(F) Documentation of relevant findings from the review of DMR(s), PHA(s), SPA(s) and HCA(s);</p> <p>(G) The Incident Investigation Team's recommendations; and,</p>	<p>(5) The employer must establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions must be documented. The recommendations must include interim measures that will prevent a recurrence or similar incident until final corrective actions can be implemented.</p> <p>(6) The incident investigation team must review the incident scenarios evaluated in the most recent PHA, and must revise the safeguard protection analyses (SPAs) in the PHA if necessary.</p> <p>(7) Investigation reports must be provided within one week of its completion, and upon request, reviewed with employees whose job tasks are affected by the incident. Investigation reports must also be made available to all operating, maintenance and other personnel, including employees of contractors where applicable, whose work assignments are within the facility where the incident occurred or whose job tasks are relevant to the incident findings. Investigation reports must be provided on request to employee representatives and, where applicable, contractor employee representatives.</p>	<p>(e) A list of any DMR(s), PHA(s), SPA(s), and HCA(s) that were reviewed as part of the investigation;</p> <p>(f) Documentation of relevant findings from the review of DMR(s), PHA(s), SPA(s), and HCA(s);</p> <p>(g) The incident investigation team's recommendations; and</p> <p>(h) Interim measures implemented by the employer.</p> <p>(8) The employer must implement all recommendations in accordance with section XXX.</p> <p>(9) The employer must complete an HCA in a timely manner for all recommendations that result from the investigation of a major incident. The employer must append the HCA report to the investigation report.</p> <p>(10) Within one week upon the completion of reports required under subsection six, the reports must be provided to affected employees. Upon request the employer must review the report with affected employees. These reports must be provided upon request to affected employee</p>	

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<p>(H) Interim measures implemented by the employer.</p> <p>(9) The employer shall implement all recommendations in accordance with subsection (x).</p> <p>(10) The employer shall complete an HCA in a timely manner for all recommendations that result from the investigation of a major incident. The employer shall append the HCA report to the investigation report.</p> <p>(11) Investigation reports shall be provided to and upon request, reviewed with employees whose job tasks are affected by the incident. Investigation reports shall also be made available to all operating, maintenance and other personnel, including employees of contractors where applicable, whose work assignments are within the facility where the incident occurred or whose job tasks are relevant to the incident findings. Investigation reports shall be provided on request to employee representatives and, where applicable, contractor employee representatives.</p>	<p>(8) The team must prepare a written investigation report within ninety calendar days of the incident. If the team demonstrates in writing that additional time is needed due to the complexity of the investigation, the team must prepare a status report within ninety calendar days of the incident and every thirty calendar days thereafter until the investigation is complete. The team must prepare a final investigation report within four months of the incident.</p> <p>(9) The employer must complete an HCA in a timely manner for all recommendations that result from the investigation of a major incident. The employer must attach the HCA report to the investigation report.</p> <p>(10) Incident investigation reports must be retained for the life of the process.</p>	<p>representatives and employers of affected employees.</p> <p>(11) Any draft or final report required in subsection six and related documentation must be provided immediately to the department upon written request.</p> <p>(12) Incident investigation reports must be retained for the life of the process unit.</p>	

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<p>(12) Incident investigation reports shall be retained for the life of the process unit.</p>			
<p>(p) Emergency Planning and Response</p>	<p>WAC 296-XX-XXX Emergency Planning and Response.</p>	<p>WAC 296-67-XXXX Emergency planning and response.</p>	<p>Commentary</p>
<p>(A) The employer shall develop, implement and maintain an effective Emergency Action Plan pursuant to CCR Title 8, Section 3220.</p>	<p>(1) The employer must develop, implement and maintain an effective emergency response or emergency action plan for the entire plant. An emergency response plan must define and include procedures for handling small releases.</p> <p>(2) If the employer plans to rely on external emergency response organization during an emergency, it must document the nature and agreement between itself and any expected assistance from that entity. All drills, scenarios, response time sequences, and debrief action items must be included in the documentation with the assistance and input by the external emergency response entity.</p>	<p>(1) The employer must develop, implement and maintain an effective emergency response or emergency action plan for the entire plant, in accordance with the provisions of WAC 296-24-567, Employee emergency plans and fire prevention plans; and chapter 296-824 WAC, Emergency response. An emergency response plan must define and include procedures for handling all of the below:</p> <ul style="list-style-type: none"> (a) Large and small spills or releases; (b) Fires; (c) Explosions; and (d) Any other emergency with a direct bearing on employee safety and health. <p>(2) The written plan must specify how an emergency response will be executed if it exceeds the capability of the employer’s internal emergency response team.</p>	<p>1. Added WAC code language back in; specified types of incidents.</p> <p>2. Simplified language at (2).</p>

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		(3) The employer must provide for employee collaboration.	
(u) Compliance Audits.	WAC 296-67-XXXX Compliance audits.	WAC 296-67-XXXX Compliance audits.	Commentary
<p>(1) Every three (3) years, the employer shall conduct an effective Compliance Audit. The employer shall certify that they have evaluated compliance with the provisions of this section to verify that the procedures and practices developed under this section are effective and being followed. The employer shall prepare a written report of the findings of the Compliance Audit.</p> <p>(2) The Compliance Audit shall be conducted by at least one person with expertise and experience in the requirements of the subsection under review. As part of the Compliance Audit, the employer shall consult with operators with expertise and experience in each process audited and shall document the findings and recommendations from these consultations in the written report. The report shall state the qualifications and identity of the persons performing the Compliance Audit.</p>	<p>(1) Employers must certify that they have evaluated compliance with the provisions of this section at least every three years to verify that the procedures and practices developed under the standard are effective and are being followed.</p> <p>(2) The compliance audit must be conducted by at least one person with expertise and experience in the process being audited. As part of the compliance audit, the employer must consult with operators with expertise and experience in each process audited and must document the findings and recommendations from these consultations in the written report. The report must state the qualifications and identity of the persons performing the compliance audit.</p> <p>(3) The employer must promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected</p>	<p>(1) Every three years, the employer must conduct an effective compliance audit. The employer must certify that they have evaluated compliance with the provisions of this chapter to verify that the procedures and practices developed under this chapter are effective and being followed. The employer must prepare a written report of the findings of the compliance audit.</p> <p>(2) The compliance audit must be conducted by at least one person with expertise and experience in the requirements of the section under review. As part of the compliance audit, the employer must consult with operators with expertise and experience in each process audited and must document the findings and recommendations from these consultations in the written report. The report must state the qualifications and identity of the persons performing the compliance audit.</p> <p>(3) The employer must make the report available to employees and employee representatives pursuant to section XXXX. The employer must respond in writing within sixty days to any written comments submitted by an employee or employee representative regarding the report.</p>	<p>1. Added last sentence to (1) in order to align with California rule</p>

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<p>(3) The employer shall make the report available to employees and employee representatives, pursuant to subsection (q). The employer shall respond in writing within sixty (60) calendar days to any written comments submitted by an employee or employee representative regarding the report.</p> <p>(4) The employer shall implement all recommendations in accordance with subsection (x).</p> <p>(5) The employer shall retain the three (3) most recent compliance audit reports.</p> <p>(6) The Compliance Audit report shall fulfill the inspection requirements related to process safety under CCR Title 8, Section 3203 but shall not relieve the employer of other obligations thereunder, including inspection for other hazards.</p>	<p>(4) The employer must make the report available to employees and employee representatives. The employer must respond in writing within sixty calendar days to any written comments submitted by an employee or employee representative regarding the report.</p> <p>(5) Employers must retain the three most recent compliance audit reports.</p>	<p>(4) The employer must implement all recommendations in accordance with section XXXX.</p> <p>(5) The employer must retain the three most recent compliance audit reports.</p>	
<p>(w) Division Access to Documents and Information.</p>	<p>WAC 296-XX-XXX Trade Secrets.</p>	<p>WAC 296-67-XXXX Trade secrets.</p>	<p>Commentary</p>
<p>(1) The employer shall provide all documents and information developed or collected pursuant to this Section to the Division upon request</p>	<p>(1) Employers must make all information necessary to comply with the section available to those persons responsible for:</p>	<p>(1) Without regard to possible trade secret status of such information, employers must make all information necessary to comply with the section available to those persons responsible for compiling the process safety information (required</p>	<p>1. Stylistic change</p>

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	<p>(a) Compiling the process safety information (required by WAC 296-67-071);</p> <p>(b) Assisting in the development of the process hazard analysis (required by WAC 296-67-081);</p> <p>(c) Developing the operating procedures (required by WAC 296-67-085);</p> <p>(d) Incident investigations (required by WAC 296-67-113);</p> <p>(e) Emergency planning and response (WAC 296-67-117); and</p> <p>(f) Compliance audits (WAC 296-67-121) without regard to possible trade secret status of such information.</p> <p>(2) Nothing in this section must preclude the employer from requiring the persons to whom the information is made available under this section to enter into confidentiality agreements not to disclose the information as set forth in WAC 296-67-117.</p> <p>(3) Subject to the rules and procedures set forth in WAC 296-67-117, employees and their</p>	<p>by WAC 296-67-XXXX), those assisting in the development of the process hazard analysis (required by WAC 296-67-XXXX), those responsible for developing the operating procedures (required by WAC 296-67-XXXX), and those involved in incident investigations (required by WAC 296-67-XXXX), emergency planning and response (WAC 296-67-XXXX) and compliance audits (WAC 296-67-XXXX).</p> <p>(2) Nothing in this section precludes the employer from requiring the persons to whom the information is made available under this section to enter into confidentiality agreements not to disclose the information as set forth in WAC 296-901-14018, Trade secrets.</p>	

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	<p>designated representatives must have access to trade secret information contained within the process hazard analysis and other documents required to be developed by this standard.</p>		
<p>(r) Process Safety Culture Assessment.</p>	<p>WAC 296-67-XXXX Process safety culture assessment.</p>	<p>WAC 296-67-XXXX Process safety culture assessment.</p>	<p>Commentary</p>
<p>(1) The employer shall develop, implement and maintain an effective PSCA program.</p> <p>(2) The employer shall conduct an effective PSCA and produce a written report within eighteen (18) months following the effective date of this section, and at least once every five (5) years thereafter. If the employer has conducted and documented a PSCA up to eighteen (18) months prior to the effective date of this section, and that PSCA includes the elements identified in this subsection, that PSCA may be used to satisfy the employer's obligation to complete an initial PSCA under this subsection.</p> <p>(3) The PSCA shall be developed and implemented by a team that shall include at least one member knowledgeable in refinery operations and at least one employee representative. The employer shall provide for employee participation,</p>	<p>(1) The employer must develop, implement and maintain an effective process safety culture assessment (PSCA) program.</p> <p>(2) The employer must conduct an effective PSCA and produce a written report within eighteen months following the effective date of this section, and at least every five years thereafter. If the employer has conducted and documented a PSCA up to eighteen months prior to the effective date of this section, and that PSCA includes the elements identified in this subsection, that PSCA may be used to satisfy the employer's obligation to complete an initial PSCA under this subsection.</p> <p>(3) The PSCA must be developed and implemented by a team that must include at least one member knowledgeable in refinery operations and at least one employee representative with processing and maintenance experience. The employer must provide for employee collaboration; and consult</p>	<p>(1) The employer must develop, implement and maintain an effective process safety culture assessment (PSCA) program.</p> <p>(2) The employer must conduct an effective PSCA and produce a written report within eighteen months following the effective date of this chapter, and at least every five years thereafter. If the employer has conducted and documented a PSCA up to eighteen months prior to the effective date of this chapter, and that PSCA includes the elements required in this section, that PSCA may be used to satisfy the employer's obligation to complete an initial PSCA.</p> <p>(3) The PSCA must be developed and implemented by a team that must include at least one member knowledgeable in refinery operations and at least one employee representative. The employer must provide for employee collaboration, pursuant to section XXX. The team must consult with at least one employee or another individual with expertise in assessing</p>	<p>1. Added language at (4)(e) – (k)</p>

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<p>pursuant to subsection (q). The team shall consult with at least one employee or another individual with expertise in assessing process safety culture in the petroleum refining industry.</p> <p>(4) The PSCA shall include an evaluation of the effectiveness of the following elements of process safety leadership:</p> <p>(A) The employer’s hazard reporting program;</p> <p>(B) The employer’s response to reports of hazards;</p> <p>(C) The employer’s procedures to ensure that incentive programs do not discourage reporting of hazards; and,</p> <p>(D) The employer’s procedures to ensure that process safety is prioritized during upset or emergency conditions.</p> <p>(5) The team shall develop a written report within ninety (90) calendar days of completion of the PSCA, which shall include:</p>	<p>with at least one employee or another individual with expertise in assessing process safety culture in the petroleum refining industry.</p> <p>(4) The PSCA must include an evaluation of the effectiveness of the following elements of process safety leadership:</p> <p>(a) The employer’s hazard reporting program;</p> <p>(b) The employer’s response to reports of hazards;</p> <p>(c) The employer’s procedures to ensure that incentive programs do not discourage reporting of hazards; and</p> <p>(d) The employer’s procedures to ensure that process safety is prioritized during upset or emergency conditions.</p> <p>(5) The team must develop a written report within ninety calendar days of completion of the PSCA, which must include:</p> <p>(a) The method(s) used to conduct the PSCA;</p> <p>(b) The findings and conclusions of the PSCA; and</p>	<p>process safety culture in the petroleum refining industry.</p> <p>(4) The PSCA must at least include an evaluation of the effectiveness of the following elements of process safety leadership:</p> <p>(a) The employer’s hazard reporting program;</p> <p>(b) The employer’s response to reports of hazards;</p> <p>(c) The employer’s procedures to ensure that incentive programs do not discourage reporting of hazards;</p> <p>(d) The employer’s procedures to ensure that process safety is prioritized during upset or emergency conditions.</p> <p>(e) Employee collaboration practices;</p> <p>(f) Compliance with government regulations, RAGAGEPs and internal policies and procedures;</p> <p>(g) Asset integrity and reliability;</p> <p>(h) Contractor management;</p>	

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<p>(A) The method(s) used to conduct the PSCA;</p> <p>(B) The findings and conclusions of the PSCA; and,</p> <p>(C) The team's recommendations to address the findings of the PSCA.</p> <p>(6) The employer, in consultation with the PSCA team, shall prioritize recommendations and implement corrective actions within 24 months of completion of the written report.</p> <p>(7) The PSCA team shall conduct a written Interim Assessment of the implementation and effectiveness of each PSCA corrective action within three (3) years following the completion of a PSCA report. If a corrective action is found to be ineffective, the employer shall implement changes necessary to ensure effectiveness in a timely manner not to exceed six (6) months.</p> <p>(8) The refinery manager or designee shall serve as signatory to all PSCA reports,</p>	<p>(c) The team's recommendations to address the findings of the PSCA.</p> <p>(6) The employer, in consultation with the PSCA team, must prioritize recommendations and implement corrective actions within twenty-four months of completion of the written report .</p> <p>(7) The PSCA team must conduct a written interim assessment of the implementation and effectiveness of each PSCA corrective action within three years following the completion of a PSCA report. If a corrective action is found to be ineffective, the employer must implement changes necessary to ensure effectiveness in a timely manner not to exceed six months.</p> <p>(8) The refinery manager or designee must serve as signatory to all PSCA reports, corrective action plans and Interim Assessments.</p> <p>(9) PSCA reports, corrective action plans and Interim Assessments must be communicated and made available to employees, their representatives and participating contractors within sixty calendar days of completion.</p>	<p>(i) Safe work practices;</p> <p>(j) Employee competency, training, and performance assurance; and</p> <p>(k) Compliance audits.</p> <p>(5) The team must develop a written report within ninety calendar days of completion of the PSCA, which must include:</p> <p>(a) The method(s) used to conduct the PSCA;</p> <p>(b) The findings and conclusions of the PSCA; and</p> <p>(c) The team's recommendations to address the findings of the PSCA.</p> <p>(6) The employer, in consultation with the PSCA team, must prioritize recommendations and implement corrective actions within twenty-four months of completion of the written report.</p> <p>(7) The PSCA team must conduct a written interim assessment of the implementation and effectiveness of each PSCA corrective action within three years following the completion of a PSCA report. If a corrective action is found to be ineffective, the employer must implement changes</p>	

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<p>CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD Chapter §5189.1. Process Safety Management for Petroleum Refineries.</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries Discussion Draft 1</p>	<p>WAC 296-XX-XXX Process Safety Requirements for Petroleum Refineries, Part A Discussion Draft 2</p>	<p>Commentary</p>
<p>corrective action plans and Interim Assessments.</p> <p>(9) PSCA reports, corrective action plans and Interim Assessments shall be communicated and made available to employees, their representatives and participating contractors within sixty (60) calendar days of completion.</p> <p>(10) Participating contractors shall provide PSCA reports, corrective action plans and Interim Assessments to their employees and employee representatives within fourteen (14) calendar days of receipt.</p>	<p>(10) Participating contractors must provide PSCA reports, corrective action plans and Interim Assessments to their employees and employee representatives within fourteen calendar days of receipt.</p>	<p>necessary to ensure effectiveness within, but not to exceed, six months.</p> <p>(8) The refinery manager must serve as signatory to all PSCA reports, corrective action plans and interim assessments.</p> <p>(9) PSCA reports, corrective action plans and interim assessments must be communicated and made available to all employees, their representatives, and participating contractors within sixty calendar days of completion.</p> <p>(10) Participating contractors must provide PSCA reports, corrective action plans, and interim assessments to their employees and employee representatives within fourteen calendar days of receipt.</p>	
<p>(s) Human Factors.</p>	<p>WAC 296-67-XXXX Human factors.</p>	<p>WAC 296-67-XXXX Human factors.</p>	<p>Commentary</p>
<p>(1) The employer shall develop, implement and maintain an effective written Human Factors program within eighteen (18) months following the effective date of this section.</p> <p>(2) The employer shall include a written analysis of Human Factors, where relevant, in major changes, incident investigations, PHAs, MOOCs and HCAs.</p>	<p>(1) The employer must develop, implement and maintain an effective written human factors program within eighteen months following the effective date of this section.</p> <p>(2) The employer must include a written analysis of human factors that represents industry best practices relevant to major changes, incident investigations, PHAs, MOOCs and HCAs. The analysis must include</p>	<p>(1) The employer must develop, implement and maintain an effective written human factors program within eighteen months following the effective date of this chapter.</p> <p>(2) The employer must include a written analysis of human factors that, at a minimum, represents industry recognized and generally accepted good engineering practices (RAGAGEP) relevant to MOCs, incident investigations, PHAs, MOOCs,</p>	<p>1. At (2), removed “best practices” and added RAGAGEP language</p>

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<p>The analysis shall include a description of the selected methodologies and criteria for their use.</p> <p>(3) The employer shall assess Human Factors in existing operating and maintenance procedures and shall revise these procedures accordingly. The employer shall complete no less than fifty (50) percent of assessments and revisions within three (3) years following the effective date of this section and one hundred (100) percent within five (5) years.</p> <p>(4) The Human Factors analysis shall apply an effective method in evaluating the following: staffing levels; the complexity of tasks; the length of time needed to complete tasks; the level of training, experience and expertise of employees; the human-machine and human-system interface; the physical challenges of the work environment in which the task is performed; employee fatigue and other effects of shiftwork and overtime; communication systems; and the understandability and clarity of operating and maintenance procedures.</p>	<p>a description of the selected methodologies and criteria for their use.</p> <p>(3) The employer must assess human factors in existing operating and maintenance procedures and must revise these procedures accordingly. The employer must complete fifty percent of assessments and revisions within three years following the effective date of this section and one hundred percent within five years.</p> <p>(4) The human factors analysis must apply an effective method in evaluating the following:</p> <p>(a) Staffing levels;</p> <p>(b) Complexity of tasks;</p> <p>(c) Length of time needed to complete tasks;</p> <p>(d) Level of training, experience and expertise of employees;</p> <p>(e) Human-machine and human-system interface;</p> <p>(f) Physical challenges of the work environment in which the task is performed;</p>	<p>and HCAs. The analysis must include a description of the selected methodologies and criteria for their use.</p> <p>(3) The employer must assess human factors in existing operating and maintenance procedures and must revise these procedures accordingly. The employer must complete fifty percent of assessments and revisions within three years following the effective date of this section and one hundred percent within five years.</p> <p>(4) The human factors analysis must apply an effective method in evaluating at least the following:</p> <p>(a) Staffing levels;</p> <p>(b) Complexity of tasks;</p> <p>(c) Length of time needed to complete tasks;</p> <p>(d) Level of training, experience and expertise of employees;</p> <p>(e) Human-machine and human-system interface;</p> <p>(f) Physical challenges of the work environment in which the task is performed;</p>	

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<p>(5) The Human Factors analysis of process controls shall include:</p> <p>(A) Error-proof mechanisms;</p> <p>(B) Automatic alerts; and,</p> <p>(C) Automatic system shutdowns.</p> <p>(6) The employer shall include an assessment of Human Factors in new and revised operating and maintenance procedures.</p> <p>(7) The employer shall train operating and maintenance employees in the written Human Factors program.</p> <p>(8) The employer shall provide for employee participation in the Human Factors program, pursuant to subsection (q).</p> <p>(9) The employer shall make available and provide on request a copy of the written Human Factors program to employees and their representatives and to affected contractors, employees of contractors, and contractor employee representatives, pursuant to subsection (q).</p>	<p>(g) Employee fatigue and other effects of shiftwork and overtime;</p> <p>(h) Communication systems; and</p> <p>(i) Comprehension of operating and maintenance procedures.</p> <p>(5) The human factors analysis of process controls must include:</p> <p>(a) Error-proof mechanisms;</p> <p>(b) Automatic alerts; and</p> <p>(c) Automatic system shutdowns.</p> <p>(6) The employer must include an assessment of human factors in new and revised operating and maintenance procedures.</p> <p>(7) The employer must train operating and maintenance employees in the written human factors program.</p> <p>(8) The employer must provide for employee collaboration in the human factors program.</p>	<p>(g) Employee fatigue and other effects of shiftwork and overtime;</p> <p>(h) Communication systems; and</p> <p>(i) The understandability and clarity of operating and maintenance procedures.</p> <p>(5) The human factors analysis of process controls must include:</p> <p>(a) Error-proof mechanisms;</p> <p>(b) Automatic alerts; and</p> <p>(c) Automatic system shutdowns.</p> <p>(6) The employer must include an assessment of human factors in new and revised operating and maintenance procedures.</p> <p>(7) The employer must train affected employees in the written human factors program.</p> <p>(8) The employer must make available, and provide upon request, a copy of the written human factors program to affected employees and their representatives.</p>	

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	<p>(9) The employer must make available and provide on request, a copy of the written human factors program to employees and their representatives and to affected contractors, employees of contractors, and contractor employee representatives</p>	<p>(9) The employer must provide for employee collaboration.</p>	
<p>(x) Implementation</p>	<p>WAC 296-XX-XXX Implementation.</p>	<p>WAC 296-67-XXXX Corrective action program</p>	<p>Commentary</p>
<p>(1) The employer shall develop and maintain an effective written corrective action program to prioritize and implement the recommendations of a PHA, SPA, DMR, HCA, Incident Investigation and Compliance Audit, pursuant to this section.</p> <p>(2) All findings and associated recommendations must be provided to the employer by the team performing the review or analysis in a timely manner.</p> <p>(3) The employer may reject a team recommendation if the employer can demonstrate in writing that the recommendation meets one of the following criteria:</p> <p>(A) The analysis upon which the recommendation is based contains material factual errors;</p>	<p>(1) The employer must develop, implement and maintain an effective written corrective action program to prioritize and implement the process safety performance indicators recommended as the result of a process hazard analysis (PHA), safeguard protection analysis (SPA), damage mechanism review (DMR), hierarchy of hazard controls analysis (HCA), incident investigation and compliance audit, pursuant to this section.</p> <p>(2) All findings and associated recommendations must be provided to the employer by the team performing the review or analysis.</p> <p>(3) The employer may reject a team recommendation if the employer can demonstrate in writing that the recommendation meets one of the following criteria:</p>	<p>(1) The employer must develop, implement and maintain an effective written corrective action program to prioritize and implement recommendations of:</p> <p>(a) Process hazard analyses (PHA);</p> <p>(b) Safeguard protection analyses (SPA);</p> <p>(c) Damage mechanism reviews (DMR);</p> <p>(d) Hierarchy of hazard controls analyses (HCA);</p> <p>(e) Incident investigations; and</p> <p>(f) Compliance audits.</p> <p>(2) All findings and associated recommendations must be provided to the employer by the team performing the analysis, review, investigation, or audit in a timely manner.</p>	<p>At (11): Draft 1 had this language: "...or during an outage or turnaround, whichever comes first." This phrase was removed in our 2nd draft, reverting it to the CA language which doesn't have that language.</p> <p>At (12): Draft 1 left out "...unless the employer demonstrates in writing that it is infeasible to do so." We put it back in draft 2, reverting to CA language.</p> <p>At (16): We added this language which wasn't in draft 1.</p>

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<p>(B) The recommendation is not relevant to process safety; or,</p> <p>(C) The recommendation is infeasible; however, a determination of infeasibility shall not be based solely on cost.</p> <p>(4) The employer may change a team recommendation if the employer can demonstrate in writing that an alternative measure would provide an equivalent or higher order of inherent safety. The employer may change a team recommendation for a safeguard if an alternative safeguard provides an equally or more effective level of protection.</p> <p>(5) The employer shall document all instances where any one of the criteria in subsections (x)(3) or (x)(4) is used for the purpose of rejecting or changing a team recommendation.</p> <p>(6) Each recommendation that is changed or rejected by the employer shall be communicated to onsite team members for comment and made available to offsite team members for comment. The</p>	<p>(a) The analysis upon which the recommendation is based contains material factual errors;</p> <p>(b) The recommendation is not relevant to process safety; or</p> <p>(c) The recommendation is infeasible; however, a determination of infeasibility must not be based solely on cost.</p> <p>(4) The employer may change a team recommendation if the employer can demonstrate in writing that an alternative measure would provide an equivalent or higher order of inherent safety. The employer may change a team recommendation for a safeguard if an alternative safeguard provides an equally or more effective level of protection.</p> <p>(5) The employer must document all instances where any one of the criteria in subsections xxx is used for the purpose of rejecting or changing a team recommendation.</p> <p>(6) Each recommendation that is changed or rejected by the employer must be communicated to onsite team members for</p>	<p>(3) The employer may reject a team recommendation if the employer can demonstrate in writing that the recommendation meets one of the following criteria:</p> <p>(a) The analysis upon which the recommendation is based contains material factual errors;</p> <p>(b) The recommendation is not relevant to process safety; or</p> <p>(c) The recommendation is infeasible; however, a determination of infeasibility must not be based solely on cost.</p> <p>(4) The employer may change a team recommendation if the employer can demonstrate in writing that an alternative measure would provide an equivalent or higher order of inherent safety. The employer may change a team recommendation for a safeguard if an alternative safeguard provides an equally or more effective level of protection.</p> <p>(5) The employer must document all instances where any one of the criteria in subsection (3) or (4) of this section is used for the purpose of rejecting or changing a team recommendation.</p>	

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<p>employer shall document all written comments received from team members for each changed or rejected recommendation. The employer shall document a final decision for each recommendation and shall communicate it to onsite team members and make it available to offsite team members.</p> <p>(7) The employer shall develop and document corrective actions to implement each accepted recommendation. The employer shall assign a completion date for each corrective action and a person responsible for completing the corrective action.</p> <p>(8) If the employer determines that a corrective action requires revalidation of any applicable PHA, SPA, HCA or DMR, these revalidations shall be subject to the corrective action requirements of this subsection. The employer shall promptly append all revalidated PHAs, SPAs, DMRs, and HCAs to the applicable report.</p> <p>(9) The employer shall promptly complete all corrective actions and shall comply with all completion dates required by this</p>	<p>comment and made available to offsite team members for comment. The employer must document all written comments received from team members for each changed or rejected recommendation. The employer must document a final decision for each recommendation and must communicate it to onsite team members and make it available to offsite team members.</p> <p>(7) The employer must develop and document corrective actions to implement each accepted recommendation. The employer must assign a completion date for each corrective action and a person responsible for completing the corrective action.</p> <p>(8) If the employer determines that a corrective action requires revalidation of any applicable process hazard analysis (PHA), safeguard protection analysis (SPA), hierarchy of hazard controls analysis (HCA) or damage mechanism review (DMR), these revalidations must be subject to the corrective action requirements of this subsection. The employer must promptly append all revalidated PHAs, SPAs, DMRs, and HCAs to the applicable report.</p>	<p>(6) Each recommendation that is changed or rejected by the employer must be communicated to onsite team members for comment and made available to offsite team members for comment. The employer must document all written comments received from team members for each changed or rejected recommendation. The employer must document a final decision for each recommendation and must communicate it to onsite team members and make it available to offsite team members.</p> <p>(7) The employer must develop and document corrective actions to implement each accepted recommendation. The employer must assign a completion date for each corrective action and a person responsible for completing the corrective action.</p> <p>(8) If the employer determines that a corrective action requires revalidation of any applicable process hazard analysis (PHA), safeguard protection analysis (SPA), hierarchy of hazard controls analysis (HCA) or damage mechanism review (DMR), these revalidations must be subject to the corrective action requirements of this section. The employer must promptly append all</p>	

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<p>subsection. The employer shall conduct an MOC for any proposed change to a completion date, pursuant to subsection (n). The employer shall make all completion dates available, upon request, to all affected operation and maintenance employees and employee representatives.</p> <p>(10) Except as required in subsections (x)(11) and (x)(13), each corrective action that does not require a process shutdown shall be completed within thirty (30) months after the completion of the analysis or review, unless the employer demonstrates in writing that it is infeasible to do so.</p> <p>(11) Each corrective action from a Compliance Audit shall be completed within eighteen (18) months after completion of the audit, unless the employer demonstrates in writing that it is infeasible to do so. Each corrective action from an incident investigation shall be completed within eighteen (18) months after completion of the investigation, unless the employer demonstrates in writing that it is infeasible to do so.</p>	<p>(9) The employer must promptly complete all corrective actions and must comply with all completion dates required by this subsection. The employer must conduct an MOC for any proposed change to a completion date. The employer must make all completion dates available, upon request, to all affected operation and maintenance employees and employee representatives.</p> <p>(10) Except as required in subsections xxx and xxx, each corrective action that does not require a process shutdown must be completed within thirty months after the completion of the analysis or review, unless the employer demonstrates in writing that it is infeasible to do so.</p> <p>(11) Each corrective action from a compliance audit must be completed within eighteen months after completion of the audit, unless the employer demonstrates in writing that it is infeasible to do so. Each corrective action from an incident investigation must be completed within eighteen months after completion of the investigation or during an outage or turnaround, whichever comes first. If the employer deems the corrective action timeline to be infeasible, the employer must document the basis for that</p>	<p>revalidated PHAs, SPAs, DMRs, and HCAs to the applicable report.</p> <p>(9) The employer must promptly complete all corrective actions and must comply with all completion dates required by this chapter. The employer must conduct an MOC for any proposed change to a completion date, pursuant to section XXX. The employer must make all completion dates available, upon request, to all affected employees and employee representatives.</p> <p>(10) Except as required by subsection (11) and (13), each corrective action that does not require a process shutdown must be completed within thirty months after the completion of the analysis or review, unless the employer demonstrates in writing that it is infeasible to do so.</p> <p>(11) Each corrective action from a compliance audit must be completed within eighteen months after completion of the audit, unless the employer demonstrates in writing that it is infeasible to do so. Each corrective action from an incident investigation must be completed within eighteen months after completion of the investigation, unless the employer demonstrates in writing that it is infeasible to do so.</p>	

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<p>(12) Each corrective action requiring a process shutdown shall be completed during the first regularly scheduled turnaround of the applicable process, following completion of the PHA, SPA, DMR, HCA, MOC, Compliance Audit or Incident Investigation, unless the employer demonstrates in writing that it is infeasible to do so.</p> <p>(13) Notwithstanding subsections (x)(10), (x)(11) and (x)(12), corrective actions addressing process safety hazards shall be prioritized and promptly corrected, either through permanent corrections or interim safeguards sufficient to ensure employee safety and health, pending permanent corrections.</p> <p>(14) Where a corrective action cannot be implemented within the time limits required in subsections (x)(10), (x)(11) or (x)(12), the employer shall ensure that interim safeguards are sufficient to ensure employee safety and health, pending permanent corrections. The employer shall document the decision and rationale for any delay and shall implement the corrective action as soon as possible. The</p>	<p>determination in writing that it is infeasible to do so.</p> <p>(12) Each corrective action requiring a process shutdown must be completed during the regularly scheduled turnaround of the applicable process, following completion of the PHA, SPA, DMR, HCA, MOC, Compliance Audit or Incident Investigation.</p> <p>(13) Notwithstanding subsections xxx and xxx, corrective actions addressing process safety hazards must be prioritized and promptly corrected, either through permanent corrections or temporary, interim safeguards sufficient to ensure employee safety and health, pending permanent corrections.</p> <p>(14) Where a corrective action cannot be implemented within the time limits required in subsections xxx the employer must ensure that interim safeguards are sufficient to ensure employee safety and health, pending permanent corrections. The employer must document the decision and rationale for any delay and must implement the corrective action as soon as possible. The documentation must include:</p>	<p>(12) Each corrective action requiring a process shutdown must be completed during the first regularly scheduled turnaround of the applicable process, following completion of the PHA, SPA, DMR, HCA, MOC, compliance audit or incident investigation, unless the employer demonstrates in writing that it is infeasible to do so.</p> <p>(13) Notwithstanding sections (10), (11) and (12), corrective actions addressing process safety hazards must be prioritized and promptly corrected, either through permanent corrections or interim safeguards sufficient to ensure employee safety and health, pending permanent corrections.</p> <p>(14) Where a corrective action cannot be implemented within the time limits required in subsections (10), (11) or (12), the employer must ensure that interim safeguards are sufficient to ensure employee safety and health, pending permanent corrections. The employer must document the decision and rationale for any delay and must implement the corrective action as soon as possible. The documentation must include:</p> <p>(a) The rationale for deferring the corrective action;</p>	

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<p>documentation shall include:</p> <p>(A) The rationale for deferring the corrective action;</p> <p>(B) All MOC requirements, pursuant to subsection (n);</p> <p>(C) A revised timeline describing when the corrective action will be implemented; and,</p> <p>(D) An effective plan to make available the rationale and revised timeline to all affected employees and their representatives.</p> <p>(15) The employer shall track and document the completion of each corrective action and shall append the documentation to the applicable PHA, SPA, DMR, HCA, Incident Investigation or Compliance Audit.</p>	<p>(a) The rationale for deferring the corrective action;</p> <p>(b) All MOC requirements;</p> <p>(c) A revised timeline describing when the corrective action will be implemented; and</p> <p>(d) An effective plan to make available the rationale and revised timeline to all affected employees and their representatives.</p> <p>(15) The employer must track and document the completion of each corrective action and must append the documentation to the applicable PHA, SPA, DMR, HCA, Incident Investigation or compliance audit.</p>	<p>(b) All MOC requirements, pursuant to WAC 296-XX-XXX ;</p> <p>(c) A revised timeline describing when the corrective action will be implemented; and</p> <p>(d) An effective plan to make available the rationale and revised timeline to all affected employees and their representatives.</p> <p>(15) The employer must track and document the completion of each corrective action and must append the documentation to the applicable PHA, SPA, DMR, HCA, incident investigation or compliance audit.</p> <p>(16) For purposes of this section, a determination of infeasibility must not be based solely on cost.</p>	
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