



December 19, 2018

Mr. Alan Lundeen
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Via email: psmcomments@lni.wa.gov

**Memo #4: Final Comments on the Second Draft of Revisions to Chapter 296-XX WAC,
*Process Safety Requirements for Petroleum Refineries***

Dear Mr. Lundeen,

On behalf of our organizations and members, we are pleased to offer this Memo #4 as final comment on the revisions to Chapter 296-67 WAC *Process Safety Management for Refineries*, Part A, Discussion Draft Round 2 of September 24, 2018.

As we noted in Memo #3, we believe the Round 2 Draft is substantially improved from the previous version. Though it does not include all of the changes we recommended, it is closer to meeting the objective of a practical, meaningful and legally enforceable PSM regulation: one that will better protect the safety and health of Washington's workers, communities, and natural resources.

At the same time, we pointed out in Memo #3 and in our comments during subsequent Advisory Committee meetings that the proposal suffers from internal inconsistencies and technical errors that can, and must, be corrected if the regulation is to achieve this objective. In Memo #3, we identified these problems and offered text corrections and other remedies.

In the current Memo #4, below, we restate the comments from Memo #3, all of which are contained herein, and we make a small number of revisions and additions to these comments, based on the discussions in the Advisory Committee meetings. You will find those changes and additions in **red text** in the following PSM elements:

- (1) A revision to *Purpose and Scope* (p. 3);
- (3) A revision to the definition of "Reactive" to comport with findings of the CSB (p.4);
- (4) A revision to the definition of *Process* (p. 5);
- (5) A revision to the definition of *process safety incident* (pp. 6-7);
- (6) An additional explanatory note on our proposed definition of RAGAGEP (p. 8);

- (7) A revision to the definition of *RAGAGEP* (p. 8);
- (8) An addition explanatory note on proposed changes to the *Contractor* element (p. 10)
- (9) A revision to the *Emergency Planning and Response* element (p. 11);
- (10) Additional comments on inconsistencies throughout the Draft in the use "chapter," "part," "section," "subsection," and "element" throughout the Draft (pp. 13-14).

We urge you and staff to carefully consider these recommendations and amend the Discussion Draft Round 2 accordingly. Please contact Stephanie Celt of BlueGreen Alliance at stephaniec@bluegreenalliance.org if you have any questions.

Thank you again for your leadership in advancing a modern PSM regulation for the State of Washington.

Sincerely,

Charlotte Brody, Vice President, Health Initiatives	BlueGreen Alliance
Stephanie Celt, Washington Policy Coordinator	BlueGreen Alliance
Walter Cleve, Tesoro Anacortes Safety Rep	USW Local 12-591, AFL-CIO
Steve Garey, Washington Steering Committee	BlueGreen Alliance
Eleanor Hines, Lead Scientist, Clean Water Program	REsources for Sustainable Communities
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cc. Paulette Avalos, Senior Policy Advisor, Governor’s Policy Office
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1) Purpose and Scope (p. 1)

Problem:

- The Draft retains the original PSM focus on “consequences” of process failures.

Rationale:

- In the process industries, the following framework of the AIChE is usually applied:
 - Risk = Hazard * Likelihood * Consequence.
- Focusing on “consequences” of process failures is contrary to the prevention focus of the PSM proposal, which requires refiners to correct process safety *hazards*.
- Preventing, eliminating and minimizing “hazards” is therefore consistent with the PSM proposal and with industry best practice.

Solution:

- Please amend the sentence to read: *“This Chapter contains requirements for the prevention, elimination, and minimization of process safety hazards in the petroleum refining industry.”*
- Or amend the sentence to read: *This Chapter contains requirements for the prevention, elimination, and minimization of releases of toxic, reactive, flammable, or explosive chemicals or materials in the petroleum refining industry.*

2) Definition of Affected Employee (p. 1).

Problem:

- The Draft leaves out personnel who could be affected by process hazards, such as unit support engineers.

Rationale:

- The definition is intended to cover all employees who might be affected by an unsafe process condition.

Solution:

- Please add “*supporting employees*” as item “e” in the list of personnel.

3) Definition of Hazardous Chemical or Material (p. 2)

Problem:

- The Draft refers to “explosive “ and “reactive” chemicals, but definitions for these types of hazardous chemicals or materials are not included in the definitions subsection.

Rationale:

- The proposal introduces ambiguity by including definitions for “flammable” and “toxic” but omitting definitions for “explosive” and “reactive.”
- Without definitions, these latter two terms could be subject to misinterpretation in the implementation and enforcement of the PSM regulation.

Solution:

- Please insert the following definitions into the proposed regulation:
 - Explosive. See the definition of Explosive in WAC 296-901-14024, Appendix B
 - Reactive. Chemicals that are more likely to react in combination with other chemicals and/or under certain conditions of temperature, pressure, moisture, storage time, or other condition.
 - Note: CSB investigations have shown that most major incidents involving chemical reactions have occurred not from reactive chemicals per se but from chemicals coming under physical conditions sufficient to trigger an explosion or fire). This is not well-captured in the definition of Reactive substance in WAC 296-901-14024, Appendix B.
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4) Definition of Human Factors (p. 2).

Problem:

- “Process safety” and “Health and safety” are included as separate items in the list of “human factors,” rather than in (c), as areas of activity that could be *affected* by “human and individual characteristics such as fatigue...”

Rationale:

- This is a simple structural correction in the paragraph and listing.

Solution:

- Please redraft so that (c) is consistent with the California language, as follows:
 - (c) Human and individual characteristics such as fatigue, that can affect job performance, process safety, or health and safety.
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5) Definition of Process (p. 5).

Problem:

- This definition is missing two key concepts that are part of the California PSM regulation:
 - Partial and unplanned shut-downs, and
 - Separate vessels.

Rationale:

- The Draft lists “partial and unplanned shut-downs” as a condition under which a Pre-Start Up Safety Review (PSSR) is required (page 24 at 1).
- The phrase “partial and unplanned shut-downs” therefore needs to be included in the definition of Process in order to be covered unambiguously by the PSM regulation.
- Partial and unplanned shut-downs can present unstable conditions and therefore warrant explicit coverage by the PSM regulation.
- **Our recommended change is consistent with Federal OSHA interpretation: “*The boundaries of the covered process are based on the equipment which contain HHCs, either through interconnection or separate vessels which are located such that an explosion would affect interconnected and nearby unconnected vessels which contain quantities of the HHC that when added together would exceed the threshold quantity and provide a potential for a catastrophic release.*”**
<https://www.osha.gov/laws-regs/standardinterpretations/2008-01-31>

Solution:

- Amend (i) to read: “Any equipment that is interconnected, including separate vessels, that could be involved in a potential release.”
 - Add a new sentence to read: “This definition includes processes under partial or unplanned shutdown.”
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Definition of Process Safety Culture (p.5)

Problem:

- This definition needs to include the protection of communities and the environment, in addition to employees.

Rationale:

- Including communities and the environment is consistent with Appendix C of the WA PSM standard: “This standard as a whole is to aid employers in their efforts to prevent or mitigate episodic chemical releases that could lead to a catastrophe in the workplace and possibly to the surrounding community.”
- Consideration for the safety of persons outside a plant is typically included in factors regarding the safety culture of the process industries. For example, the Baker Report (2007) (p. 10) on the Texas City explosion: “Given the importance of process safety to the well-being of a refinery workforce and the community in which a refinery is located, the Panel believes that it should use more stringent criteria, or effectively “raise the bar,” in its evaluation of the process safety culture survey data.”
- And: The Baker Report (2007) (p. 24): “Moreover, an organization with a strong safety culture does not lose sight of the fact that the stakeholders with the most to lose—their lives—are workers and members of the public living or working near hazardous operating units.”

- And: The Baker Report (2007) (p. 294, Recommendation #4): “The relevant stakeholders include salaried, hourly, and contract employees; employee representatives; contractors; and where appropriate, members of the community in close proximity to BP’s U.S. refineries.”

Solution:

- Adopt the California language, which differs in the last words: “...in order to ensure the protection of people and the environment.”
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Definition of Process Safety Incident (p.5)

Problem:

- This definition is confused by the sentence structure, which uses “...unplanned release...” as an example of an event that “...could cause a release...”
- More broadly, we do not believe this definition “lowers the bar” so far as to cause refiners to “treat all incidents equally,” which would defeat the purpose of the PSM regulation, a concern raised by WSPA.

Rationale:

- The WA definition does not differ substantively from the California definition of “major incident,” which invokes the “potential” for “serious physical harm,” as defined by California Labor Code Section 6432(e), as follows:

(e) "Serious physical harm," as used in this part, means any injury or illness, specific or cumulative, occurring in the place of employment or in connection with any employment, that results in any of the following: (1) Inpatient hospitalization for purposes other than medical observation. (2) The loss of any member of the body. (3) Any serious degree of permanent disfigurement. (4) Impairment sufficient to cause a part of the body or the function of an organ to become permanently and significantly reduced in efficiency on or off the job, including, but not limited to, depending on the severity, second-degree or worse burns, crushing injuries including internal injuries even though skin surface may be intact, respiratory illnesses, or broken bones.

- Under this definition of “serious physical harm” in the California regulation, a small release of a highly hazardous material (as defined) in a process or process equipment (as defined) that has the “potential” to cause a second-degree burn could be considered a “major incident.” This is a fairly protective scope, or “low bar.” To date, however, this definition of “major incident” has not created difficulties among California refiners, nor has it resulted in citations by Cal/OSHA.

Solution:

- Retain the existing definition, but correct the sentence structure by striking “unplanned release,” to read as follows: “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.”
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Definition of Process Safety Management (p. 6)

Problem:

- This definition needs to focus on ensuring the safety of *processes*, which protects workers, communities and the environment.

Rationale:

- AIChE defines PSM as a process-focused discipline. See *Risk Based Process Safety* (2007) (p. xliii): Process safety management is a “management system that is focused on prevention of, preparedness for, mitigation of, response to, and restoration from catastrophic releases of chemicals or energy from a process associated with a facility.”
- Federal OSHA includes the protection of “employees and others” in the objective of PSM. See OSHA 3133, *Process Safety Management Guidelines for Compliance* (1997): “The major objective of process safety management (PSM) of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations that could expose employees and others to serious hazards.”
- By ensuring the safety of refinery processes, PSM under this definition protects the safety of employees, communities and the environment.

Solution:

- Replace the definition with the following: “*The application of management systems to ensure the safety of petroleum refinery processes and equipment.*”
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Definition of RAGAGEP (p. 6)

Problem:

- RAGAGEP is narrowly applied in the Draft.

Rationale:

- RAGAGEP represents industry best-practices that should be adopted at the earliest opportunity by facilities.
- The PSM proposal, however, limits explicit application of RAGAGEP to the PSI, Mechanical Integrity, Compliance Audits and Human Factors elements.
- RAGAGEP can and should be applied to nearly all PSM elements.
- **The CSB Tesoro Anacortes report underscores the problem of the use of “shall’ and “should” in industry standards that could result in an absence of any substantive**

requirements. Court decisions in the Tesoro Anacortes and BP Husky cases illustrate the importance of clarifying the intent and application of RAGAGEP.

Solution:

- Insert the following text in the definition of RAGAGEP: “RAGAGEP shall apply to all processes, elements, and topics addressed in this Chapter, including where RAGAGEP is not stated explicitly. Any RAGAGEP that is stated as a recommendation (for example, by the use of “should” rather than “shall”) in a code, standard, technical report, recommended **practice or other document** may be deemed, at the discretion of the Division, to be a regulatory requirement subject to the provisions of this Chapter.”
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Definition of Serious Physical Harm (missing)

Problem:

- This definition is missing from the Draft; however, the phrase “*serious physical harm*” appears in the definition of Process Safety Hazard and in the Employee Collaboration element under Stop Work procedures and anonymous reporting of hazards.

Rationale:

- Without a definition, it is unclear what constitutes “serious physical harm.” This could lead to ambiguity in the interpretation and enforcement of the PSM regulation.

Solution:

- Include the following definition: “*Serious Physical Harm. As described in WAC 296-900-14010 under severity levels 1, 2, and 3 for injuries or illnesses associated with serious violations.*”
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Employee Collaboration (p. 8)

Problem:

- Employee collaboration is required in the Process Safety Information (PSI) element, but PSI is not listed in the Employee Collaboration element under (1)(a)(i-viii). This could introduce ambiguity in the interpretation and enforcement of employee collaboration requirements regarding PSI.

Rationale:

- There is an important role for employee participation in the development and maintenance of process safety information.
- This role should be subject to the requirements of the Employee Collaboration element.

Solution:

- Insert the following text at (1)(a)(i): “Development and maintenance of process safety information (PSI).”
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Process Safety Information (p. 12)

Problem:

- The words “constructed” and “installed” are missing from the list of requirements in (8). The word “constructed” is missing in (9).
- These words appear in the same lists in the Mechanical Integrity element on p. 25 at (5)(a)(iii) and (5)(b).
- These words are included in the California PSM in the PSI and Mechanical Integrity elements.

Rationale:

- This represents an internal inconsistency that could result in ambiguity in interpretation and enforcement of the PSM standard.
- Ensuring proper construction and installation of process equipment is important in ensuring the safety of both new and existing equipment, especially in the absence of a RAGAGEP.

Solution:

- Add the following words to the existing text for (8) on page 12: “If the employer installs new process equipment for which no RAGAGEP exists, the employer must determine and document that the equipment is properly constructed, designed, installed, maintained, inspected, tested and operating in a safe manner.”
 - Add the following words to the existing text for (9) on page 12: “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 properly constructed, designed, installed, maintained, inspected, tested and operating in a safe manner for its intended purpose.”
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Contractors (pp. 23-24)

Problem:

- The Draft is missing California text (from page 14 at (3)(C) pertaining to the implementation of safety and health procedures by contractor employees.

Rationale:

- In addition to requiring effective training and a means of ensuring that contractor employees understood the training, the actual application of safety and procedures on

the job is important to process and employee safety, and is an indicator of the contractor's safety culture.

- Effective application of safety and health procedures on the job is relevant to the requirements of (1) on page 23 of the Draft, pertaining to the selection of contractors.
- **CSB investigative reports and recommendations have frequently pointed out the need for a special focus on contractor safety, including training and host employer oversight.**

Solution:

- Insert the following California PSM text at (3)(d) on page 24: *"The contractor shall ensure that each of its employees understands and follows the safety and health procedures of the refinery employer and the contractor."*
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Mechanical Integrity (p. 26)

Problem:

- The syntax and use of words in each of the sentences in (4)(a) is flawed, making them difficult to interpret.
- The sentences appear to allow refinery employers to make temporary repairs and leave those repairs in place indefinitely once the employer determines that the repairs "ensure safe operation."
- The final sentence of (4)(a) appears to allow for a failure of a temporary failure to occur as an expected, or possible, outcome of the employer's mechanical integrity program.
- Failure of a temporary repair could result in death or serious physical harm to employees.

Rationale:

- Syntax and word problems introduce ambiguity into the interpretation and enforcement of the PSM standard.
- Allowing for employer discretion in making temporary repairs on deficient process equipment that is operating "outside of acceptable limits" is inconsistent with the principles of PSM and should not be included in a regulation.
- Using language that anticipates a process equipment failure due to the employer's use of temporary repairs is inconsistent with RAGAGEP and should not be included in a PSM regulation.

Solution:

- Replace (4)(a) with the following adaption of California text from page 16 (3)(A), Equipment Deficiencies: *"The employer must correct deficiencies to ensure safe operation of process equipment. Repair methodologies must be consistent with RAGAGEP or more protective internal practices."*
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Emergency Planning and Response (p. 34)

Problem:

- The division deleted an important provision that would require refiners to document their drills and other training exercises with local emergency responders. This requirement should be retained and clarified.

Rationale:

- Emergency responders play a critical role in protecting workers in the event of a major incident. Refiners rely on volunteer and paid external response organizations, including fire departments, EMS and law enforcement, to respond to the refinery in the event of a process incident, but there is no PSM requirement to ensure that refiners will train these responders to do so in a safe and effective manner.
- The implications of poor training, planning and information sharing for emergency responders were made clear in the West, Texas explosion on April 17, 2013, when 13 volunteer firefighters were among the 15 people killed by the blast that led to and was emphasized in President Obama's Executive Order 13650.

Solution:

Insert the following paragraphs:

“(2) If the employer will rely on external volunteer or paid emergency response organizations to respond to a process safety incident, the employer must document the types of tasks the employer expects the organizations to undertake during the incident and the steps the employer has taken to ensure that the organizations will be able to complete those tasks in a safe and effective manner.

(3) The employer shall conduct regular drills and other training exercises to ensure that emergency response organizations are able to respond to process safety incidents at the facility in a safe and effective manner.

(4) The employer shall document the nature and outcome of all drills and other training exercises with external emergency response organizations and shall retain the documentation for a minimum of ten (15) years.”

Trade Secrets (p. 35)

Problem:

- By allowing employers to claim a trade secret for most PSM information, paragraph (1) is inconsistent with the requirements of the Employee Collaboration element (at page 8) and with each of the PSM elements, which require effective employee collaboration throughout all phases of “development, training, implementation and maintenance.”

- For example, the Employee Collaboration element at (1)(a) requires “effective collaboration by affected operating and maintenance employees, throughout all phases, in performing:
 - (i) Process hazard analyses (PHAs)
 - (ii) Damage mechanism reviews (DMRs)
 - (iii) Hierarchy of hazard controls analyses (HCAs)
 - (iv) Change management (MOC and MOOC)
 - (v) Process safety culture assessment (PSCAs)
 - (vi) Incident investigations
 - (vii) Safeguard protection analyses (SPAs) and
 - (viii) Process safety startup reviews (PSSRs).”

- The Trade Secrets element would allow the employer to claim a trade secret and withhold information *on all the PSM elements listed above*, with the exception of:
 - (i) PSI
 - (ii) PHAs (noted above)
 - (iii) Operating procedures
 - (iv) Incident investigations (noted above)
 - (v) Emergency planning and response, and
 - (vi) Compliance audits

- This internal contradiction opens the PSM standard to conflict in the interpretation and application of employee collaboration requirements. These requirements provide for important employee rights and authorities that underpin each of the PSM elements.

Rationale:

- Effective employee collaboration is recognized by the American Institute of Chemical Engineers (AIChE) and by the U.S. CSB as an essential component of an effective risk-based PSM program.
- Employees and their representatives are only able to participate meaningfully, however, if they are provided with the information necessary to do so.
- Because the Trade Secrets element allows employers to withhold information from employees and their representatives by making trade secrets claims, this element undermines, and is inconsistent with, the employee collaboration requirements of the PSM standard.

Solution:

- Delete paragraph (1).
- Move paragraph (2) to the Employee Collaboration element, which is consistent with the California PSM standard.

Throughout the Draft.

Problem:

- Throughout the draft, there is inconsistent use of the following terms:
 - Chapter
 - Section
 - Part
 - Element
 - Subsection

Rationale:

- Inconsistent use of these terms could lead to ambiguity in interpretation and enforcement, as well as to incorrect implementation. For example, under Employee Collaboration at page 8 #(2) the draft provides for the right of collective bargaining agents to select...”employees to participate in PSM teams and other activities, pursuant to this *part*.” It is essential that this right is applied throughout the *chapter*; that is, throughout all PSM elements. It is not clear what the term “part” means. There are similar examples throughout the draft.

Solution:

- Clarify what is meant by each of these terms and apply them carefully and consistently throughout the document.
- For purposes of comparison:

CA term	WA term	Meaning
<i>Section</i>	<i>Chapter</i>	The entire PSM regulation. This is probably the most important distinction.
<i>Subsection</i>	<i>Subsection</i>	This is used in CA to designate individual paragraphs, such as “ <i>subsection (q)(1)(c)</i> ,” and it is also used to designate individual PSM elements, such as “ <i>pursuant to subsection (h)</i> ,” which refers the reader to the Contractors element. We recommend using this term only with clear citations [such as “ <i>pursuant to (q)(1)(c)</i>], rather than simply, “ <i>pursuant to this subsection.</i> ” WA uses this term with “ <i>pursuant to subsection XXXX</i> ,” and “ <i>....under this subsection.</i> ” It is not clear if the subsection refers to the entire PSM element or to a specific set of paragraphs within the element.
<i>Element</i>	<i>Element</i>	In CA, this refers to any one of the major PSM components, like <i>Human Factors</i> .

		<p><i>"...shall be trained in the PSM elements relevant to that team,"</i> appears in element (g), <i>Training</i>. In CA, it appears that it is used interchangeably in some cases with "subsection."</p> <p>WA uses this term to refer to <i>"all PSM elements."</i></p>
"Part" is not used in CA.	<i>"...this part"</i> is used throughout WA.	Unknown if this refers to a subsection, a paragraph, or the entire PSM Chapter.

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