



Memorandum

Date: April 15, 2024

To: Autumn Gonzalez, Chief Counsel and Acting Executive Officer
Amalia Neidhardt, Principal Safety Engineer
Occupational Safety and Health Standards Board

From: Michael Wilson, Senior Safety Engineer
Christine Hoffman, Senior Safety Engineer
Kevin Graulich, Principal Safety Engineer
Eric Berg, Deputy Chief of Health
Division of Occupational Safety and Health

Subject: Evaluation of Petition No. 601 to Amend Title 8 Section 5189.1, Process Safety Management for Petroleum Refineries

1.0 INTRODUCTION

On January 16, 2024, the Division of Occupational Safety and Health (Cal/OSHA) received a petition from Tracy W. Scott, president of the United Steel Workers Local 5 (Petitioner), to amend California Code of Regulation title 8 section 5189.1 Process Safety Management for Petroleum Refineries. The United Steel Workers represents just under a million workers in North America, including most of California's refinery workers.

Labor Code Section 142.2 permits interested persons to propose new or revised occupational safety and health regulations and requires the Occupational Safety and Health Standards Board (Standards Board) to consider such proposals. California Labor Code section 147 requires the Standards Board to refer to Cal/OSHA for evaluation of any proposed occupational safety and health standard.

2.0 PETITIONER'S PROPOSAL AND BASIS FOR AMENDMENT OF TITLE 8 SECTION 5189.1

The petitioner requests an emergency regulation be adopted immediately to expand the scope of title 8 section 5189.1, Process Safety Management (PSM) for Petroleum Refineries, to include refineries that process renewable feedstocks.

The petitioner notes that section 5189.1 is California's groundbreaking process safety regulation for oil refineries that the Standards Board adopted unanimously in 2017 and that this regulation is the most far-reaching and protective process safety standard worldwide.

The petitioner also notes that a much older and less protective regulation, section 5189 Process Safety Management of Acutely Hazardous Materials (established in 1992), currently covers renewable feedstock refineries rather than the more protective regulation, section 5189.1, even though the hazards are equivalent at both types of refineries.

According to the petitioner, section 5189 is ineffective, and they cite the causes of the 2012 Chevron Richmond Refinery fire as evidence of its ineffectiveness. Reports from the U.S. Chemical Safety and Hazard Investigation Board (CSB) and the Governor's Working Group on Refinery Safety regarding the 2012 Chevron Richmond Refinery fire determined that the weaknesses of section 5189 contributed substantially to the deferred maintenance, poor safety culture, and lack of accountability on the part of Chevron management that ultimately led to the catastrophic pipe failure at the Richmond Chevron Refinery in August 2012.^{1,2}

The petitioner also refers to the 2023 Marathon Renewable Fuels Refinery in Martinez, CA as further evidence of the ineffectiveness of section 5189. This facility refined petroleum until 2020 and was previously covered by section 5189.1. In 2022, when the refinery converted to renewable feedstock, the Marathon management determined that the plant would no longer be covered by section 5189.1 and would instead be covered by the weaker regulation, section 5189. Jerome Serrano, an employee at the Marathon Renewable Fuels Refinery, was critically burned in November 2023 due to a catastrophic and uncontrolled flammable liquid release. According to the petitioner, the accident was the result of poor maintenance that began when Marathon managers decided to no longer comply with section 5189.1.

The petitioner asserts that under the outdated regulation, section 5189, the Marathon Martinez and other renewable refineries in California are on a path to further catastrophic releases that could injure or kill many workers and threaten the safety and health of thousands of nearby residents. The petitioner calls for urgent action to ensure renewable refineries are covered by the new and more protective regulation, section 5189.1.

3.0 APPLICABLE TITLE 8 REGULATIONS

3.1 Section 5189 Process Safety Management of Acutely Hazardous Materials

Section 5189 is very similar to the federal OSHA process safety management regulation, Title 29 Code of Federal Regulation section 1910.119 (29 CFR 1910.119) Process Safety Management of Highly Hazardous Chemicals. In 1992, federal OSHA adopted 29 CFR 1910.119 in response to many disastrous hazardous substance releases, fires, and explosions from petroleum and chemical facilities from 1970 through 1990.³

¹ U.S. Chemical Safety and Hazard Investigation Board. Interim Investigation Report on Chevron Refinery Fire. April 2013. <https://www.csb.gov/file.aspx?DocumentId=5913>

² Interagency Working Group on Refinery Safety. Improving Public and Worker Safety at Oil Refineries. February 2014. <https://ww2.arb.ca.gov/sites/default/files/classic/isd/fuels/carefinery/crseam/refinerysftyprt.pdf>

³ U.S. Department of Labor, Occupational Safety and Health Administration. Final Rule on Process Safety Management of

Section 5189 consists of a management program that integrates technologies, procedures, and management practices. It contains requirements addressing process safety information, process hazard analysis, operating procedures, training, contractors, pre-startup safety reviews, mechanical integrity, hot work permits, management of change, incident investigations, emergency planning and response, and employee participation.

Section 5189 applies to a process or a facility that contains any of the following:

- A hazardous substance over a specific threshold quantity listed in Appendix A of section 5189;
- A flammable liquid with a flashpoint below 100 degrees Fahrenheit in one location in a quantity of 10,000 pounds or more; or
- Any explosive manufacturing operation regardless of the quantity of explosives.

3.2 Section 5189.1 Process Safety Management for Petroleum Refineries.

Section 5189.1 built upon, improved, and removed weaknesses from section 5189 that were identified by the Governor's Working Group on Refinery Safety and the CSB after the Richmond Chevron Refinery fire of 2012.

3.2.1 Catastrophic Process Failure at Richmond Chevron Refinery, August 2012.

On August 6, 2012, a pipe failure and fire at the Richmond Chevron Refinery endangered the lives of 19 workers and caused about 15,000 residents to seek medical attention for symptoms related to smoke exposure.⁴

In its investigation, the CSB found that plant managers had not implemented the recommendations of Chevron's own process safety experts—in five separate reports—to prevent the process of sulfidation corrosion that ultimately destroyed the pipe.⁵ California's process safety management (PSM) regulation in place at the time, section 5189, did not require the company to do so.

The pipe failure in the plant's crude unit occurred precisely where Chevron's process safety experts predicted it would. The CSB Chairperson concluded that, "In the case of the Chevron refinery fire, the reactive system of regulation simply did not work to prevent what was ultimately a preventable accident."⁶

Highly Hazardous Chemicals. Federal Register, vol. 57, no. 36, page 6356. Feb 24, 1992. <https://www.osha.gov/laws-regs/federalregister/1992-02-24>.

⁴ U.S. Chemical Safety and Hazard Investigation Board (CSB) (October 2014). "Interim Investigation Report Chevron Richmond Refinery Fire" (p. 10). <https://www.csb.gov/chevron-refinery-fire/>.

⁵ U.S. CSB (October 2014). *ibid.* (pp. 24-26). <https://www.csb.gov/chevron-refinery-fire/>.

⁶ U.S. CSB (November 10, 2014). "CSB Releases Board Approved Regulatory Report on Chevron Refinery Fire - Proposes a More Rigorous Refinery Industry Regulatory System in California." <https://www.csb.gov/csb-releases-board-approved-regulatory-report-on-chevron-refinery-fire---proposes-a-more-rigorous-refinery-industry-regulatory-system-in-california/>.

3.2.2 Following the Richmond Chevron Refinery Fire, the Governor's Interagency Refinery Safety Working Group Recommended Revising Section 5189 to Improve Refinery Safety

Immediately following the Richmond Chevron incident, Governor Jerry Brown convened an Interagency Refinery Safety Working Group, made up of representatives from 13 state, Federal and local agencies.⁷ The final report of the Working Group, issued in February 2014, concluded that "improving refinery safety is a goal strongly shared by government, industry, workers, and communities," and it called for changes in three areas to meet this objective:⁸

- Emergency Response and Preparedness
- Safety and Prevention of Hazardous Events
- Community Education and Alerts

The report recommended that the following revisions to section 5189 "be required as soon as possible" for the state's petroleum refineries:⁹

- Implement inherently safer systems to the greatest extent feasible;
- Perform periodic safety culture assessments;
- Incorporate damage mechanism hazard reviews into process hazard analyses;
- Conduct root cause analyses after significant accidents or releases;
- Account for human factors and organizational changes; and,
- Use structured methods, such as layer of protection analysis, to ensure adequate safeguards in process hazard analyses.

The CSB also called attention to weaknesses in section 5189 and recommended that it be strengthened, along with Cal/OSHA's ability to effectively enforce it.¹⁰

⁷ Interagency Working Group on Refinery Safety members represented the Department of Industrial Relations (DIR), Cal/OSHA, U.S. EPA, CalEPA Secretary's Office, Air Resources Board (ARB), Governor's Office of Emergency Services (OES), Department of Toxic Substances Control (DTSC), State Water Resources Control Board (SWRCB), California Energy Commission, California Technology Agency (CTA), Department of Finance (DOF), Department of Public Health (DPH), Office of the State Fire Marshal (OSFM), and Contra Costa County Health Services Agency.

⁸ Governor Edmund G. Brown (February 2014). *Improving Public and Worker Safety at Oil Refineries: Report of the Interagency Working Group on Refinery Safety*. <http://www.dir.ca.gov/dosh/interagency-refinery-task-force.html> Accessed March 22, 2017. (pp. 24-33).

⁹ Governor Edmund G. Brown (February 2014). *Improving Public and Worker Safety at Oil Refineries: Report of the Interagency Working Group on Refinery Safety*. <http://www.dir.ca.gov/dosh/interagency-refinery-task-force.html> Accessed March 22, 2017. (p. 21).

¹⁰ U.S. Chemical Safety and Hazard Investigation Board (October 2014). *Regulatory Report. Chevron Richmond Refinery Pipe Rupture and Fire*. Report No. 2012-03-I-CA. <http://www.csb.gov/file.aspx?DocumentId=661> Accessed February 2018. (pp. 96-98).

3.2.3 In Developing Section 5189.1, Cal/OSHA Conducted Extensive Outreach with Industry and Labor

Between 2012 and 2017, Cal/OSHA, CalEPA, and the Governor's Office of Emergency Services (OES) worked together to draft new safety regulations for the state's 14 petroleum refineries. During 2014, Cal/OSHA convened or participated in 26 meetings or hearings pertaining to process safety at petroleum refineries. At each of these meetings, Cal/OSHA presented the findings and recommendations of the Governor's report and CSB investigations; described regulatory revisions under consideration; and listened to and recorded the views of meeting participants.

Cal/OSHA convened a PSM Advisory Committee made up of experts from labor and industry. All Advisory Committee meetings were open to the public, who were invited to present their views before the Committee.

On August 4, 2017, the Standards Board approved Cal/OSHA's proposed new PSM regulation for petroleum refineries, section 5189.1. The new regulation was effective on October 1, 2017. CalEPA implemented a new California Accidental Release (Cal/ARP) Program 4 regulation in October 2017 that was identical to section 5189.1 and is enforced by county-level Certified Unified Program Agencies (CUPAs).^{11, 12, 13}

3.2.4 Section 5189.1 Requires Modern PSM Practices at California's Petroleum Refineries

Section 5189.1 substantially strengthened 15 existing elements from the 1992 PSM regulation, section 5189, and introduced nine new elements. Altogether, the 24 elements function as an integrated system that modernizes process safety management in the state's petroleum refineries. For the first time nationwide, section 5189.1 requires refineries to implement a comprehensive PSM program that includes the following elements:

- **Involve employees:** Section 5189.1 requires refiners to build a team-based approach to process safety by involving employees "throughout all phases" of process safety decision-making with managers, and allowing employees to select their representatives who participate in these decision-making processes. It requires employers to give employee PSM representatives access to all process safety information, including information that might be subject to protection as a

¹¹ CCR Title 8, §5189.1. Process Safety Management for Petroleum Refineries https://www.dir.ca.gov/title8/5189_1.html. A description of the purpose and necessity for each PSM element is provided in DIR's *Initial Statement of Reasons*: <http://www.dir.ca.gov/OSHSB/documents/Process-Safety-Management-for-Petroleum-Refineriess-ISOR.pdf>. (Accessed March 13, 2024).

¹² CCR Title 19, Article 6.5, Program 4 Prevention Program, §2762.0.1. (p. 417) [Browse - California Code of Regulations \(westlaw.com\)](#) (Accessed March 13, 2024).

¹³ California DIR, CalEPA, Cal/OES joint press release (August 4, 2017). New Regulations Improve Safety at Oil Refineries. <https://calepa.ca.gov/new-regulations-improve-safety-at-oil-refineries/#:~:text=Key%20features%20of%20the%20regulations,the%20safety%20and%20prevention%20program>. (Accessed Marcy 13, 2024).

trade secret. It gives employees the authority to shut down an unsafe process, anonymously report hazards, and refuse unsafe work.

- Incorporate inherent safety: Section 5189.1 requires refiners to develop robust corrective actions by applying the hierarchy of hazard controls “in sequence and priority order” when addressing process safety hazards. In the hierarchy, the regulation requires consideration and implementation of first- and second-order inherent safety measures “to the greatest extent feasible,” but allows consideration and implementation of passive, active or procedural safeguards with written justification by the employer. It is not permissible for refiners to reject inherent safety measures or other higher-order corrective actions “on the basis of cost alone.”
- Improve transparency: Section 5189.1 requires refiners to document all PSM decisions, including corrective actions and any objections by employee PSM representatives to process safety decisions made by managers.
- Ensure comprehensive coverage: Section 5189.1 eliminates the existing list of designated chemicals and threshold quantities in Appendix A of section 5189 and replaces them with specific physical-chemical properties that are applied to all flammable liquids, flammable gases, and acutely toxic and reactive chemicals that have the potential to cause a major incident. This approach is more protective; for example, section 5189.1 covers flammable liquids with a flash point lower than 199.4° F, whereas section 5189 covers flammable liquids with a flash point below 100° F, and only when they are present at 10,000 pounds or more in one location.^{14, 15} As a result, for example, section 5189.1 covers petroleum diesel (flash point of 125° F), whereas section 5189 does not.
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- Strengthen Process Hazard Analyses (PHA): Section 5189.1 requires refiners to conduct rigorous PHAs to identify and correct process safety hazards by incorporating damage mechanism reviews, human factors studies, hierarchy of hazard controls analyses, incident investigations history, and by performing safeguard protection analyses to ensure redundancy and independence of safeguards.
- Strengthen incident investigations: Section 5189.1 requires refiners to assemble an Incident Investigation Team with employee representatives to conduct a root cause analysis for incidents and near misses, which must determine the initiating and underlying causes and must include an assessment of “organizational and safety culture deficiencies and other management system failures.”

¹⁴ California Code of Regulations (CCR) Title 8, section 5189.1 Process Safety Management for Petroleum Refineries, subsection (b) Application, and subsection (c) Definitions of highly hazardous material, process, and flammable liquid.

¹⁵ California Code of Regulations (CCR) Title 8, section 5189. Process Safety Management of Acutely Hazardous Materials, subsection (b) Application.
<https://www.dir.ca.gov/title8/5189.html#:~:text=%C2%A75189.,reactive%2C%20flammable%20or%20explosive%20chemicals.>

- Integrate damage mechanisms: Section 5189.1 requires refiners to conduct comprehensive Damage Mechanism Reviews (DMRs) of process equipment and process conditions that include a “review of industry-wide experience with the process” and “all applicable standards, codes and practices.”
- Assess safety culture: Section 5189.1 requires refiners to perform periodic Process Safety Culture Assessments with the involvement of employees and to report the results and corrective action plans to all employees and contractor employees.
- Evaluate human factors: Section 5189.1 requires refiners to integrate human factors into their process safety programs, including in major changes, process hazard analyses (PHAs), management of change (MOC), management of organizational change (MOOC), incident investigations and hierarchy of hazard controls analyses (HCA).
- Implement corrective actions: Section 5189.1 requires refiners to implement corrective actions to process safety hazards on a designated timeline and to justify any deviations from the timeline using the MOC procedure.
- Protect contractors: Section 5189.1 requires refiners to improve protections for employees of contractors and involve them in incident investigations and other elements of process safety.
- Improve RAGAGEP: Section 5189.1 requires refiners to adhere to “recognized and generally accepted good engineering practices” (RAGAGAP) based on industry-wide safety standards, or on standards developed internally by the refiner that are more protective than industry-wide standards.
- Evaluate organizational changes: Section 5189.1 requires refiners to evaluate and document the impact on process safety of changes in personnel and organizational structure that exceed 90 days in duration (MOOC).
- Ensure management accountability: Section 5189.1 requires the refinery manager or designee to certify all process safety culture assessments and MOOC assessments, and to ensure compliance with all PSM program elements.

The Process Hazard Analysis (PHA) that existed under section 5189 was expanded in section 5189.1 into a more effective vehicle for identifying and correcting process hazards (Figure 1). The PHA requires refiners to incorporate a complete body of technical information into the decision-making process, including the results of DMRs, lessons learned from similar processes across the refinery sector, human factors analyses, the effects of organizational changes, and others, and it requires participation of employee PSM representatives “throughout all phases” of the PHA decision-making process.

Figure 1. Graphic illustration of section 5189.1. Section 5189 requires the PHA but does not require the preliminary and subsequent elements shown. Each of the bulleted elements is integrated into each step of the PHA process. Several elements of 5189.1 are not shown.



3.2.5 Section 5189.1 represents a major step forward for refinery safety.

Section 5189 was adopted in 1992 in response to the PSM standard that federal OSHA promulgated the same year. Until the implementation of section 5189.1, neither standard had been updated since 1992. Section 5189.1 stands as the nation's first and only major advancement for industrial process safety in 32 years, to the benefit of thousands of California refinery workers and hundreds of thousands of residents in communities surrounding the state's refineries.

In August 2017, when the Board approved section 5189.1, David Lanier, then Secretary of the Labor and Workforce Development Agency (LWDA), stated that "California now leads the nation in protecting the safety and health of refinery workers and people in nearby communities." Mark Ghilarducci, director of the Governor's Office of Emergency Services (OES) stated that, "These new regulations increase overall preparedness, provide greater accountability and implement a nation-leading approach to public safety and emergency prevention at refineries." Matthew Rodriguez, Secretary for Environmental Protection, stated that "The goal of these regulations is to hold refineries accountable for the safety of workers and communities. Thanks to input from refinery workers, industry leaders and

environmental and community organizations, we can better anticipate problems and prevent accidents that might pose serious risks to the public and environment.”¹⁶

4.0 ANALYSIS

4.1 Section 5189.1 Process Safety Management for Petroleum Refineries does not Cover Renewable Refineries

The scope of section 5189.1, established in subsection 5189.1(a), is currently limited to refineries that process petroleum – crude oil (liquid hydrocarbon mixtures) extracted from naturally occurring underground reservoirs. These refineries process petroleum into gasoline, diesel, other fuels, and petroleum products.

Section 5198.1 does not cover any other type of facility, including refineries that process renewable feedstocks. Renewable feedstocks consist of soybean oil; corn oil; canola oil; waste plant and animal oils, fats, and greases; recycled wastes; and other biomass.¹⁷ Renewable gasoline, renewable diesel, and other renewable fuels, and products made from renewable feedstocks, are nearly identical and chemically equivalent to the petroleum products they are designed to replace.^{18,19}

4.2 Some California refineries are transitioning to producing fuels from renewable feedstocks

In September 2020, Governor Newsom signed Executive Order N-79-20 to spur the state’s transition from reliance on fossil fuels, while also retaining the capacity to produce transportation fuels in-state and ensure public safety and environmental protection. As part of this Order, CalEPA and the California Natural Resources Agency (CNRA) were directed to “expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities,” as follows:

“To support the transition away from fossil fuels consistent with the goals established in this Order and California’s goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other State, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities, while supporting community participation, labor standards, and protection of public health, safety and the environment. The agencies shall report on progress and

¹⁶ California DIR, CalEPA, Cal/OES joint press release (August 4, 2017). New Regulations Improve Safety at Oil Refineries.

<https://calepa.ca.gov/new-regulations-improve-safety-at-oil-refineries/>

<https://calepa.ca.gov/new-regulations-improve-safety-at-oil-refineries/#:~:text=Key%20features%20of%20the%20regulations,the%20safety%20and%20prevention%20program.>

¹⁷ U.S. Energy Information Administration. Biofuels explained: Biodiesel, renewable diesel, and other biofuels.

<https://www.eia.gov/energyexplained/biofuels/biodiesel-rd-other-basics.php>. Accessed April 13, 2024.

¹⁸ U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy. Biofuel Basics.

<https://www.energy.gov/eere/bioenergy/biofuel-basics>.

¹⁹ U.S. Department of Energy, Energy Efficiency and Renewable Energy. Alternative Fuels Data Center.

<https://afdc.energy.gov/fuels/emerging->

[hydrocarbon#:~:text=Engine%20and%20infrastructure%20compatibility%E2%80%94Renewable,in%20existing%20vehicles%20and%20infrastructure.](https://afdc.energy.gov/fuels/emerging-hydrocarbon#:~:text=Engine%20and%20infrastructure%20compatibility%E2%80%94Renewable,in%20existing%20vehicles%20and%20infrastructure.)

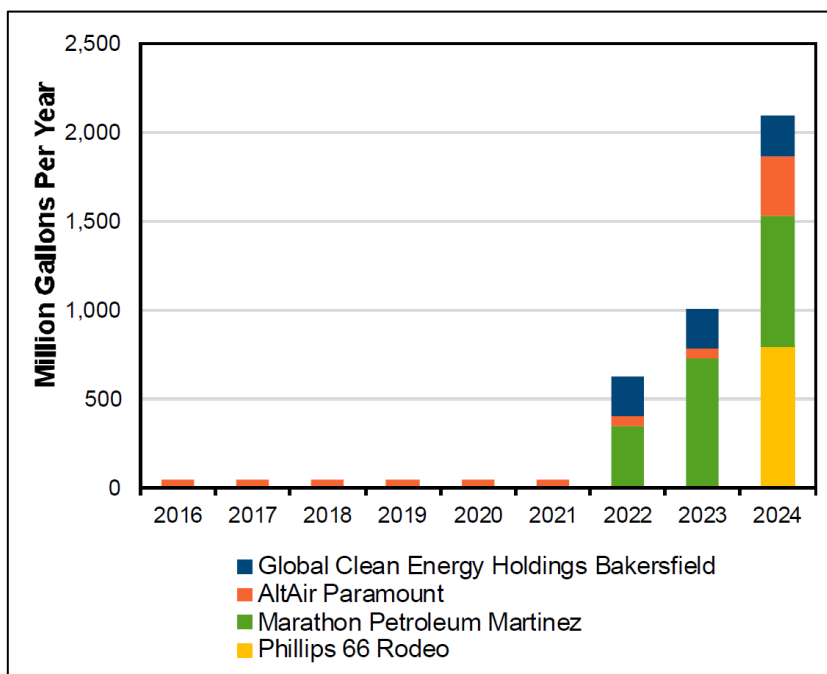
provide an action plan, including necessary changes in regulations, laws or resources, by July 15, 2021.”²⁰

According to CalEPA, the “replacement of fossil fuels with renewable fuels has the potential to decrease greenhouse gas (GHG) and conventional pollutant emissions.” To incentivize the production of renewable fuels, the U.S. EPA’s Renewable Fuel Standard (RFS) Program required that 36 billion gallons of renewable fuel replace or reduce the quantity of petroleum-based transportation fuel, jet fuel or heating oil by 2022.²¹

In addition, pursuant to the California Assembly Bill (AB) 32 Scoping Plan and the Governor's Executive Order S-01-07, the California Air Resources Board’s (CARB) Low Carbon Fuel Standard (LCFS) regulations encourage the production and use of low-carbon transportation fuels in California to reduce GHG emissions and decrease dependency on petroleum-based fuels.²²

As a result, production of fuels formulated from renewable feedstocks is growing in California and is expected to become an increasing part of the state’s transportation fuels market (Figure 3).

Figure 3. Current and Proposed California Renewable Fuels Production Capacity.²³



²⁰ California EPA (July 1, 2021). Petroleum Refinery Transition to Renewable Fuel. Draft Report on Regulatory Processes During Conversion of Petroleum

<https://calepa.ca.gov/wp-content/uploads/sites/6/2021/07/Conversion-of-a-Petroleum-Refinery-to-a-Renewable-Fuels-Facility-7-1-21-DRAFT.pdf> (p. 2).

²¹ California EPA (July 1, 2021). *ibid.* (p. 6).

²² California EPA (July 1, 2021). *ibid.* (p. 6).

²³ California Energy Commission. Petroleum Watch (June 2022). California Refiners Shift to Renewable Fuels.

https://www.energy.ca.gov/sites/default/files/2022-06/2022-06_Petroleum_Watch_ADA.pdf

4.3 The Marathon Martinez Refinery Can Produce up to 730 Million Gallons of Renewable Diesel Per Year

According to the U.S. CSB, the Martinez Renewables Refinery is “a 50/50 joint partnership between Marathon Petroleum (Marathon) and Neste, operated by a subsidiary of Marathon. The facility previously operated as a petroleum refinery for more than 100 years under various owners until 2020, when Marathon ceased production at the site. Marathon converted the site to a renewable fuels facility and began production of renewable diesel in early 2023, with plans to increase operation to full design capacity by the end of 2023.”²⁴

In the March 2022 final Environmental Impact Statement (EIS), Marathon indicated that they “would convert the Refinery from fossil fuel refining to a renewable fuels refining facility. The processing activities under the proposed Project would be similar to activities that are currently being conducted at the Refinery with the primary change being a change in feedstock from fossil fuels (crude oil) to renewable sources (rendered fats and vegetable oils) for a transition from fossil fuel petroleum refining into a renewable fuels facility. Currently, the Refinery can process up to 161,000 barrels per day (bpd) of crude oil; the proposed Project would reduce the total amount of refined feedstock processed to 48,000 bpd.”²⁵

From these 48,000 bpd, Marathon Martinez anticipated producing 730 million gallons of fuels—primarily renewable diesel—per year while reducing greenhouse gases by 60%, criteria air pollutants by 70%, and water used in production by a billion gallons per year.^{26, 27}

4.4 Renewable Diesel is Chemically Equivalent to Petroleum Diesel, which is covered by Section 5189.1

Renewable diesel is chemically equivalent to petroleum diesel and can be used in any concentration in a diesel engine. Renewable diesel can be used as a direct substitute for conventional diesel (up to 100%, known as R100). Blends of renewable diesel and petroleum diesel are labelled with an R followed by the percentage (by volume) of the renewable diesel content. Biodiesel, on the other hand, can only be mixed up to 10% with petroleum diesel because in higher concentration it can create problems in engines and may void vehicle warranties.²⁸

²⁴ U.S. Chemical Safety and Hazard Investigation Board (February 2024). Furnace Tube Rupture and Fire at Marathon Martinez Renewables Facility. https://www.csb.gov/assets/1/6/marathon_martinez_inv_update_final_final.pdf

²⁵ Martinez Refinery Renewable Fuels Project. Final Environmental Impact Report (March 2022).

https://www.contracosta.ca.gov/DocumentCenter/View/74460/Martinez-Refinery-Renewable-Fuels-Project-FEIR_p.3.9-15.

²⁶ Marathon Sustainable Energy. <https://www.marathonmartinezrenewables.com/Sustainable-Energy/>. Petroleum Watch.

²⁷ California Energy Commission. Petroleum Watch (June 2022). California Refiners Shift to Renewable Fuels. https://www.energy.ca.gov/sites/default/files/2022-06/2022-06_Petroleum_Watch_ADA.pdf

²⁸ California Air Resources Board (August 29, 2023). Fact Sheet: Renewable Diesel Fuel Requirements. <https://ww2.arb.ca.gov/resources/fact-sheets/fact-sheet-renewable-diesel-fuel-requirements>

Because the flash point of petroleum and renewable diesel is 125° F, these fuels are not covered by section 5189, which excludes any substance whose flash point exceeds 100° F. Section 5189.1, however, covers flammable liquids whose flash point is less than 199.4° F, so the requirements of this section apply to petroleum diesel, and they would apply to renewable diesel if the Application were not limited to petroleum refineries.^{29, 30}

Under section 5189.1, subsection (b) (Application) states that section 5189.1 applies to “processes within petroleum refineries.”³¹ The term “process” is defined as “petroleum refinery activities including use, storage, manufacturing, handling, piping or on-site movement that involve a highly hazardous material, which is defined as “a flammable liquid or flammable gas, or a toxic or reactive substance.” A “flammable liquid” is defined as listed under Appendix B of section 5194, which refers to Appendix B of CFR §1910.1200 - Physical Criteria (Mandatory), subsection B.6.1, where flammable liquid “means a liquid having a flash point of not more than 93°C (199.4°F).”³² Because petroleum diesel has a flash point of 125°F, it is covered under section 5189.1.³³ Because it is chemically equivalent to petroleum diesel, renewable diesel shares the same flash point of 125°F. .

The fact that renewable diesel is not currently covered by section 5189.1 is a consequence of the use of the term “petroleum refinery” in the Scope and purpose (subsection a) and the Application (subsection b) and the narrow definition of “petroleum refinery” in subsection (c) as an “Industrial site engaged in activities set forth in North American Industry Classification System (NAICS) Code 324110”. Facilities that refine nonpetroleum materials into fuel have different NAICS codes.

The drafters of section 5189.1 did not anticipate the emergence of a renewable refinery sector in California, but they recognized that—to protect worker safety and health—any substance with a flashpoint lower than 199.4° F that is used in a process should be covered by the comprehensive requirements of section 5189.1. For this reason, expanding the Scope and Application of section 5189.1 to include renewable refineries is consistent with the intent of section 5189.1 and all its technical elements.

4.5 California’s Interagency Refinery Task Force Recommends Special Action Be Taken to Ensure Renewable Refineries Comply With the 2017 Refinery Safety Orders.

In a July 2021 draft report, the Interagency Refinery Safety Taskforce (IRTS), made up of ten agencies, including Cal/OSHA, CalEPA, the U.S. EPA, and county agencies, recommended that “when refineries

²⁹ California Code of Regulations (CCR) Title 8, section 5189. Process Safety Management of Acutely Hazardous Materials, subsection (b) Application.

³⁰ California Code of Regulations (CCR) Title 8, section 5189.1 Process Safety Management for Petroleum Refineries, subsection (b) Application, and subsection (c) Definitions of highly hazardous material, process, and flammable liquid.

³¹ California Code of Regulations (CCR) Title 8, section 5189.1 Process Safety Management for Petroleum Refineries, https://www.dir.ca.gov/title8/5189_1.html

³² <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200AppB>

³³ <https://www.osha.gov/chemicaldata/909>

convert from petroleum to renewable fuel production, it is important that they continue to be covered by the PSM and Cal/ARP regulations because the fuels they produce will continue to be flammable.”³⁴ In this case, the IRTF is referring to Cal/OSHA’s section 5189.1 and the Cal/ARP program 4, which are specific to petroleum refineries and contain identical language.

However, the IRTF pointed out that “...because the regulations specifically apply to petroleum refineries, not to renewables, it might be necessary for California to take special action to ensure these refineries continue to comply as they transition.”³⁵

5.0 CAL/OSHA RECOMMENDATION

Refineries that process renewable feedstock should be covered by section 5189.1 for the following reasons:

- The principal hazards of refining renewable feedstocks are nearly identical to those of refining petroleum, as both types of refineries contain large quantities of flammable liquids and gases at high temperatures and pressures that, in the event of a release or incident, can cause large-scale and disastrous fires and explosions.^{36,37}
- Section 5189 contains substantial weaknesses and omissions, including omitting coverage of petroleum diesel and renewable diesel. Even for the substances covered, section 5189 does not provide adequate protection against uncontrolled releases of hazardous materials.
- Petroleum diesel and renewable diesel are chemically equivalent, but only petroleum diesel is covered by section 5189.1.

Title 8 section 5189.1 should be amended by:

- Removing the word “petroleum” from subsections 5189.1 (a) and (b),
- Amending the definition of “petroleum refinery” in subsection (c) to “fuel refinery” and adding the appropriate NAICS³⁸ identifiers to include renewable refineries,
- Substituting “fuel refinery” for “petroleum refinery” in the definitions of “Process,” “Process Safety Management,” and “Turnaround” in subsection (c), and

³⁴ California EPA (July 1, 2021). Petroleum Refinery Transition to Renewable Fuel. Draft Report on Regulatory Processes During Conversion of Petroleum <https://calepa.ca.gov/wp-content/uploads/sites/6/2021/07/Conversion-of-a-Petroleum-Refinery-to-a-Renewable-Fuels-Facility-7-1-21-DRAFT.pdf> (p. 17).

³⁵ California EPA (July 1, 2021). Petroleum Refinery Transition to Renewable Fuel. Draft Report on Regulatory Processes During Conversion of Petroleum <https://calepa.ca.gov/wp-content/uploads/sites/6/2021/07/Conversion-of-a-Petroleum-Refinery-to-a-Renewable-Fuels-Facility-7-1-21-DRAFT.pdf> (p. 17).

³⁶ Contra Costa County Department of Conservation and Development. Martinez Refinery Renewable Fuels Project Final Environmental Impact Report/ March 2022. <https://www.contracosta.ca.gov/DocumentCenter/View/74460/Martinez-Refinery-Renewable-Fuels-Project-FEIR>.

³⁷ Contra Costa County Department of Conservation and Development. Martinez Refinery Renewable Fuels Project Draft Environmental Impact Report. <https://www.contracosta.ca.gov/DocumentCenter/View/72957/Martinez-Refinery-Renewable-Fuels-DEIR-Vol-1-Complete-DEIR>

³⁸ The North American Industry Classification System (NAICS) is used by federal statistical agencies to classify business establishments. <https://www.census.gov/naics/>

- Substituting “fuel refinery” for “petroleum refinery” in subsections (e)(3)(B) and (e)(9), which cover requirements for process hazard analyses.

This action is consistent with the intent and technical elements of section 5189.1 and should be taken immediately.

Cal/OSHA recommends the change to section 5189.1 be made through expedited normal rulemaking rather than through emergency rulemaking. Cal/OSHA believes the required change to section 5189.1 does not meet the definition of emergency from the Office of Administrative Law. However, the change can be made quickly through normal rulemaking, as the regulatory language change is minimal and clearly justifiable.

6.0 Conclusion

Cal/OSHA recommends that the Standards Board grant the petition to the extent that it requests Cal/OSHA to expedite normal rulemaking to ensure renewable refineries are covered by section 5189.1.

cc: Debra Lee, Acting Cal/OSHA Chief
Carl Paganelli, Deputy Chief of Consultation, Process Safety Management, and Engineering Services