

ERM Client Alert

Major Changes to Refinery Air Rules Finalized by EPA



On September 29, 2015, the EPA Administrator signed a major regulatory package that will result in significant new requirements for Petroleum Refineries.

Background

The Clean Air Act requires the EPA to periodically review and revise national air regulations. EPA has recently conducted the risk and technology review (RTR) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) and the New Source Performance Standards (NSPS) that apply to petroleum refineries, including NESHAP subparts A, CC, Y, and UUU and NSPS subparts J and Ja (Refinery Sector Rules). The finalized regulations should appear in the Federal Register in October 2015.

ERM has been closely following these rule developments throughout the decade-long path leading to the final rulemaking. In addition to being recognized as the national expert on the fenceline monitoring requirements, ERM has unparalleled expertise and experience across the wide span of topics covered in this rule package: the Clean Air Act statutory authorities that form the basis for the actions; the data collected via the ICR; the risk assessment methods and results; and the flare and coker technologies. ERM also supported API and AFPM in the preparation of their comments on the proposal package.

Key Requirements

The final rule amendments are lengthy and complex. This summary provides a high-level description of the more substantive requirements, highlighting major differences from the proposal. Be sure to refer to the final rule before making any decisions on compliance.

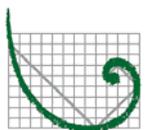
- **Fenceline Monitoring.** EPA has finalized requirements to require fenceline monitoring at every refinery using passive benzene samplers. These requirements are contained in subpart CC, as well as in two test methods that accompany the final rule – Methods 325A and 325B. Each refinery must establish monitoring locations around the perimeter of the refinery. Typical refineries will likely require between 12 and 24 locations depending on the size of the refinery and the number of “known” sources near the boundary. Passive tubes must be collected and replaced every 14 days, and

meteorological data must be collected corresponding to each period. For each 14-day sampling period, you must calculate a “ ΔC ” value by subtracting the lowest benzene reading from the highest. The average ΔC from the 26 most recent sample periods must be calculated and compared to EPA’s action level of 9 $\mu\text{g}/\text{m}^3$. The rule does allow a more sophisticated process to adjust the concentrations based on the contributions of off-site or non-refinery onsite sources, provided that the refinery creates a site-specific monitoring plan and has it approved by EPA. If any rolling annual average ΔC exceeds the 9 $\mu\text{g}/\text{m}^3$ action level, the refinery will be required to initiate a root cause analysis to determine the cause of the exceedance and perform corrective actions. If the concentration doesn’t go down below 9 $\mu\text{g}/\text{m}^3$ after the initial corrective actions, a corrective action plan must be submitted to EPA.

All results of the fenceline monitoring program will be submitted to EPA’s Compliance and Emissions Data Reporting Interface (CEDRI) electronic reporting system quarterly and made available to the public.

Two major changes in the final fenceline monitoring requirements were that (1) EPA included guidelines for operators to use in requesting an alternative fenceline monitoring technology and (2) EPA added provisions that would allow for a reduction in the frequency of fenceline monitoring for areas with very low benzene results.

- **Delayed Coking Units.** EPA has finalized a work practice standard in lieu of a numeric emission limit. For existing sources, DCU coke drums would be required to reach a pressure of 2 psig or lower prior to venting to the atmosphere, averaged over 60 batch cycles. For new sources, DCU coke drums would be required to reach a pressure of 2.0 psig or lower prior to venting to the atmosphere, per batch cycle. In lieu of the coke drum pressure operating limit, operators may elect to comply with coke drum temperature limits of 220°F and 218°F, respectively, for existing and new sources. Draining, deheading and coke cutting would be prohibited prior to atmospheric venting; however, prevent draining is allowed prior to achieving applicable operating limits to “double-quench” a coke drum, provided that a CPMS is installed to measure drain water temperature.
- **Fluid Catalytic Cracking Units.** The NSPS Subpart J incremental PM limit for sources burning solid or liquid fuels



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was removed in the final rule. A 20% opacity limit has replaced the site-specific limits or control device parameter monitoring described in the proposed rule. The use of 3-hour averaging periods for compliance monitoring is required in lieu of daily averages for control device operating limits or hourly or 24-hour averages for opacity monitoring. For FCCUs equipped with ESPs for PM control, monitoring and recording the total power and the secondary current to the entire system is required. For FCCUs equipped with wet scrubbers for PM control, daily checks of the air or water pressure to the spray nozzles is required. A PM performance test at least once every 5 years for all FCCUs is required, as well as a one-time test for HCN using EPA Method 320 (FTIR). Various startup/shutdown alternative limits are described, such as a minimum regenerator cyclone inlet face velocity limit in lieu of opacity for all sources, and the requirement to meet only a L/G ratio limit rather than pressure drop for sources equipped with wet scrubbers.

- **Flares.** Refinery NESHAP Subpart CC has been revised to include several flare performance work practices. The operational requirements related to combustion zone gas properties include meeting a minimum operating limit of 270 Btu/scf on a 15-minute average, in conjunction with meeting flare tip velocity, visible emissions, and continuously lit pilot flame to provide 98% destruction efficiency. Refineries must characterize the composition of waste gas, assist gas and fuel gas, either via continuous monitoring or grab sampling every 8 hours. Flares with very limited flare gas streams that are not expected to fluctuate can do a limited up-front sampling exercise. For flares that have the potential to operate above the smokeless capacity, under any circumstances, a flare management plan is required to outline how the facility will minimize flaring during startup, shutdown or emergency releases (due 3 years and 60 days after publication in the FR).
- **Storage tanks.** Refinery NESHAP Subpart CC has been revised to expand the definition of Group 1 storage tanks to include vessels with smaller volumes and lower vapor pressures than the current definition. The Group 1 definition expands to storage tanks $\geq 20,000$ gallons but $< 40,000$ gallons if the maximum true vapor pressure (TVP) is ≥ 1.9 psia and to include storage tanks $> 40,000$ gallons if the maximum TVP is > 0.75 psia. Also added, is a cross-reference to the Generic MACT (40 CFR 63 Subpart WW) for storage vessels that requires controls on floating roof fittings (e.g., guidepoles, ladder wells and access hatches), as well as new inspection requirements.
- **Leak Detection and Repair.** EPA is developing an alternative that would allow refineries to monitor for leaks via optical gas imaging in place of EPA Method

21, using monitoring requirements to be specified in a future proposed Appendix K to 40 CFR Part 60.

- **Marine Vessel Loading.** MACT Subpart Y is being revised to delete the exclusion for marine vessel loading operations at petroleum refineries, which will require small marine vessel loading operations (i.e., operations with HAP emissions less than 10/25 tpy) to use submerged filling based on the cargo filling line requirements in 46 CFR 153.282.
- **Startup, Shutdown, and Malfunction.** The final rule eliminates the startup, shutdown and malfunction (SSM) exemption in NESHAP Subparts CC and UUU. EPA has added work practice standards for miscellaneous process vents (MPV) to the final rule for periods of startup and shutdown in lieu of complying with MPV standards at all times, as proposed. There is an alternate standard for PM and CO for both partial and full burn FCCUs during startup and shutdown. The final rule also contains alternate standards for SRUs during both startup and shutdown and specific standards during certain catalyst change outs.
- **Relief Valves.** EPA has finalized a work practice standard for each pressure relief device (PRD) in organic HAP service. Refiners are required to perform a root cause analysis and implement corrective action each time a release to the atmosphere occurs. The work practice standard also limits the number of events that a PRD may release to the atmosphere during a 3-year period. Under the proposed rule, PRD releases were not allowed. Monitoring systems that are capable of identifying and recording the time and duration of each pressure release to the atmosphere are required, as proposed.

What Can You Do Now?

1. **Review** the finalized rule package to assess how its implementation will affect your operations. All existing refineries would be required to alter compliance programs, install additional monitoring equipment, and potentially install new control equipment. In addition, many refineries are in the midst of capital project development that may be impacted by these rules. Engineering designs and operating methods may need to be re-evaluated to accommodate the final standards that result from these proposed amendments.
2. **Conduct** a pilot fence line monitoring field trial to understand how to implement the fence line program, to compare actual measured data against the proposed concentration threshold, to determine the need for a site-specific monitoring plan, and to have a basis for working with community relations representatives to prepare for the public availability of fence line data.

How Can ERM Help?

ERM's refinery teams are eager to help:

- *Prepare comprehensive summaries of the final requirements tailored to your refinery operations.*
- *Craft a detailed compliance plan for your refinery.*
- *Conduct a fence line monitoring field trial.*
- *Create a site-specific fence line monitoring plan to account for off-site or onsite non-refinery sources.*
- *Develop and submit alternative monitoring plans to allow for use of existing non-passive fence line monitoring systems.*
- *Develop a flare management plan for flaring events during SSM.*
- *Conduct source testing for Particulate Matter and HCN.*
- *Develop and implement efficient solutions for electronic data reporting using EPA's Electronic Reporting Tool (ERT).*
- *Address community concerns that may be triggered by the health risk information presented in the rule and the EPA's press releases, as well as planning for the public availability of fence line data.*

Finally, if changes to existing construction and operating permits are required for the installation of new equipment needed to comply with these future requirements, ERM has excellent relations with most state agencies to help develop flexible permits which do not unduly curtail your operations and reduce the risk of noncompliance.

Key Contacts

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