Petroleum Refineries & New Federal Fenceline
Monitoring Requirements

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Why are there new requirements to monitor emissions at the fenceline of petroleum refineries?

On Sept. 29, 2015, the Environmental Protection Agency (EPA) issued the final rule designed to reduce risks from emissions of hazardous air pollutants at petroleum refineries. One requirement of the rule is the obligation to conduct continuous fenceline monitoring of the toxic air pollutant benzene along the perimeter of petroleum refineries, Title 40 of the Code of Federal Regulations, Section 63.658 (40 CFR 63.658). The rule was amended twice, and the current rule became effective on Nov. 26, 2018.

Upwind and downwind fenceline monitoring data provides petroleum refiners additional insight into their sources of benzene emissions and the potential impacts so they can take appropriate actions to mitigate and address the emissions from these sources.

TCEQ encourages early detection and implementation of corrective actions before emissions increase to the established corrective "action level" for benzene of 9 µg/m³, or 2.8 parts per billion (ppb), on an annual average basis. Monitoring data is publicly available on EPA's website to communicate the status of petroleum-refinery monitoring data and emission sources: <cfpub.epa.gov/webfire/>

Is the benzene action level a concern for the community?

As explained by EPA, the benzene action level is not an ambient air standard and was not derived from a health-based benzene standard. The benzene action level does not necessarily signify emissions that present an unacceptable risk to the public.

An individual elevated value from a sampler may be the result of a process change, maintenance activity, or an intermittent emission from a source external to the petroleum refinery such as neighboring facilities, roadways, airports, marine ports, or from environmental events (for example, smoke from forest fires). Fenceline samplers are not intended to measure benzene impacts in the community. Nevertheless, and as a separate act from the federal requirements, TCEQ evaluates the monitored benzene data for potential effects on human health.

For the human health evaluation, TCEQ is calculating a rolling annual average of the benzene concentrations measured at each fenceline monitor. If the monitored individual or annual average benzene concentrations rise to a level of concern in areas where the public may be exposed, TCEQ will take further actions that may include conducting air monitoring using handheld equipment, focused investigations, and potentially

listing the area on the Air Pollutant Watch List: <www.tceq.texas. gov/toxicology/apwl/apwl.html>. Listing an area on the Air Pollutant Watch List results in more focused inspections, monitoring, and permitting activities to reduce air pollution levels.

Is the TCEQ responsible for conducting the fenceline monitoring at petroleum refineries?

No, the sampling conducted under the petroleum refinery fenceline monitoring program is performed by the refineries as required by federal rule. However, TCEQ does have its own stationary monitoring network consisting of over 75 monitoring locations across the state to assess ambient concentrations that may impact the general public. This network generates monitoring data for a wide variety of air toxics, including benzene. See <www.tceq.texas.gov/airquality/monops/air-mon>

What is being done to regulate emissions from petroleum refineries?

The TCEQ requires all major sources (and certain minor sources) to obtain both a New Source Review (NSR) permit to construct and a Title V permit to operate. Most petroleum refineries are major sources. TCEQ issues NSR permits for the construction or modification of any facility that will emit air contaminants, including petroleum refineries.

NSR authorizations are required to be obtained prior to starting construction or modification. Most petroleum refineries also have a Title V Operating Permit, which codifies all applicable air quality requirements and requires annual certifications of compliance be submitted to TCEQ.

What are petroleum refineries?

Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of crude oil, or through the redistillation, cracking, extraction, reforming, or other processing of unfinished petroleum derivatives [Title 30 Texas Administrative Code Section 101.1(78)]. TCEQ is the state's air permitting authority and enforces state and federal regulations concerning air emissions from these sites.

As part of the NSR permitting process...

The applicant must demonstrate that the facility will use the best available control technology and that air contaminants, including benzene, will not be emitted at concentrations that could cause or contribute to adverse health effects. NSR Permits include operational limitations and a Maximum Allowable Emissions Rate Table, which limits the quantity of emissions of specific pollutants that can be emitted to the atmosphere. Permittees must demonstrate compliance with all terms and conditions of their permit, including any monitoring or recordkeeping requirements.

TCEQ also conducts routine investigations of sites producing air emissions to evaluate compliance with state and federal regulations and permitting requirements. Some examples include:

- *Title V permit investigations;*
- *Investigations of reported emissions events;*
- *Investigations as a result of complaints from citizens; and*
- *Other investigations, including reconnaissance, report reviews, and focused investigations.*

What are some of the new requirements of the petroleum fenceline monitoring program?

The new requirements include continuous monitoring for benzene using passive diffusive tube samplers, which are placed on the property boundary of the petroleum refinery. Every two weeks the tubes are collected and sent to a lab for analysis of benzene concentrations, and new tubes are placed on the property boundary. Each petroleum refinery is required to have multiple fenceline samplers, and these samplers are owned, operated, and maintained by the refinery.

Refineries are required to report benzene concentration measurements from the 2-week samples for each location to EPA on a quarterly basis through the EPA's data management system, the Compliance and Emissions Data Reporting Interface. Root cause and corrective action analysis are required by the petroleum refinery if the refinery's net annual average benzene concentration1 level for a given two-week period exceeds EPA's action level of 2.8 ppb. Exceeding the benzene action level is not a permit violation, nor does it necessarily indicate a concern for public health, as discussed above.

[1]The petroleum refinery net annual average benzene concentration, called the ΔC, is calculated by taking the annual average of the net 2-week concentrations (subtraction of the lowest benzene concentration measured at the refinery from the highest benzene concentration at the refinery for every 2-week period).

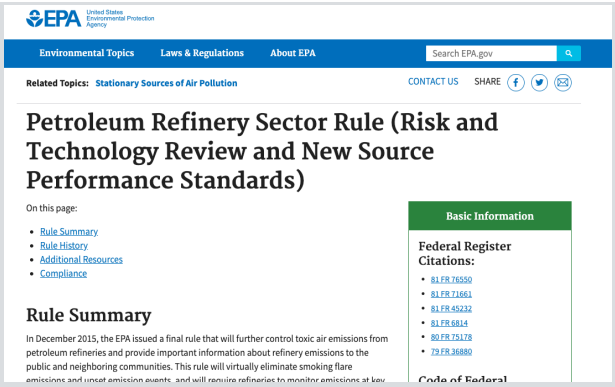
What are some important dates for the new requirements?

Refineries were required to install fenceline monitoring systems for benzene by Jan. 29, 2018. On Jan. 30, 2018, refineries began collecting the perimeter (fenceline) monitoring data.

The refineries calculated the initial 12 months of data collected as a refinery-wide net annual average (as described above) and were required to submit the initial report by May 15, 2019. The first report covered a compliance period from the compliance date, Jan. 30, 2018, to March 31, 2019 (so the first quarterly report contained between 12 and 15 months of data).

All reports are submitted to EPA's emissions data system on a quarterly basis no later than 45 days following the end of each reporting period. A 30-day review period follows the submission of each report. Data will be made available to the public following this review period, and refreshed quarterly in EPA's WebFIRE online database.

TCEQ conducts investigations of the reported data for compliance with sampling, reporting, recordkeeping, and corrective action requirements on a quarterly schedule.



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Petroleum Refinery Sector Rule (Risk and Technology Review and New Source Performance Standards)

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Rule Summary

In December 2015, the EPA issued a final rule that will further control toxic air emissions from petroleum refineries and provide important information about refinery emissions to the public and neighboring communities. This rule will virtually eliminate smoking flare emissions and upset emission events, and will require refineries to monitor emissions at key

Basic Information

Federal Register Citations:

- 81 FR 76550
- 81 FR 71661
- 81 FR 45232
- 81 FR 6814
- 80 FR 75178
- 79 FR 36880

Code of Federal

For additional information, please see EPA's Petroleum Refinery Sector Rule webpage:

<www.epa.gov/stationary-sources-air-pollution/petroleum-refinery-sector-rule-risk-and-technology-review-and-new>

Also see information on health effects of benzene: <www.tceq.texas.gov/goto/benzene-facts>

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