



At a Glance

The EPA Should Enhance Oversight to Ensure that All Refineries Comply with the Benzene Fenceline Monitoring Regulations

Why We Did This Audit

To accomplish this objective:

The U.S. Environmental Protection Agency Office of Inspector General conducted this audit to determine to what extent oversight of the benzene fenceline monitoring requirements by the EPA and delegated authorities ensures that refineries take corrective action and lower benzene concentrations when they exceed the action level.

Benzene is a known human carcinogen emitted by petroleum refineries. In 2015, the EPA issued regulations requiring petroleum refineries to monitor benzene concentrations around their perimeters, or *fencelines*. If their annual average concentrations exceed the action level, which the EPA set at 9 micrograms per cubic meter, refineries must conduct a root cause analysis and take corrective actions. The EPA oversees the fenceline monitoring requirements. Delegated authorities are state and local agencies that the EPA has approved to oversee the requirements within their borders.

To support these EPA mission-related efforts:

- *Improving air quality.*
- *Partnering with states and other stakeholders.*

To address this top EPA management challenge:

- *Integrating and leading environmental justice, including communicating risks.*

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What We Found

Oversight by the EPA and delegated authorities has not ensured that all refineries that exceed the action level reduce their benzene concentrations at their fencelines. For example, from January 2018 to September 2021, 13 of the 118 refineries we reviewed had benzene concentrations above the action level in 20 or more weeks after the initial exceedance. Many of these refineries are located near communities with potential environmental justice concerns. Furthermore, three of these 13 refineries had not reduced their annual average concentration to the action level or below. These refineries may not have accurately identified the root cause of their exceedances or taken appropriate corrective actions. Despite the existence of potential issues, the EPA and delegated authorities took limited formal enforcement-related actions at refineries under the benzene fenceline monitoring regulations.

We identified barriers that could prevent the EPA and delegated authorities from determining whether refineries exceed the action level. For example, some refineries have EPA-approved monitoring plans that rely solely on modeling—instead of on additional monitoring, as required by EPA regulations—to estimate contributions to benzene concentrations from emissions sources not covered by the monitoring regulations. Modeling could overestimate benzene contributions from these other sources and mask whether a refinery has exceeded the action level. Also, some refineries did not submit all the required data to the EPA and thus may not have reported high concentrations that could have pushed them over the action level. Specifically, based on our analysis of the data from January 2018 to September 2021, five refineries failed to report monitoring data for at least two weeks. If the EPA and delegated authorities cannot identify exceedances of the action level, then they cannot ensure that refineries take corrective action as required. This could result in communities being exposed to higher benzene concentrations and associated health risks than if appropriate corrective actions were taken.

If refineries do not reduce benzene concentrations that exceed the action level, nearby communities could face increased risk of adverse health effects, and communities with environmental justice concerns could be disproportionately affected.

Recommendations and Planned Agency Corrective Actions

We recommend that the EPA provide guidance to delegated authorities on what constitutes a violation of the regulations and how to identify gaps in refinery-submitted data, develop a strategy to address refineries that fail to reduce their benzene concentrations after an exceedance of the action level, and ensure that monitoring plans that rely solely on modeling are appropriately amended to incorporate additional monitoring. The Agency agreed with our recommendations and provided acceptable planned corrective actions with estimated milestone dates. We consider the recommendations to be resolved with corrective actions pending.