U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF INSPECTOR GENERAL

Air Quality

Improved Data and EPA Oversight Are Needed to Assure Compliance With the Standards for Benzene Content in Gasoline

Report No. 17-P-0249 **June 8, 2017**

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Abbreviations

ABT	Averaging, Banking and Trading
CFR	Code of Federal Regulations
CPA	Certified Public Accountant
EMTS	EPA Moderated Transaction System
EPA	U.S. Environmental Protection Agency
MSAT2	Mobile Source Air Toxics rule
NATA	National Air Toxics Assessment
OAR	Office of Air and Radiation
OECA	Office of Enforcement and Compliance Assurance
OIG	Office of Inspector General
OTAQ	Office of Transportation and Air Quality
PADD	Petroleum Administration for Defense District
RFS	Renewable Fuel Standard

Cover photos: *Clockwise:* A pump at a gasoline station, cars in highway traffic, and a petroleum refinery. (EPA photos)

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U.S. Environmental Protection Agency
Office of Inspector General

17-P-0249
June 8, 2017

At a Glance

Why We Did This Review

The Office of Inspector General (OIG) conducted this evaluation to determine the effectiveness of the EPA's process and controls for ensuring that gasoline refiners and importers meet EPA standards for benzene content in gasoline. Prolonged exposures to benzene are associated with blood disorders and leukemia.

The EPA's 2007 Mobile Source Air Toxics Rule set two standards to limit benzene in gasoline: an annual average standard and a maximum average concentration standard. Refiners and importers report to the EPA the volume and benzene content for each batch of gasoline produced or imported, and the total annual volume and average benzene concentration of all gasoline produced or imported for the year. Facilities can buy credits from other facilities to meet the annual average standard.

This report addresses the following EPA goals or cross-agency strategies:

- *Addressing climate change and improving air quality.*
- *Protecting human health and the environment by enforcing laws and assuring compliance.*

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Listing of OIG reports.

Improved Data and EPA Oversight Are Needed to Assure Compliance With the Standards for Benzene Content in Gasoline

What We Found

Program improvements can reduce the risk that benzene in gasoline exceeds legal limits.

The U.S. Environmental Protection Agency (EPA) could improve the effectiveness of its oversight processes and controls for the benzene fuels program to provide better assurance that refineries and importers report accurate and complete data, and comply with the gasoline benzene standards.

We reviewed all batch and annual benzene reports for the period 2011 through 2014. Reported annual volumes and/or annual average benzene concentrations did not match supporting batch reports for over 25 percent of the regulated facilities. The benzene regulations require facilities to engage an auditor to attest to the accuracy of credit information in their annual benzene reports. However, the effectiveness of these reviews was limited because the auditors were not required to verify supporting data used to calculate credits.

EPA enforcement staff said they have limited resources to oversee all fuels programs. Thus, decisions to review and enforce benzene program compliance take into account the significance of a facility's potential or actual violations for all fuels programs. We identified potential noncompliance with the benzene standards at 40 facilities.

For 16 of these facilities, EPA staff had either never reviewed these facilities for compliance using its compliance assessment tool, conducted an on-site compliance audit as of the time of our review, or had reviewed the facilities prior to the year in which we identified the potential noncompliance. According to data reported to the EPA at the time of our review, these 16 facilities produced or imported over 13 billion gallons of gasoline during the period 2011 through 2014, which potentially did not meet applicable benzene standards for gasoline (about 3 percent of total U.S. volume during that period). Due to the possibility of reporting or other errors, additional review by EPA staff is needed to determine whether these facilities exceeded the benzene standards.

Recommendations and Planned Agency Corrective Actions

We made 10 recommendations for the EPA to improve data quality and completeness, and review instances of potential noncompliance. The EPA agreed with all recommendations or provided acceptable corrective actions for the recommendations. Two recommendations are complete and closed. Three recommendations are resolved because the EPA provided acceptable corrective actions and completion dates. Five recommendations are unresolved pending the EPA providing completion dates for the corrective actions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

June 8, 2017

MEMORANDUM

SUBJECT: Improved Data and EPA Oversight Are Needed to Assure Compliance With the Standards for Benzene Content in Gasoline
Report No. 17-P-0249

FROM: Arthur A. Elkins Jr.

TO: Sarah Dunham, Acting Assistant Administrator
Office of Air and Radiation

Lawrence Starfield, Acting Assistant Administrator
Office of Enforcement and Compliance Assurance

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). The project number for this evaluation was OPE-FY15-0051. This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 60 calendar days. You should include completion dates for all unresolved recommendations. Your response will be posted on the OIG's public website, along with our memorandum commenting on your response. Your response should be provided as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at www.epa.gov/oig.

Table of Contents

Chapters

- continued -

Appendices

Chapter 1
Introduction

Purpose

We conducted this evaluation to determine the effectiveness of the U.S. Environmental Protection Agency's (EPA's) process and controls for ensuring that gasoline refiners and importers meet EPA standards for benzene in gasoline.

Background

The EPA's February 26, 2007, Mobile Source Air Toxics (MSAT2) rule adopted controls on gasoline, passenger vehicles and portable fuel containers to limit air toxics emissions. Air toxics are pollutants known to cause cancer or other serious health impacts, and include pollutants commonly emitted from mobile sources, such as benzene, formaldehyde, and 1,3-butadiene. Mobile sources, including passenger vehicles, contribute a significant portion of the total cancer risk from these pollutants nationwide.

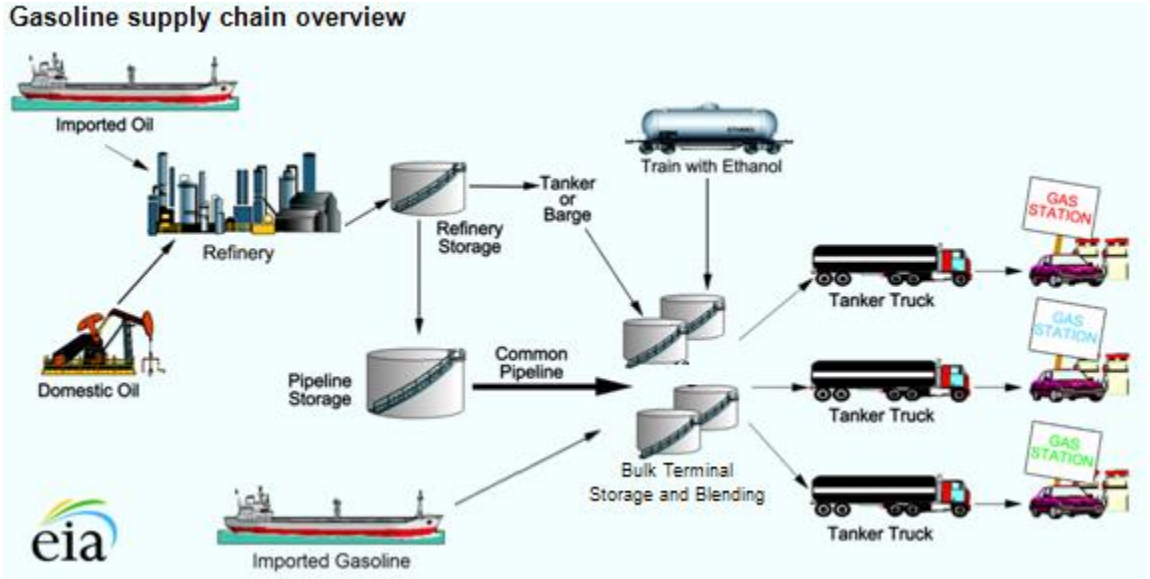
Prolonged exposures to benzene are associated with blood disorders and cancers such as leukemia. The EPA estimated that by 2030, the gasoline benzene requirements in the MSAT2 rule would reduce benzene emissions by about 20,000 tons per year.

The EPA's MSAT2 rule includes standards that limit the content of benzene in gasoline. The standards are intended to reduce benzene exhaust and evaporative benzene emissions from motor vehicles fueled by gasoline. In addition, the standards should reduce evaporative emissions from gasoline distribution and portable fuel containers. The EPA estimated that by 2030, the gasoline standards would reduce benzene emissions by about 20,000 tons per year. Overall, the MSAT2 rule is estimated to prevent 30 to 110 excess benzene-related cancer deaths per year by 2030.[1]

[1] This estimate includes benefits expected from all requirements of the MSAT2 rule, including the passenger vehicle and portable fuel container standards, and the gasoline benzene standards.

The following diagram (Figure 1) shows the gasoline distribution system.

Figure 1: Gasoline distribution system



Source: U.S. Energy Information Administration.

Health-Related Impacts of Benzene Exposure

Long-term inhalation exposures to benzene have been linked to disorders and cancers of the blood, including leukemia. Children may be at an increased risk from benzene exposure, due to a lower body weight per exposure, and differences in respiration and activity rates compared to adults. According to the EPA's 2011 National Air Toxics Assessment (NATA), benzene is one of three key pollutants that contribute the most to overall cancer risks nationwide. Mobile sources are responsible for most of the outdoor risks from benzene.

According to the EPA, concentrations of benzene in the air have significantly declined since the 1990s. However, in its 2011 NATA, the EPA classified benzene as a regional cancer risk driver.[2]

Gasoline Benzene Requirements

Under the MSAT2 rule, gasoline benzene requirements apply to refiners and importers of gasoline, and consist of three main components:

[2] The EPA defines *regional cancer risk drivers* as air toxics compounds that pose an estimated upper-bound lifetime cancer risk exceeding either: (a) 10 in a million to more than 1 million people; or (b) 100 in a million to more than 10,000 people.

The gasoline benzene control program has three main components: (1) an annual average benzene content standard of 0.62 volume percent; (2) an upper limit benzene standard of 1.30 volume percent; and (3) an averaging, banking and trading program.

(1) An annual average gasoline benzene content standard. Refiners' and importers' annual average gasoline benzene concentration must not exceed 0.62 volume percent. However, a facility may exceed the standard and carry forward a deficit into the following year, provided that it meets the standard in the following year and obtains sufficient reductions or credits to offset the preceding year's deficit. Most refiners and importers were required to comply with this standard beginning on January 1, 2011, while approved small refiners had until January 1, 2015, to comply.

(2) An upper limit benzene standard. Refiners and importers must meet a maximum average benzene concentration of 1.30 volume percent. Most refiners and importers were required to comply with this standard beginning on July 1, 2012, while approved small refiners had until July 1, 2016, to comply.

(3) An averaging, banking and trading (ABT) program. Facilities that do not meet the annual average standard of 0.62 volume percent can purchase credits[3] from other facilities (or obtain credits transferred from another facility owned by the same company) to attain compliance with the standard. These credits are generated by facilities that have an annual average concentration below 0.62 volume percent. The credits can be banked for future use, sold or transferred to another facility. Credits cannot be used to attain compliance with the maximum average standard of 1.30 volume percent. All facilities must have average concentrations at or below 1.30 volume percent, regardless of their credit status.

Required Reporting

Refiners and importers are required to submit certain reports to the EPA to demonstrate compliance with the benzene standards. These reports include the following:

- **Batch Reports.** For each batch[4] of gasoline refined or imported, refiners and importers are required to submit a report on the characteristics of the gasoline in that batch (including the total volume of gasoline and the

[3] A credit (expressed in gallons of benzene) can be used on a one-for-one basis to offset the same volume of benzene in gasoline that was produced or imported above the standard.
[4] A batch is a quantity of gasoline at a facility that is uniform with regard to certain properties.

benzene concentration) to the EPA. Reformulated gasoline[5] batch reports are submitted quarterly, and conventional gasoline batch reports are submitted annually. Some facilities submit over 200 individual batch reports to the EPA each year.

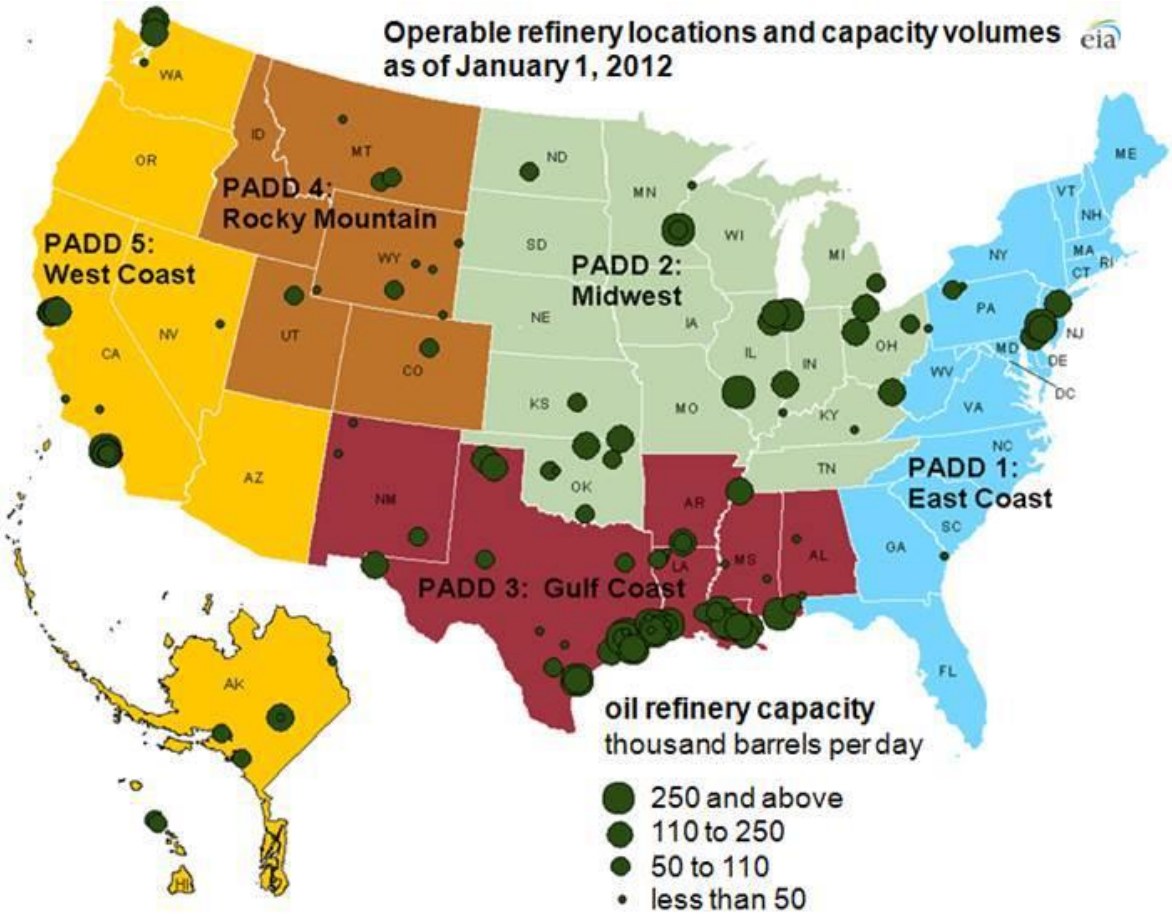
- **Annual Benzene Report.** Refiners and importers must submit an annual benzene report with information pertaining to compliance with the benzene standards for that year. The information includes the total volume of gasoline subject to the standards; the annual average and maximum average benzene concentrations; any benzene deficit carried forward from the prior year; and the number of benzene credits generated, sold or purchased, if applicable. The owner or a responsible corporate officer of the refinery or importer must sign and certify the report as correct. The values in the annual benzene report for total volume and annual average and maximum average benzene concentrations should be based on information reported in the facility's individual batch reports.

- **Credit Reporting.** Prior to May 1, 2015, facilities were required to report information related to their credit purchases, sales and transfers using a Credit Transfer Report. Starting on May 1, 2015, the agency transitioned the reporting of credit-related information to an automated electronic system called the EPA Moderated Transaction System (EMTS). This system now tracks all credit transactions.

In 2014, approximately 300 facilities, including refineries and importers, reported producing or importing gasoline products subject to the benzene regulations. Figure 2 shows the location of major refineries in the U.S., as of January 1, 2012. These major refineries would be expected to produce the majority of gasoline subject to the benzene standards.

[5] Reformulated gasoline is gasoline blended to burn cleaner than conventional gasoline in order to reduce smog-forming and other toxic pollutants in the air. Reformulated gasoline is required to be sold in areas with high smog problems and is optional elsewhere.

Figure 2: Location and capacity of U.S. refineries



This map shows the geographic location and refining capacity of U.S. refineries as of January 1, 2012, grouped by geographic regions called Petroleum Administration for Defense Districts (PADD).

Source: U.S. Energy Information Administration.

Attest Engagements

The benzene regulations require refiners and importers to engage an independent certified public accountant (CPA), a CPA firm, or an internal auditor (auditor) to conduct a review of a facility's benzene credit reporting. Agreed-upon procedures specified in the regulations are to be used. These annual attest engagements include the following requirements:

- Reviewing the facility's annual benzene reports to compute the amount of credits generated or needed.
- Reviewing contracts or other documents to compute the amount of credits transferred or received.
- Conducting a credit reconciliation to reconcile the auditor's computed credit balance with the balance reported to the EPA.

- Determining whether a credit deficit existed for the current year and the prior year.

The auditor issues a report on its findings to the facility, which submits a copy of the auditor's report to the EPA. The attest engagement is intended to help the EPA verify that the information submitted for compliance purposes is accurate and that record-keeping requirements are being met.

Responsible Offices

The EPA's Office of Air and Radiation (OAR), Office of Transportation and Air Quality (OTAQ), and the agency's Office of Enforcement and Compliance Assurance (OECA), are responsible for oversight of the gasoline benzene standards. OTAQ is responsible for implementing the gasoline benzene program, which includes the development of regulations and reporting forms, and obtaining facility reports. The Fuels Enforcement Branch within OECA's Office of Civil Enforcement, Air Enforcement Division, is responsible for compliance assurance activities, such as conducting compliance audits at facilities and taking enforcement actions when violations of the standards are found.

Noteworthy Achievements

In March 2014, OECA developed an enforcement-sensitive compliance assessment tool. The tool allows OECA to review data from reports submitted by refiners and importers for all of the EPA's fuel regulations, including the gasoline benzene standards. The tool flags information that appears to indicate a problem with reporting or compliance, and allows OECA to more efficiently review information reported by facilities.

Scope and Methodology

We conducted our review from September 2015 through February 2017. We conducted this review in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the review to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objectives.

To understand the program's requirements, we reviewed the following applicable statutes, policies and guidance pertaining to benzene content in gasoline:

- The Clean Air Act.
- The MSAT2 rule (issued February 26, 2007).

- The gasoline benzene standards, codified in the CFR, Chapter 40, Part 80, Subpart L.
- Control of Hazardous Air Pollutants from Mobile Sources—Regulatory Impact Analysis, February 2007.
- EPA guidance pertaining to the EMTS.
- OECA's guidance related to oversight of fuel regulations.

To determine how the EPA oversees the gasoline benzene content program, we interviewed staff and managers in OTAQ and OECA to identify what policies, procedures and guidance documents the EPA issued for the program; what controls the EPA has established over the ABT program to assure that credits and trading are supported; what information the EPA collects and reviews to determine refinery compliance with the standards; and what reports the EPA has issued regarding compliance and gasoline quality under the program.

To determine the accuracy of reported data and identify potential instances of noncompliance with the rule, we obtained and analyzed data reported to the EPA by the approximately 300 regulated entities (refiners and importers). This data included batch reports and annual benzene reports for compliance years 2011 through 2014. We did not audit the benzene monitoring and testing process on which the values reported to the EPA in the required reports are based.

To assess the effectiveness of attest engagements as a management control, we selected and reviewed a sample of attest engagement reports to determine what information was contained in the reports, whether the CPA or CPA firm was licensed in accordance with requirements, whether the CPA firms followed procedures in accordance with requirements included in the regulations, and whether the reports identified the same data or potential compliance concerns our data analysis identified. Our sample was based on the following:

- Randomly selected refiners and importers that appeared to exceed the annual average benzene limit of 0.62 volume percent.
- Randomly selected refiners and importers that did not exceed the annual average benzene limit of 0.62 volume percent.
- All refiners and importers that appeared to have benzene deficits in consecutive years.

As part of the reformulated gasoline program, the RFG Survey Association Inc.[6] annually tests samples of reformulated gasoline from gas stations across the country for compliance with reformulated gasoline requirements. These requirements incorporate the benzene standards. We did not review the sampling

[6] The RFG Survey Association Inc. was the result of the initial collaboration of the American Petroleum Institute, National Petroleum Refiners Association member companies, and the EPA to determine whether the oil industry could develop an industry compliance program to meet the requirements outlined in the Clean Air Act Amendments for reformulated gasoline.

and testing processes or verify the accuracy of the data collected by the RFG Survey Association's testing program for reformulated gasoline. While this data can provide an indication of reformulated gasoline producers' compliance with the 0.62 volume percent benzene standard, about 70 percent of the gasoline sold in the U.S. is not reformulated, and thus not included in that testing program. According to the EPA's analysis of data from reformulated gasoline, the national average benzene concentration in reformulated gasoline was below the 0.62 volume percent benzene standard in 2013 and 2014.

Appendix A provides more detailed information on our scope and methodology.

Prior Report

Issues related to the scope of this current review are noted in the EPA Office of Inspector General (OIG) Report No. 13-P-0373, *The EPA Should Improve Monitoring of Controls in the Renewable Fuel Standard Program*, issued September 5, 2013. In the 2013 report, the OIG found that while OTAQ received attest engagements for the Renewable Fuel Standard (RFS) program, and OECA maintained the attest engagement files, neither OTAQ nor OECA tracked whether all required parties submitted attest engagements and whether the engagements contained all required elements.

To assist with tracking, the OIG recommended that the EPA's Office of Air and Radiation require electronic submittal of all reporting requirements for the RFS program, particularly third-party attest engagements. The EPA agreed with the recommendation and has since begun tracking attest engagement reports for the RFS program using the EMTS.

Chapter 2
Missing Reports and Data Quality Limitations Hamper EPA's Ability to Assess Compliance

We found that reports required under the benzene program were missing for some facilities, and the reports that were successfully submitted often contained errors and other data quality limitations. We analyzed all annual benzene and supporting batch reports submitted by facilities[7] from 2011 through 2014 and found:

- Required annual benzene reports were missing for approximately 5 to 8 percent of the facilities submitting batch reports in a given year.
- Approximately 34 to 42 percent of facility-submitted reports in a given year contained errors or other data quality limitations.

The EPA did not have an adequate system of controls in place to assure complete and accurate facility reporting of required data. In addition, controls meant to verify benzene credit-related information were not sufficient to ensure data accuracy. As a result, reported information for many facilities cannot be relied upon to assess compliance with the benzene standards. These weaknesses create inefficiencies in the oversight and enforcement process, since OECA must invest resources to determine the accuracy of a facility's reported data before making more extensive compliance determinations.

Benzene Program Reporting and Oversight Process

The EPA relies on information from the required facility-submitted reports to conduct initial assessments of compliance with the benzene standards. These required reports include the following:

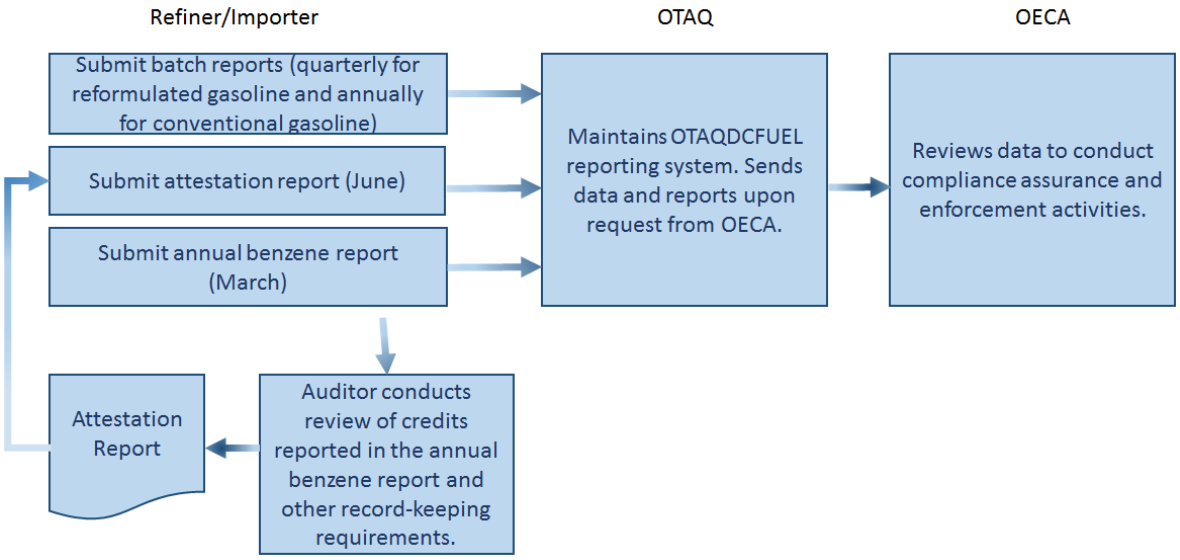
- Annual benzene reports.
- Batch reports for all batches of gasoline subject to the benzene standards.
- Agreed-upon procedures from the attest engagement reports conducted by auditors, which are intended to provide assurance about the accuracy of credit-related information reported by facilities.

Facilities submit their required benzene-related reports to the agency electronically by uploading them to the EPA's OTAQDCFUEL reporting system.

[7] We excluded facilities that process transmix (a mixture of refined petroleum products formed when fuels are transported through pipelines) from our analysis. Transmix facilities separate previously refined petroleum products from the mixture and further process them for resale.

Facilities can use the Unified Report Form to submit their annual and batch reports in one file, which is then uploaded into OTAQDCFUEL. Staff from OTAQ retrieve, process and maintain facility-submitted reports. OTAQ staff do not routinely review the reports in-depth to identify errors or missing data; instead OTAQ sends the facility-submitted reports to OECA for compliance assurance purposes. Figure 3 provides an overview of benzene reporting and EPA oversight.

Figure 3: Flowchart of benzene reporting and EPA oversight



Source: OIG analysis.

EPA's fuel regulations require annual benzene reports and batch reports to be "signed and certified as correct" by the refinery or importer owner, or other responsible corporate officer, when they are submitted to the agency.[8] Also, in OTAQDCFUEL, the facility representative submitting these reports must electronically certify that the reports are complete, correct and meet regulatory requirements.

Some Required Facility Reports Were Missing

OTAQ staff could not provide us with all of the required annual benzene and supporting batch reports that we requested. Based on communications with OTAQ staff, we concluded the missing reports were either never submitted to the EPA, or were submitted but unprocessed due to the report file being corrupted or the file containing improper references that would not allow the report to be uploaded to the OTAQDCFUEL system.

Facilities that submit batch reports for gasoline products subject to the benzene standards are required to submit annual benzene reports to show whether the

[8] Title 40 CFR §80.1354(d)(3), 40 CFR §80.75(n)(2), and 40 CFR §80.105(d)(3).

facilities have complied with the standards. While the EPA was able to provide us with the annual benzene reports for most of the facilities that submitted batch reports for compliance years 2011 through 2014, the agency was not able to do so for over 5 percent of the facilities that submitted the batch reports for each year (Table 1).

Table 1: Facilities with batch reports but no corresponding annual benzene reports

Compliance year	Facilities that submitted batch reports	Facilities with batch reports but no corresponding annual benzene reports			
		Number of facilities	Percentage of all facilities	Total volume of facilities (gallons)	Percentage of national volume
2011	299	23	7.7%	845,610,068	0.8%
2012	322	21	6.5%	380,899,634	0.3%
2013	313	22	7.0%	1,174,046,852	1.1%
2014	318	16	5.0%	243,733,438	0.2%

Source: OIG analysis of OTAQ-provided batch reports and annual benzene reports.

In addition, batch reports were missing for nine facilities during the period 2011 through 2014, but these facilities had submitted annual benzene reports to the EPA. Without batch reports, EPA staff cannot verify the accuracy of a facility's reported annual average and maximum average benzene concentrations. According to the submitted annual benzene reports, each of the nine facilities produced or imported between approximately 1.4 million and 800 million gallons of gasoline in the year for which their batch reports were missing.

Reports Contained Errors and Other Data Quality Limitations

Batch and annual benzene reports submitted to OTAQ contained a significant number of errors and data quality limitations:

- About one-third of facilities reported total volumes and/or annual average benzene concentrations that did not match values calculated from batch report data.
- For compliance year 2014, about 42 percent of facilities reported benzene credits or deficits carried over from the previous year, which did not match values calculated from batch report data.
- Not all reported benzene concentrations in batch reports and annual benzene reports contained the required minimum number of decimal places.

Reported Annual Average Benzene Concentrations and Total Volumes Were Not Supported by Batch Data

We calculated each facility's annual average benzene concentration and total volume based on its batch reports, and compared these values to those reported in the facility's annual benzene report. In each compliance year from 2011 through 2014, about one-third of the facilities reported annual average benzene concentration and/or total volume values that did not reconcile to the values calculated from their batch reports. Some of the calculated values were higher than the reported values, while others were lower. This is important because compliance with the benzene standard is based on the annual average benzene concentration adjusted for purchased credits, if needed.

Inaccurate annual average benzene concentrations or total volumes can result in incorrect compliance determinations, as well as the generation of invalid credits by facilities that reported annual average benzene concentrations below the standard. Table 2 shows the number of facilities with reported annual average benzene concentrations and/or total volumes in their annual benzene report, which did not reconcile to the values we calculated from their batch reports; and the number of facilities where the difference was greater than plus-or-minus 10 percent. Table 3 shows the total volumes (as determined from batch reports) associated with facilities whose annual benzene reports did not reconcile to their corresponding batch reports.

Table 2: Facilities with reported annual average benzene concentrations and/or total volumes that did not reconcile to batch reports

Compliance year	Facilities that submitted annual benzene reports and corresponding batch reports	Facilities with annual average benzene concentrations and/or total volumes that did not reconcile to batch reports		
		Number of facilities	Percentage of all facilities	Facilities with a difference > ± 10 percent
2011	235	87	37.0%	29
2012	263	88	33.5%	29
2013	285	80	28.1%	34
2014	287	84	29.3%	29

Source: OIG analysis of OTAQ-provided batch reports and annual benzene reports.

Table 3: Total volume of gasoline associated with facilities whose annual benzene reports did not reconcile to corresponding batch reports

Compliance year	Number of facilities	Total volume based on batch reports (gallons)	Percentage of national volume
2011	87	61,465,312,970	55.1%
2012	88	60,429,585,361	54.5%
2013	80	52,467,321,405	48.3%
2014	84	57,701,737,237	50.7%

Source: OIG analysis of OTAQ-provided batch reports and annual benzene reports.

Any errors in the calculation of total volumes and annual average benzene concentrations impact the integrity of the credit trading program, since these errors produce inaccurately calculated credits. With respect to environmental impact, errors that understate the annual average benzene concentrations are the most important, since those errors suggest an environmental benefit (i.e., reductions in benzene concentrations and resulting emissions) that did not occur.

Further, understated benzene concentrations could result in noncompliance issues and the generation of unsupported credits that do not represent true reductions in the benzene content in gasoline. In 2011, 2012 and 2014, the net effect of all discrepancies in those years was an understatement of annual average benzene concentrations (i.e., overall, the concentrations reported in the annual benzene reports were lower than those calculated based on batch reports).

Potential reasons for the discrepancies include the following:

- Company may have miscalculated annual average benzene concentration and/or total volume.
- Company may not have submitted revised (i.e., corrected) batch and/or annual benzene reports to the EPA.
- Company may have excluded some gasoline products subject to the benzene regulations from the total volume and annual average benzene concentration calculations.
- Company may have erroneously included gasoline products not subject to the benzene regulations in the total volume and annual average benzene concentration calculations.

Before assessing compliance with the standard at facilities with such reporting discrepancies, OECA staff have to spend time determining why the values do not match and obtain more accurate data from the facility. This added layer of work

creates inefficiencies for agency staff, especially OECA staff who review facility-reported data to assess compliance with the standards.

Reported Benzene Credits and Deficits Do Not Match Those Calculated From Batch Reports for Large Number of Facilities

When a facility's annual average benzene concentration exceeds 0.62 volume percent, it creates a benzene deficit. Likewise, when a facility's annual average benzene concentration is below 0.62 volume percent, it creates a benzene credit. Facilities report the number of credits or deficits carried over from the previous year in their annual benzene reports. We calculated the number of benzene credits or deficits carried over for compliance years 2011 through 2014 for each facility, based on the benzene concentrations from their batch reports, and the benzene credits obtained or transferred as reported in their annual benzene reports. We then compared the OIG-calculated credits or deficits carried over to those reported by the facilities in their annual benzene reports for compliance years 2012, 2013 and 2014. Benzene credits or deficits reported to the EPA did not match our calculations for a large percentage of facilities. Our results are shown in Table 4.

Table 4: Facilities with reported benzene credits or deficits that did not match OIG calculations

Compliance year	Facilities that submitted annual benzene reports [1]	Facilities with reported benzene credits or deficits that did not match OIG calculations		
		Number of facilities	Percentage of all facilities	Number with differences >1,000 credits/deficits
2012	267	74	27.7%	68
2013	287	107	37.3%	89
2014	289	122	42.2%	101

Source: OIG analysis of OTAQ-provided batch reports and annual benzene reports.

[1] The numbers in this column are larger than those in Table 2. Only facilities that submitted annual benzene reports and corresponding batch reports are included in Table 2, and not all facilities submitted batch reports.

Accurate credit balances are needed to assess and assure compliance with the 0.62 volume percent standard, and to assure the overall integrity of the ABT program. An overstated credit balance could result in the transfer or sale of nonexistent credits to facilities that need credits to achieve compliance with the annual average concentration standard. Likewise, if a facility has understated its deficit, it may not obtain sufficient credits to achieve compliance. Based on our calculations, the net effect of the discrepancies was an overstatement of the amount of credits held by facilities.

The importance of accurate benzene credits and deficits is amplified by the fact that a facility is allowed to carry forward a benzene deficit, provided the facility meets the standard in the following year and offsets the prior year's deficit. In those circumstances, 2 years of accurate data is needed to determine compliance. Chapter 3 discusses our review of facility credits and the impact of those credits on compliance.

Facility Reports Contained Other Data Quality and Reporting Errors

Facility reports contained several types of data quality and reporting errors.

- **Reported benzene concentrations did not contain the required minimum number of decimal places.** The annual average and maximum average benzene concentration standards (0.62 volume percent and 1.30 volume percent, respectively) contain two decimal places. However, from 2011 through 2014, between 3.1 and 6.4 percent of facilities reported benzene concentrations at one decimal place or as whole numbers in annual benzene reports. During this same period, between 4.4 and 5.2 percent of batch reports submitted each year contained benzene concentrations without the minimum number of decimal places. When concentrations are reported at less than two decimal places, EPA staff cannot readily determine whether the reported concentrations were in compliance with the standards.

- **Facility identification numbers were not registered with the EPA.** Seven of the 289 facilities that submitted annual benzene reports for 2014, submitted reports with facility identification numbers that had not been registered with the EPA. Since the identification numbers were not registered, the EPA did not have registration information for these facilities, such as the name and address of the facility and business activities at the facility.

- **Volume values did not match volume type**. Volumes for certain types of gasoline must be reported as negative values, while others are to be reported as positive values. For example, volumes for previously certified gasoline are to be reported as a negative value to avoid double counting in total volume values. Over 70 batch reports from 2011 through 2014 included volume types that did not match the negative or positive values. We do not know whether those facilities made an error in reporting the volume value or the volume type. Accurately reported values are important because the volume (whether negative or positive) affects the resultant annual average and maximum average benzene concentration calculations.

- **Invalid product codes.** Over 1,300 batch reports from 2011 through 2014 contained invalid gasoline product type codes.

- **Production dates outside of the reporting year.** Over 650 batch reports included production dates for batches that did not match the compliance year reported in the batch report.

- **Maximum and annual average benzene concentrations did not match.** Beginning with the 2014 reporting year, a facility's reported maximum average benzene concentration should be the same as the facility's annual average benzene concentration. However, for compliance year 2014, there were 141 of 289 facilities (49 percent) that reported maximum average benzene concentrations that did not match their annual average benzene concentrations.

- **Some importers submitted multiple annual benzene reports for the same year.** The EPA requires importers to aggregate data for their facilities and submit just one annual benzene report for each compliance year. However, not all importers aggregated their facilities to submit one annual benzene report. The number of importers not aggregating their reports by year include four importers in 2011, five importers in 2012, seven importers in 2013, and eight importers in 2014.

We note that the total number of facilities (out of approximately 300) and batch reports (out of approximately 200,000) between 2011 and 2014 with the above reporting errors are relatively small. However, these errors still create challenges and inefficiencies for determining compliance based on the reported data.

Data quality and reporting errors decrease the EPA's assurance that the agency has received accurate and reliable information upon which to assess program compliance and performance. OECA staff noted that the EPA has issued numerous regulations governing various fuels programs that are very complex and detailed, and sometimes inconsistent between programs. In our view, facility misinterpretation or misunderstanding of the benzene program requirements may have contributed to data quality and reporting errors. It is important that the EPA clarifies the program's reporting requirements for regulated facilities to help ensure that the agency receives quality data to effectively and efficiently assess compliance.

EPA Lacks Adequate Controls to Assure Complete and Accurate Data

We identified weaknesses in the processes used to assure the accuracy of credit-related information, and in the controls over data in facility reports when they are submitted to the EPA.

Independent Reviews Do Not Verify Supporting Data Used to Calculate Credits

The benzene regulations require that facilities obtain attest engagements from auditors to attest to the accuracy of their reported credits or deficits. However, the effectiveness of these reviews was limited because the engagements were not required to verify the accuracy of the information used to calculate benzene credits. Specifically, auditors are not required to verify total volumes and annual average benzene concentrations based on what is reported in facilities' batch reports. Auditors are only required to obtain this information from the annual benzene reports.

The benzene regulations require auditors to compute a facility's benzene credit or deficit, which is based on the total volumes and annual average benzene concentrations reported in the annual benzene reports. The auditors are not required to verify that the total volumes and annual average benzene concentrations are supported by the facility's batch reports. As discussed earlier in this chapter, we were unable to reconcile total volumes and annual average benzene concentrations to supporting batch reports for almost one-third of the facilities reporting data to the EPA.

Assuring the accuracy of the information used to compute credits is important because 34 to 41 percent of all facilities obtained credits, presumably to meet compliance with the 0.62 volume percent standard, in a given year from 2011 through 2014. We reviewed the attest engagement reports for 13 facilities that we identified as having 2 consecutive years of benzene deficits. We found that only one of the engagements identified and reported a deficit finding.

In contrast to the attestation procedures for the benzene credit program, another fuels program with credit trading—the sulfur fuels program—requires attest engagements to include verification of total volumes and concentrations based on batch reports.[9]

The EPA's oversight of attest engagements could be strengthened as well. For example, OTAQ could not provide us with seven of the 72 attest engagement reports that we requested. Further, four of the 66 reports we reviewed did not include any of the steps specifically required by the benzene regulations. Specifically, those reports did not include steps attesting to the accuracy of facility-reported information on benzene credits and annual average benzene concentrations.

One of the attest engagements we reviewed found that a facility had benzene deficits in consecutive years. However, EPA staff were not aware of this facility's noncompliance because staff had not reviewed the attest engagement report. OTAQ collects attest engagement reports, but staff do not routinely review the

[9] Title 40 CFR §80.415(b)(6).

reports. OECA staff said they review the reports to help them target on-site audits, or when their compliance assessment tool flags a potential compliance problem at a facility.

Credit Balances in EPA's Credit Tracking System Have Not Been Verified

The EMTS is an automated electronic system through which companies can buy, sell and retire benzene credits. The system is a considerable improvement over the previous paper-based system that companies used to report credit-related transactions. The EMTS includes several built-in automated checks to help ensure the integrity of credit transactions made among companies within the system. However, we found that the accuracy of the initial credit balances entered into the EMTS were not verified. Further, the accuracy of information entered into the system and used to calculate credits for subsequent years is not verified.

When OTAQ transitioned to the EMTS in 2015, facilities were instructed to input all unused credits into the system, along with related information such as the year credits were generated and the number of times they had been traded. The accuracy of this information is important because subsequent credit activity is based on these initial balances. However, OTAQ has not verified the accuracy of the initial credit information input into the EMTS.

Further, at the end of each reporting period, facilities generating credits enter their annual average benzene concentrations and total volumes into the EMTS, and the system verifies that the credit balance for that year is accurate based on the reported annual average benzene concentration and total volume values. However, if the annual average benzene concentration or total volume values input by facilities generating credits are incorrect, the system cannot detect this inaccuracy and the resulting credit calculation would be inaccurate as well. As noted earlier in this chapter, we were unable to verify the accuracy of reported benzene credit or deficit balances for over 40 percent of the facilities reporting that information to the EPA in 2014.

EPA Lacks an Automated Reporting System That Flags Missing Reports and Data Quality Limitations

The EPA does not currently have an automated system that identifies missing reports or forces the correction of common data quality limitations in benzene reporting. Facilities submit their batch and annual benzene reports to the EPA's OTAQDCFUEL system. While not required, facilities generally use the Unified Report Form to report their data, and then upload the form into OTAQDCFUEL.

The Unified Report Form is designed to flag certain data formatting errors by turning the cells with errors red. However, the form does not flag the types of data quality errors and limitations identified above, or assess the accuracy of values

entered. Further, there were no controls to prevent a company from uploading a Unified Report Form with flagged red cells into the OTAQDCFUEL system. Reporting errors are not forced to be corrected before being uploaded, and reports with flagged errors are not returned to the facility for correction by the system.

The OTAQDCFUEL system simply collects the Unified Report Forms and other required reports.[10] The system does not have the capability to check whether data from Unified Report Forms and other facility-submitted reports were complete and accurate. The OTAQDCFUEL system was not designed to check whether all regulated entities submitted required reports. Under the current system, errors and missing reports have to be manually identified by the EPA. Staff in OTAQ do not routinely check the Unified Report Forms, or other required reports for errors or missing data. Staff said they do not follow up with facilities about reported data that look problematic. Reported data are not generally reviewed until OECA staff conduct initial compliance assessment reviews.

According to OTAQ staff and managers, they are planning to slowly update the reporting process for all fuels programs, and make the process more automated with built-in data quality checks. However, OTAQ stated this is a resource-intensive process that must be weighed against other funding priorities.

Data Quality Limitations Create Inefficiencies

Data quality and completeness limitations resulted in inefficiencies for EPA staff overseeing the benzene program and assessing compliance. Specifically, OECA staff relied on facility-reported data to conduct initial compliance screenings and target on-site audits. Data quality limitations created additional work for OECA staff because they had to contact facilities or review additional documentation to determine whether a problem flagged at a facility was due to inaccurate data reported by the facility rather than potential noncompliance. Time spent resolving data quality limitations reduces the amount of time that OECA can spend on its primary mission of assuring facility compliance with the benzene standards.

Further, data quality limitations could impede the EPA's ability to assess the effectiveness of the benzene standards over time. Data from batch reports indicate that the overall average benzene concentration for all gasoline in the U.S. decreased from 0.72 volume percent in 2011 to 0.61 volume percent in 2014. However, given the problems with batch report data described above, these precise values are uncertain, although an overall trend of decreasing benzene concentrations is likely.

[10] Prior to May 1, 2015, facilities uploaded Credit Transaction Reports to the OTAQDCFUEL system. Since May 1, 2015, facilities use the automated electronic EMTS to track all credit transactions.

Conclusion

The EPA's management controls were not effective in providing reasonable assurance that facility-reported data were of sufficient quality to assess compliance or maintain the integrity of credit-related information. The EPA needs to improve its controls over the benzene program's reporting process to assure the completeness and accuracy of facility-reported program data. In particular, the attest engagement review process, as written in the benzene regulations, was largely ineffective in verifying the accuracy of facilities' credit-related information, since auditors were not required to verify the supporting data (i.e., batch reports) needed to calculate facility credits.

A strong credit verification process is important because of errors found in the data used to calculate the credits, and because of the percentage of facilities that purchased credits in order to meet the standard. Collectively, control weaknesses allow the reporting of data of questionable quality, which EPA staff must research and correct before they can undertake more rigorous assessments of facility compliance with the benzene standards. This can delay EPA actions to identify and resolve instances where facilities may be producing or importing gasoline that exceeds the limits for benzene.

Recommendations

We recommend that the Assistant Administrator for Air and Radiation:

1. Improve controls over the reporting system to assure facility-submitted data are of the quality needed to assess compliance with the regulations. These controls should provide reasonable assurance that the following occurs:

    a. Volumes and average benzene concentrations in facilities' annual benzene reports match those calculated based on their batch reports.

    b. Benzene concentrations in facility batch reports and annual benzene reports contain two decimal places.

    c. Production dates match the compliance year in facility reports.

    d. Facilities use only valid product codes in their reports.

    e. Only valid company and facility identification numbers are used.

    f. Maximum average benzene concentrations for the second compliance period and beyond match the corresponding annual average benzene concentrations.

g. Import companies aggregate their facilities and submit just one annual benzene report.

h. All required reports are submitted.

2. Consult with the Office of Enforcement and Compliance Assurance to determine whether additional reporting controls are needed to enable enforcement staff to more efficiently conduct compliance assurance activities. Document the decisions made.

3. Revise the benzene regulations to require that attest engagements verify annual average benzene concentrations and volumes with batch reports, to ensure that credits needed or generated are correct.

4. Obtain any missing batch and annual benzene reports. If the required reports are not available, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.

5. Obtain any missing attest engagement reports. If attest engagements were not conducted, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.

6. Ensure the integrity of benzene credit trading by developing and implementing a process to verify that annual average benzene concentration and total volume values that facilities input into the trading database are supported by batch reports.

Agency Response and OIG Evaluation

OAR agreed with all recommendations and provided acceptable corrective actions and projected completion dates for Recommendations 4 and 5. For Recommendations 1, 2, 3 and 6, OAR provided acceptable corrective action plans. However, OAR stated that it could not provide estimated completion dates because the resources required to implement these recommendations will depend on the new EPA Administrator's discretion to consider various factors, such as how to best deploy extremely constrained program resources in light of pressing agency priorities. Recommendations 1, 2, 3 and 6 are unresolved until the agency provides a planned completion date.

OAR also attached technical comments in its response to this report. We considered these comments and made changes to the report as appropriate. Appendix B contains OAR's full response to our draft report.

Chapter 3
Improvements Needed to More Comprehensively Identify Noncompliance and Take Timely Enforcement Actions

OECA has not comprehensively assessed compliance at all facilities subject to the benzene standards. We identified 16 facilities with potential noncompliance, based on the reports the facilities had submitted to the EPA at the time of our review. OECA had not assessed these facilities' compliance status using the agency's compliance tool or an on-site audit for the year(s) that we identified with the potential violations. In addition, at the time of our review, OECA had not conducted final assessments at 15 facilities that it had identified as potentially noncompliant to determine whether enforcement action was warranted.

OECA staff and managers said that due to limited resources, they have not been able to fully assess all facilities for compliance and must prioritize potential violations within the context of all EPA fuels programs. In our view, reporting errors also hinder OECA's ability to assess compliance and conduct enforcement in an effective and efficient manner. Improvements in EPA reporting and oversight controls could increase the efficiency of OECA's activities by minimizing the time spent identifying and resolving reporting errors. These improvements would allow OECA staff to spend more time and resources assessing compliance with the benzene standards, and help increase assurances that the program achieves its projected health benefits.

OECA Oversight Includes Facility Report Review, On-Site Audits and Enforcement Activity

OECA's process for assessing compliance with the gasoline benzene standards consists of three primary activities:

(1) Initial high-level review of all facilities' annual benzene reports and batch reports for each compliance year since 2012, to assess compliance with the benzene standards and identify basic errors in reported data.

(2) Detailed evaluation of compliance with the benzene regulations using a compliance assessment tool. This tool conducts more in-depth analyses of compliance based on all annual benzene and batch reports submitted by a given facility since the standards took effect in 2011. The tool can flag potential compliance issues that are difficult to identify when looking at a facility's reports for only 1 year, such as whether a facility has credit deficits in consecutive years.

(3) On-site audits to assess compliance. These are comprehensive evaluations of facilities' compliance with multiple aspects of the benzene regulations, and are generally conducted on-site by OECA inspectors and contractors. OECA generally conducts audits at the company level, so that an audit of a large company may cover multiple facilities owned by that company. Decisions about what companies to audit are informed, in part, by the results of the compliance assessment tool described above.

After assessing compliance based on facility-reported data, or through an on-site audit, OECA stated that it often will conduct follow-up investigations into areas of potential noncompliance by engaging in conversations with the facility or requesting additional information. If noncompliance is substantiated with sufficient evidence, OECA may initiate an enforcement action.

OECA conducts compliance and enforcement activities for the benzene standards in conjunction with other EPA fuels standards, including the gasoline sulfur standard and the Reid Vapor Pressure standards. OECA's decisions about where to target audits and enforcement activities are based on information obtained from all of the fuels programs. Decisions about benzene compliance activities are made within the context of all fuels programs.

Not All Potential Noncompliers Have Been Identified and Addressed

We reviewed all annual benzene and batch reports obtained from OTAQ for compliance years 2011 through 2014 to identify potential noncompliance with the benzene standards. We identified 40 facilities that appeared to be in noncompliance with the benzene standards (e.g., five with the maximum average standard, 34 with the annual average standard, and one with both standards). We contacted OECA to determine whether it had identified the same potential instances of noncompliance and, if so, what action had been taken. Table 5 summarizes the compliance status of the 40 facilities.

Table 5: Status of potential noncompliant facilities as of April 2016

Status	No. of facilities
OECA had not assessed the facility's compliance for the period 2011–2014.	11
OECA had assessed facility compliance in a year prior to the potential noncompliance.	5
Same noncompliance was identified by OECA, but no enforcement action had been taken at the time we conducted our review.	15
Same noncompliance was identified by OECA and enforcement action had been taken.	1
Facilities were reviewed by OECA for the same period, but OECA concluded there were no violations.	8
Total	**40**

Source: OIG analysis.

Not All Potential Noncompliers Reviewed and Identified

Based on our review of the annual benzene and batch reports submitted to the EPA for compliance years 2011 through 2014, and enforcement-related information we obtained from OECA up until April 2016, we found 16 facilities in potential noncompliance with the benzene standards. OECA had not identified the 16 facilities as potential noncompliers. At 11 of these facilities, OECA had not assessed compliance using either its compliance tool or an on-site audit for the period 2011 through 2014. At five of the 16 facilities, OECA had assessed compliance, but the assessment occurred prior to the year in which the potential noncompliance occurred.

Of the 16 facilities' batch reports analyzed, one facility's reports indicated it exceeded the maximum average benzene standard of 1.30 volume percent for the compliance period ending December 31, 2013. The facility also had benzene deficits in consecutive years. This facility's maximum average benzene concentration, based on batch reports, was over 50 volume percent, and it produced or imported over 100 million gallons of gasoline during that compliance period. After we conducted our review, OECA received companywide data in September 2016 and ran its compliance assessment tool on the facility. OECA stated that reporting errors associated with the benzene concentration was the cause for the large maximum average benzene concentration. OECA stated that it intends to conduct a follow-up investigation to obtain the correct benzene concentrations.

All 16 facilities that we identified exceeded the annual average benzene concentration standard of 0.62 volume percent (with one also exceeding the 1.30 volume percent standard as discussed above). The facilities also did not obtain sufficient credits to offset the exceedance by the end of the following year. We estimated that these facilities produced or imported over 13 billion gallons of gasoline that did not meet applicable benzene standards during the period 2011 through 2014. This represented about 3 percent of the total volume of gasoline produced and imported during this period. Due to the possibility of reporting errors and other factors, additional review of facility data would be needed to confirm whether these 16 facilities exceeded the benzene standard.

Table 6 shows the total volume of gasoline produced or imported by these 16 facilities, and the amount of credits needed to offset prior-year and current-year deficits, and demonstrate compliance with the standard (i.e., credit deficit).

Table 6: Gasoline volumes for facilities with potential credit deficits as of April 2016

Compliance period	Number of facilities with consecutive year deficits	Volume of gasoline produced or imported (gallons)	Volume as a percent of total U.S. volume	Credit deficit (gallons of benzene)
2011–2012	2	1,397,371,303	0.6%	2,757,087
2012–2013	3	101,028,007	0.05%	227,262
2013–2014	8	11,186,506,434	5.0%	2,337,289
2011–2013	1	158,636,782	0.05%	122,680
2012–2014	1[1]	191,226,378	0.06%	52,281,474
2011–2014	1	25,019,262	0.01%	17,525
Totals	16	**13,059,788,166**	**2.9%**	**57,743,317**

Source: OIG analysis of OTAQ-provided batch and annual benzene reports.

[1] This facility's maximum average benzene concentration was over 50 volume percent for the compliance period that ended December 31, 2013, based on batch report data. According to OECA, this is likely a reporting error that subsequently resulted in the large credit deficits and large volume of potentially noncompliant gasoline.

Since we conducted our assessment, OECA has taken the following actions with respect to the 16 facilities:

- Ran its compliance assessment tool on three facilities. OECA stated it is currently in the process of conducting a follow-up investigation at one of these facilities due to benzene standard compliance issues.

- Ran its compliance assessment tool on seven additional facilities, for which final results are still pending. OECA also stated that it is in the process of running the assessment tool on one additional facility.

- Placed five facilities on OECA's list for future compliance assessment tool analysis as part of its normal work process, because according to OECA, the facilities involve low volumes of fuel or the potential noncompliance is likely to be due to reporting errors.

Additional Actions Not Yet Taken for Some Identified Potential Noncompliance

Based on our review of the annual benzene and batch reports submitted to the EPA for compliance years 2011 through 2014, and enforcement information we obtained from OECA up until April 2016, we found that OECA's oversight identified potential noncompliance with 16 of the 40 facilities we identified. The EPA issued a notice of violation to one of the facilities, but had not yet conducted additional evaluations to determine whether a violation had occurred, and whether enforcement action was warranted for the other 15 facilities.

Four of the 15 facilities exceeded the maximum average benzene standard of 1.30 volume percent. OECA identified one of these during an on-site audit, and the other three through reviews and/or assessments of annual benzene and/or batch reports. Based on batch report data, these four facilities' maximum average benzene concentration was calculated to be from 1.40 to 2.70 volume percent. The four facilities produced over 502,000 gallons of gasoline during the compliance periods that appear to have exceeded the maximum average benzene concentration of 1.30 volume percent.

Based on reported data, 11 of the 15 facilities did not have sufficient credits to offset both a prior-year deficit and any current-year deficit, and thus comply with the annual average benzene standard of 0.62 volume percent. These 11 facilities ranged in size from small-volume to high-volume refiners or importers. Table 7 shows the total volume of gasoline produced or imported by the 11 facilities and the amount of credits needed to achieve compliance.

Table 7: Potential noncompliant facilities due to credit deficits not yet addressed as of April 2016

Compliance period	Number of facilities with consecutive year deficits	Volume of gasoline produced or imported (gallons)	Volume as a percent of total U.S. volume	Credit deficit (gallons of benzene)
2011–2012	6	1,352,921,644	0.6%	760,846
2012–2013	1	113,330,191	0.05%	12,743
2013–2014	1	2,739,697,676	1.2%	54,200
2012–2014	2	235,468,548	0.07%	888,415
2011–2014	1	515,203,458	0.1%	39,454
Totals	11	**4,956,621,517**	**1.1%**	**1,755,658**

Source: OIG analysis of OTAQ-provided batch reports and annual benzene reports.

OECA had included these 11 facilities in its prioritization process for determining further actions. This process considers a variety of factors designed to achieve the biggest environmental and programmatic benefits, including a rough estimate of the penalty that EPA could collect if OECA determined the potential noncompliance was in fact a violation of the benzene standards. The estimated penalty is based on the February 2016 Clean Air Act Mobile Source Fuels Civil Penalty Policy, and the size of the penalty is frequently indicative of the environmental harm. OECA staff said they were using this information to prioritize on-site inspections and enforcement activities.

Since conducting our assessment, OECA has conducted follow-up investigations on three of the 15 facilities and determined that enforcement action is not warranted. In addition, OECA said that it has taken the following actions:

- Assigned seven facilities to an OECA technical case officer or attorney to further assess potential noncompliance and whether enforcement action is warranted.

- Determined that two facilities still await technical case officers or attorneys to be assigned to them.

- Planned to continue to evaluate the remaining three facilities as part of its normal work process, since the facilities' production volumes were low.

OIG and EPA Results Differ

For the remaining eight facilities identified in our analysis, OECA had conducted compliance reviews, but came to different conclusions regarding their potential compliance status. We shared our results for those eight facilities with OECA and coordinated with OECA to determine the reason for the differences in our conclusions about potential noncompliance. According to OECA, the differences in these eight cases were due to reporting or data quality errors that OECA identified based on additional review of facility information. In at least one instance, the difference was due to facility batch reports that were not available at the time we conducted our review, and thus not included in our analysis.

Several Factors Limit OECA's Oversight

The following factors limit OECA's ability to identify potential noncompliers and take timely enforcement actions:

- Availability of staff to conduct compliance assurance and enforcement activities.
- Data quality and reporting limitations.
- Current year credit deficit information not required on annual benzene reports.
- Lack of direct access to company reports.

Availability of Staff

OECA's Fuels Enforcement Branch Chief said there are limited staff to conduct compliance assessments and develop enforcement actions for the fuels programs. Thus, OECA focuses on identifying and taking enforcement action against violations with the greatest potential impact in relation to all the key fuels programs.

Data Quality and Other Reporting Limitations

Chapter 2 discusses data quality and reporting limitations that we found with the benzene program. In our view, these data quality and reporting limitations create

inefficiencies in compliance assurance activities. Accurate facility-reported information is essential to OECA's efforts to efficiently identify potential noncompliers and target facilities for on-site audits and/or enforcement actions. Prioritizing on-site audits and enforcement actions using facility-reported data is especially important given OECA's limited resources. Data quality limitations in facility-reported information create inefficiencies for OECA because staff may have to pursue additional information from a facility to determine whether a flagged problem is actually an instance of potential noncompliance instead of a reporting error.

In 10 of the 11 instances where both our review and OECA's compliance assessment tool identified potential noncompliance at a facility due to consecutive credit deficits, we were unable to reconcile the facilities' reported annual average benzene concentrations and/or total volumes back to their batch reports. As noted in Chapter 2, the regulations do not require auditors to verify that the reported total volumes and annual average benzene concentrations are supported by the facility's batch reports. We reviewed the attest engagement reports for 13 facilities that we identified as potential noncompliers due to consecutive deficits, and found that only one of them identified the credit deficit problem.

Current Year Credit Deficit Information Is Not Required on Annual Benzene Reports

The EPA does not require facilities to report the amount of benzene credits or deficits at the end of the current reporting year on its annual benzene report. Facilities are only required to report benzene credits or deficits carried over from the previous compliance year. Both the credit or deficit for the current year, and the credit or deficit for the preceding year, are needed to assess compliance with the annual average standard of 0.62 volume percent.

To screen facilities for possible exceedances of the annual average standard, OECA has to determine the number of benzene credits or deficits at the end of the current reporting year. Requiring facilities to report the amount of benzene credits or deficits at the end of the current reporting year would allow OECA staff to more efficiently identify facilities with benzene deficits in 2 consecutive years, and target those facilities for more detailed compliance reviews.

Lack of Direct Access to Company Reports

OTAQ receives and maintains the facility batch and annual benzene reports. However, OECA does not have direct access to these company reports and has to request them from OTAQ. In response to the draft report, OAR stated that it is working with the EPA's National Computer Center to implement a secure remote-access solution that provides OECA direct access to original facility files (which contain information claimed as confidential business information) submitted to the agency. OAR stated that OECA will then have direct access to compliance

data in batch and annual benzene reports that are treated as confidential business information.

Conclusion

OECA has not conducted in-depth compliance assessments at all facilities using its compliance tool or on-site audits. At the time of our review, OECA had identified instances of potential noncompliance but had not yet conducted additional evaluations to determine whether enforcement action was warranted. OECA told us that they have limited resources to oversee all fuels programs, and that they must prioritize their compliance assurance and enforcement activities. Our report makes no conclusion as to the adequacy of OECA resources. However, improvements in the EPA's reporting and oversight controls could help increase the efficiency of OECA's activities and allow staff to spend more time and resources assessing compliance with the gasoline benzene standards. Increased compliance reviews could boost assurances that facilities comply with the standards, and that the benzene program achieves anticipated long-term health benefits.

Recommendations

We recommend that the Assistant Administrator for Enforcement and Compliance Assurance:

7. Conduct an assessment of each of the 16 facilities with instances of potential noncompliance identified by our review, and if the noncompliance is confirmed, determine whether enforcement action is warranted.

8. Verify whether a violation occurred with each of the 15 facilities that the EPA had identified as potentially not complying with the benzene standard but had not initiated enforcement, and determine whether enforcement actions are warranted.

We recommend that the Assistant Administrator for Air and Radiation:

9. Revise the annual benzene report so that facilities must report the number of benzene deficits or credits at the end of the current reporting year.

10. Provide to the appropriate enforcement staff direct access to company reports submitted for fuel programs.

Agency Response and OIG Evaluation

OECA responded that it had taken a number of actions consistent with our recommendations, but did not agree to take all of the actions we recommended. OECA stated that it must retain discretion regarding whether to conduct comprehensive compliance evaluations or take enforcement actions for specific violations. We recognize that OECA retains managerial discretion to determine the specific compliance activities and enforcement activities it undertakes. Since we conducted our review, OECA has initiated or conducted compliance assessments for 11 of the 16 facilities addressed in Recommendation 7.

OECA stated that it has placed the remaining five facilities on the list for future compliance tool analysis as part of its normal work process, because the facilities involve low volumes of fuel or are likely to have reporting errors. Further, OECA has taken action on 12 of the 15 facilities addressed in Recommendation 8 by conducting follow-up investigations, assigning them to technical case officers or attorneys, or placing them in the enforcement case pipeline. OECA stated that it plans to continue to evaluate the remaining three facilities as part of its normal work process because the facilities involve low volumes of gasoline. We consider OECA's actions as meeting our intent, and Recommendations 7 and 8 are closed.

OECA also submitted technical comments on our draft report. We have considered those comments and made updates to the report as appropriate. Appendix C contains OECA's full response to our draft report.

OAR agreed with Recommendation 9 and provided an acceptable proposed corrective action plan. However, OAR stated that it could not provide estimated completion dates because the resources required to implement the recommendations will depend on the new EPA Administrator's discretion to consider various factors, such as how to best deploy extremely constrained program resources in light of pressing agency priorities. Recommendation 9 is unresolved until the agency provides a planned completion date.

OAR provided an acceptable proposed corrective action plan and planned completion date for Recommendation 10. We consider this recommendation resolved and open, pending completion of the corrective action. Appendix B contains OAR's response to our draft report.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS

Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Potential Monetary Benefits (in $000s)
1	20	Improve controls over the reporting system to assure facility-submitted data are of the quality needed to assess compliance with the regulations. These controls should provide reasonable assurance that the following occurs: a. Volumes and average benzene concentrations in facilities' annual benzene reports match those calculated based on their batch reports. b. Benzene concentrations in facility batch reports and annual benzene reports contain two decimal places. c. Production dates match the compliance year in facility reports. d. Facilities use only valid product codes in their reports. e. Only valid company and facility identification numbers are used. f. Maximum average benzene concentrations for the second compliance period and beyond match the corresponding annual average benzene concentrations. g. Import companies aggregate their facilities and submit just one annual benzene report. h. All required reports are submitted.	U	Assistant Administrator for Air and Radiation		
2	21	Consult with the Office of Enforcement and Compliance Assurance to determine whether additional reporting controls are needed to enable enforcement staff to more efficiently conduct compliance assurance activities. Document the decisions made.	U	Assistant Administrator for Air and Radiation		
3	21	Revise the benzene regulations to require that attest engagements verify annual average benzene concentrations and volumes with batch reports, to ensure that credits needed or generated are correct.	U	Assistant Administrator for Air and Radiation		
4	21	Obtain any missing batch and annual benzene reports. If the required reports are not available, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.	R	Assistant Administrator for Air and Radiation	9/30/17	
5	21	Obtain any missing attest engagement reports. If attest engagements were not conducted, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.	R	Assistant Administrator for Air and Radiation	9/30/17	
6	21	Ensure the integrity of benzene credit trading by developing and implementing a process to verify the annual average benzene concentration and total volume values that facilities input into the trading database are supported by batch reports.	U	Assistant Administrator for Air and Radiation		
7	29	Conduct an assessment of each of the 16 facilities with instances of potential noncompliance identified by our review, and if the noncompliance is confirmed, determine whether enforcement action is warranted.	C	Assistant Administrator for Enforcement and Compliance Assurance	3/8/17	

RECOMMENDATIONS

Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Potential Monetary Benefits (in $000s)
8	29	Verify whether a violation occurred with each of the 15 facilities that the EPA had identified as potentially not complying with the benzene standard but had not initiated enforcement, and determine whether enforcement actions are warranted.	C	Assistant Administrator for Enforcement and Compliance Assurance	3/8/17	
9	29	Revise the annual benzene report so that facilities must report the number of benzene deficits or credits at the end of the current reporting year.	U	Assistant Administrator for Air and Radiation		
10	29	Provide to the appropriate enforcement staff direct access to company reports submitted for fuel programs.	R	Assistant Administrator for Air and Radiation	6/30/17	

[1] C = Corrective action completed.
R = Recommendation resolved with corrective action pending.
U = Recommendation unresolved with resolution efforts in progress.

Appendix A

Details on Scope and Methodology for Data Analyses

An important part of our evaluation methodology was to conduct an independent assessment of the accuracy of facility-reported benzene data and whether that data indicated compliance with benzene content in gasoline standards. To conduct our assessment, we requested all benzene program related batch reports[11] and annual benzene reports[12] received by the EPA for compliance years 2011 through 2014. Since a facility may have submitted revised reports, we requested the latest version of these reports.

We uploaded all of the batch and annual benzene reports into a commercial software and used the software to process the data and conduct several analyses. We deleted the following data:

1. Duplicate batch and annual benzene reports.
2. Batch and annual benzene reports from transmix processors.
3. Batch and annual benzene reports from facilities that solely produced or solely imported gasoline products not subject to the benzene regulations.

We excluded transmix processors to simplify our analyses. The procedures for determining the applicability of the benzene standards to transmix processers are complex, and the resulting compliance determinations are more complex than those for other gasoline producers and importers.

After the above deletions, we created unique facility identification numbers for each batch report in the dataset by merging the company and facility identification numbers. This step was not necessary for the annual benzene reports, since OTAQ created unique facility identification numbers for the annual benzene reports prior to providing them to the OIG.

After completing the above processing steps, we conducted several analyses that include the following activities:

1. Determining whether facilities that submitted batch reports also submitted annual benzene reports.
2. Determining whether facilities that submitted annual benzene reports also submitted supporting batch reports.

[11] Gasoline batches were reported using the Reformulated Gasoline and Anti-Dumping Batch Report (Report Form ID: RFG0301). This report is submitted by producers and importers of reformulated gasoline, reformulated gasoline blendstock for oxygenate blending, conventional gasoline, or conventional gasoline blendstock that becomes finished conventional gasoline upon the addition of oxygenate. In some instances, facilities combine batches of conventional gasoline for sampling (i.e., composite sampling), and report the results in RFG0301 reports. When composite sampling is conducted, the facility must submit a Gasoline Sulfur Facility Batch Report (Report ID: GSF0401) for each individual batch of conventional gasoline in the composite sample.
[12] RFG & Anti-Dumping Annual Benzene Report (Report Form: RFG2000)

3. Calculating annual average benzene concentrations and total gasoline volumes from batch reports and comparing the results to the corresponding reported values on annual benzene reports.
4. Assessing compliance with the maximum average benzene concentration of 1.30 volume percent.
5. Calculating credit balances and assessing compliance with the annual average benzene concentration of 0.62 volume percent.

Analysis to Identify Missing Annual Benzene Reports

To determine whether facilities that submitted batch reports also submitted annual benzene reports in any given year between 2011 and 2014, we performed the following activities:

1. Compared each unique facility identification number we created for facilities that submitted batch reports with unique facility identification numbers for facilities that submitted annual benzene reports. We wanted to identify identification numbers with no corresponding annual benzene report.

2. Reviewed results from Step 1 to identify and properly account for situations where an annual benzene report for each facility was not necessary, such as instances that involve the following:

    a. Importers are required to aggregate their facilities and submit just one annual benzene report. Thus, an import facility was deemed to have submitted an annual benzene report if the importer submitted one companywide annual benzene report aggregating all their import facilities' batch reports.

    b. Approved small refiners do not have to comply with the 0.62 volume percent annual average benzene concentration limit until January 1, 2015, and the 1.30 volume percent maximum average benzene concentration limit until July 1, 2016. We did not flag these facility identification numbers as not having submitted annual benzene reports if they were approved small refiners.

Analysis to Identify Missing Batch Reports

To identify annual benzene reports with no corresponding batch reports, we did the following:

1. Compared each unique facility identification number that submitted an annual benzene report with each unique facility identification number that submitted batch reports.

2. Reviewed results from Step 1 to identify and properly account for situations where a batch report was not applicable or submitted under a different identification number:

    a. Batch reports would not be applicable in cases where a facility reported zero benzene volumes and concentration, but submitted an annual benzene report to acknowledge it still carried unused benzene credits.

b. An independent lab may have submitted batch reports for the facility.

Analysis to Verify Annual Total Volumes and Annual Average Benzene Concentrations

To determine whether the annual average benzene concentration and total volume reported on the annual benzene reports were supported by each facility's batch reports for compliance years 2011 through 2014, we did the following:

1. Calculated the total volume and the annual average benzene concentration for each unique facility identification number that submitted RFG0301 or GSF0401 batch reports for compliance years 2011 through 2014. We used the equation outlined in 40 CFR §80.1238(a) to calculate the annual average benzene concentration. In cases where a facility submitting GSF0401 batch reports for conventional gasoline products also submitted RFG0301 batch reports for reformulated gasoline products, data from both types of batch reports were used to calculate the annual average benzene concentration (using the equation given in 40 CFR §80.1238(a)) and to determine the total volume.

2. Compared the annual average benzene concentration and total volume reported by each facility in its annual benzene reports to the values we calculated from the facility's RFG0301 batch reports, GSF0401 batch reports, or both types of batch reports.

3. Calculated the percent difference between the reported and calculated annual average benzene concentrations and total volumes.

Analysis to Assess Compliance With the Maximum Average Benzene Concentration Standard of 1.30 Volume Percent

To assess compliance with the maximum average benzene concentration standard of 1.30 volume percent, we did the following:

1. Calculated the maximum average benzene concentration for each unique facility identification number that submitted batch reports for compliance periods July 1, 2012, through December 31, 2013, and calendar year 2014, using the equation and method described in 40 CFR §80.1238(a).

2. In cases where a facility submitting GSF0401 batch reports for conventional gasoline products also submitted RFG0301 batch reports for reformulated gasoline products, data from both types of batch reports were used to calculate the maximum average benzene concentration.

Analysis to Calculate Credit Balances and Assess Compliance With Annual Average Benzene Concentration Standard of 0.62 Volume Percent

Steps 1 through 3 below were conducted for every year in our review, 2011 through 2014. To determine whether a facility may be out of compliance with the annual average benzene standard (i.e., the facility had a benzene deficit for 2 consecutive years), we conducted the following steps:

1. Calculated the facility's annual average benzene concentration based on the volumes and concentrations reported in that year's batch reports.

2. Calculated the benzene credit or deficit for the reporting year using the equation in 40 CFR §80.1290(c)(1). For annual average benzene concentration, we used the average we computed in Step 1 above, not the average the facility reported on its annual benzene report.

3. Determined the facility's final credit balance for the reporting year by adjusting the amount determined in Step 2 by doing the following:

    a. Adding any credits, or subtracting any deficits, carried over from the prior year.
    b. Adding any early program credits generated prior to 2011 and reported on the annual benzene report.
    c. Adding any credits purchased from other companies or transferred from another facility during the reporting year, as reported on the annual benzene report.
    d. Subtracting any credits sold or transferred to another facility during the reporting year as reported on the annual benzene report.

4. Compared each facility's credit balances, as computed in Step 3 above, for each of the following 2-year periods:

    a. 2011 and 2012.
    b. 2012 and 2013.
    c. 2013 and 2014.

5. Identified facilities with a deficit for both years in any of the 2-year periods in Step 4 above, as facilities potentially not complying with the annual average benzene standard.

6. Repeated Steps 1 through 5 above for every year in our review, 2011 through 2014, using annual average benzene concentrations and total volumes reported in annual benzene reports.

Office of Air and Radiation Response to Draft Report

MEMORANDUM

SUBJECT: Response to Office of Inspector General's Draft Report, *Improved Data and EPA Oversight Are Needed to Assure Compliance with the Standards for Benzene Content in Gasoline* (No. OPE-FY15-0051)

FROM: Sarah Dunham
Acting Assistant Administrator
Office of Air and Radiation

TO: Carolyn Copper
Assistant Inspector General
Office of Program Evaluation
Office of Inspector General

The EPA's Office of Air and Radiation (OAR) appreciates the opportunity to review and comment on the Office of Inspector General (OIG) draft report titled "*Improved Data and EPA Oversight Are Needed to Assure Compliance with the Standards for Benzene Content in Gasoline.*" OAR's response begins with a summary of gasoline benzene program requirements and results that show, on average, industry is meeting the annual refinery average standard of 0.62 volume percent benzene, which is consistent with the results of independent third-party retail gasoline survey data. Additionally, these reductions in gasoline benzene levels are contributing to decreases in ambient benzene concentrations in the United States. Following the program summary are responses to the OIG's recommendations to OAR. OAR agrees in general with the OIG's recommendations. However, for those recommendations OAR is not already addressing, decisions must be considered in light of the Administrator's various priorities. Finally, this memo concludes with technical comments on the Draft Report.

Hazardous air pollutants, also known as air toxics, include benzene and other hydrocarbons. Section 202(1) of the Clean Air Act directs EPA to regulate air toxics emitted by motor vehicles and other moving sources (called "mobile source air toxics," or MSATs).[13] In order to protect the environment and public health, the EPA established standards for the benzene content of gasoline through the Mobile Source Air Toxics final rule ("MSAT2").[14] The standards finalized in the MSAT2 rule were designed to significantly lower emissions of benzene and the other air toxics in three ways: (1) by lowering benzene content in gasoline; (2) by reducing exhaust

[13] https://www.gpo.gov/fdsys/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapII-partA-sec7521.htm.
[14] Control of Hazardous Air Pollutants from Mobile Sources Final Rule; 72 FR 8428; February 26, 2007. The benzene control standards replace the requirements of the 2001 MSAT rule (''MSAT1'').

emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and (3) by reducing emissions that evaporate from, and permeate through, portable fuel containers.

The MSAT2 rule requires that petroleum refiners and importers produce gasoline that has an annual average benzene content of 0.62 volume percent or less beginning in 2011 and a maximum average benzene content of 1.3 volume percent, beginning July 1, 2012. The gasoline benzene standard was projected to reduce total benzene emissions from on-road and nonroad gasoline mobile sources, portable fuel containers, and gasoline distribution by 12 percent by 2015.[15] The MSAT2 program as a whole will reduce total emissions of mobile source air toxics by 330,000 tons in 2030, including 61,000 tons of benzene. OAR is responsible for implementing the gasoline benzene program, and coordinates closely with other offices, including the Office of Enforcement and Compliance Assurance (OECA), on program implementation and compliance.

In the gasoline benzene program, like many EPA fuels programs, the regulated community certifies compliance. There are approximately 300 regulated refiners and importers subject to the gasoline benzene program. These entities produce and import between 112 to 118 billion gallons of gasoline each year. These entities are required to sample and test the benzene content of every batch of gasoline produced or imported, and to report that content to the EPA. Some facilities submit over 200 individual batch reports to the EPA each year. Additionally, if these entities participate in the averaging, banking, and trading (ABT) program, they are responsible for reporting, among other things, benzene credit transactions and balances.

As the OIG notes, refiners and importers sometimes make mistakes in reports they submit to the EPA. Although we acknowledge that reporting errors do exist, the data suggest that the number of errors in the batch reports are too small to significantly impact the overall assessment of the benzene content of gasoline used in the Unites States. Thus, while these errors can in some instances pose problems for the Agency in making compliance determinations, these data are sufficient for an analysis of whether the gasoline benzene program is achieving its intended goals. The following table shows the volume weighted benzene content of each batch of gasoline reported to the EPA, and shows that, on average, industry is meeting the annual refinery average standard of 0.62 volume percent benzene.[16]

[15] 72 FR 8454; February 26, 2007.
[16] The table does not include compliance period 2016 because refiners and importers have until March 31, 2017, to submit their 2016 reports.

Compliance Period	*Total Volume (gallons)*	*Benzene Value (% vol * gallons)*	*Average Benzene (% vol)*
2013	***110,579,255,976***	***68,980,358,589***	***0.6238***
2014	***117,181,032,538***	***72,009,917,291***	***0.6145***
2015	***120,849,280,190***	***73,484,799,746***	***0.6081***
2013-2015	***348,609,568,705***	***214,475,075,626***	***0.6152***

When these reported values are adjusted to account for the downstream blending of ethanol in conventional gasoline to better indicate gasoline properties at retail, gasoline benzene levels are even lower due to dilution. EPA recently updated its website to present estimated average retail gasoline fuel property data from 1997 through 2015, extending the prior data set which covered through 2005. These data show the progression over time due to both EPA standards and other market shifts in the levels of the various fuel properties reported to the EPA by refiners and importers for every batch of gasoline produced.[17]

Additionally, these findings are consistent with the results of a retail level survey conducted by the RFG Survey Association Inc. The survey collected samples at more than 4,600 retail stations located in reformulated gasoline (RFG) areas throughout the county during each year from 2013-2015, and found the average benzene content of the RFG samples was below the 0.62 volume percent benzene standard. Although these results represent a limited sample, these data support the conclusion that as a whole, industry is meeting the 0.62 volume percent annual average benzene standard.

As described above, benzene levels in gasoline are falling and are now below the 0.62 volume percent benzene standard. These reductions in gasoline benzene levels are contributing to decreases in ambient benzene concentrations in the United States that have been reported by the EPA and other investigators.[18,19,20] For example, from 2003 to 2013 there was a 45 percent reduction in ambient air benzene concentrations as a result of the EPA's regulations. Such findings again support the conclusion that the gasoline benzene program is meeting its goals.

While industry, as a whole, is achieving the annual refinery average standard of 0.62 volume percent benzene content, OAR acknowledges that there are instances of potential noncompliance with the gasoline benzene standards at individual facilities. Furthermore, OAR recognizes the importance and role of data in program oversight and compliance. It is our goal to collect a

[17] https://www.epa.gov/fuels-registration-reporting-and-compliance-help/gasoline-properties-over-time
[18] U.S. EPA National Air Toxics Program: The Second Integrated Urban Air Toxics Report to Congress. 2014. Available at: https://www.epa.gov/urban-air-toxics/second-integrated-urban-air-toxics-report-congress.
[19] Ambient benzene concentrations in the U.S., 2003-2013, https://cfpub.epa.gov/roe/indicator.cfm?i=90#3.
[20] Yano, et. al., Impact of a new gasoline benzene regulation on ambient air pollutants in Anchorage, Alaska. Atmos. Env. 132:276-282.

complete and accurate data set and to make it available and accessible for program analysis and enforcement use in a timely manner. However, significant barriers to this goal remain and will take significant time and resources to overcome. Some functions of OAR's information systems, such as quarterly and annual compliance reporting and batch data reporting, are legacies of paper-based systems developed in the mid-1990s. We have made progress in this area by eliminating paper and physical media submissions since 2012, making it easier for data to be submitted. Additionally, we have made substantial improvements to data processing times in order to make data available to the public sooner. However, as the OIG notes, further improvements are still needed. The data are still processed and managed on the back end as if they were submitted on paper, which is time consuming, inefficient, and delays even basic formatting, completeness, and accuracy checks.

One recent and significant improvement is the use of the EPA Moderated Transaction System (EMTS) in the gasoline benzene program. Introduced in 2010 for the Renewable Fuel Standard (RFS) program, EMTS was designed to accept, process, and manage data electronically. More than 400 syntax/completeness checks and business rules are applied automatically to incoming data, which enables submitters to be informed immediately if submissions are incorrect or incomplete. OAR regularly coordinates system changes and improvements with OECA. For example, in consultation with OECA, OAR made an investment to incorporate gasoline benzene ABT credit generation and trading transactions into EMTS. This was necessary due to the complex nature of credit transactions and to incorporate the inherent safeguards for issues that EMTS was designed to address – management of the overall credit universe, direct matching of buy and sell transactions, and constraints that prevent overall credit balances from shrinking or expanding, except as authorized through transactions. Beginning with the 2015 compliance year, OAR successfully deployed gasoline benzene ABT in EMTS.

While EMTS is a success for ABT oversight, and the model for future information system development to accommodate annual compliance and batch reporting, resource constraints limit how quickly this can be accomplished. In the meantime, OAR is working to provide the best available data to Agency analysts and enforcement staff. This includes triaging data errors to ensure those having the largest impacts are dealt with first. For example, first order errors include missing, incomplete, and corrupted data that result in large data gaps. Second order errors include large scale reporting discrepancies that are repetitive and have a large-scale impact such as reporting improper units. Third order errors include batch-specific one-off errors. OAR performs this triage manually, on a resource priority basis, on the entire set of quarterly, annual, and batch data submitted. OAR regularly coordinates with data users to target compliance oversight efforts. For example, OAR coordinates with OECA staff to target oversight activities to a specific company/facility on an ad hoc basis so that batch data can be used in OECA's enforcement sensitive compliance tool (that it began developing in 2014 and is referenced in the Draft Report) and during its audit activities.

Below are OAR's responses to the OIG's specific recommendations (recommendation numbers 1-6, 9 and 10). OECA is providing a separate response to its recommendations (recommendation numbers 7 and 8). In the technical comments section, we provide suggested additional detailed changes in the form of a markup.

Recommendation 1: Improve controls over the reporting system to assure that facility-submitted data are of the quality needed to assess compliance with the regulations. For example, these controls should provide reasonable assurance that:

- **a. Volumes and average benzene concentrations in facilities' annual benzene reports match those calculated based on their batch reports.**
- **b. Benzene concentrations in facility batch reports and annual benzene reports contain two decimal places.**
- **c. Production dates match the compliance year in facility reports.**
- **d. Facilities use only valid product codes in their reports.**
- **e. Only valid company and facility identification numbers are used.**
- **f. Maximum average benzene concentrations for the second compliance period and beyond match the corresponding annual average benzene concentrations.**
- **g. Import companies aggregate their facilities and submit just one annual benzene report.**
- **h. All required reports are submitted.**

Response 1: OAR agrees that this recommendation would further enhance our oversight of the gasoline benzene program, but a decision to invest in new IT systems to improve this program must be considered in light of other IT investment priorities that improve oversight in other programs. The timing for developing and implementing the recommended controls will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned completion date: As noted above, the schedule will be determined pending further guidance on the Administrator's priorities.

Recommendation 2: Consult with the Office of Enforcement and Compliance Assurance to determine whether additional reporting controls are needed to enable enforcement staff to more efficiently conduct compliance assurance activities. Document the decisions made.

Response 2: OAR agrees that this recommendation would further enhance our oversight of the gasoline benzene program. We are coordinating with OECA on benzene and other fuels program reporting controls on an ongoing basis. However, as stated elsewhere, implementing the recommended controls will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned Completion Date: As stated above, coordination with OECA is ongoing. However, the implementation schedule for the recommended controls will be determined pending further guidance on the Administrator's priorities.

Recommendation 3: Revise the benzene regulations to require that attest engagements verify annual average benzene concentrations and volumes with batch reports, to ensure that credits needed or generated are correct.

Response 3: OAR agrees that this recommendation could further enhance our oversight of the gasoline benzene program, but a decision to revise the benzene regulations to improve this program must be considered in light of other program priorities. The timing for considering regulatory revisions will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned Completion Date: As noted above, the schedule will be determined pending further guidance on the Administrator's priorities.

Recommendation 4: Obtain any missing batch and annual benzene reports. If the required reports are not available, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.

Response 4: OAR agrees with this recommendation. We are already working to address this concern as part of our ongoing compliance oversight efforts that we initiated in 2016.

Planned Completion Date: FY Q4 (September 2017).

Recommendation 5: Obtain any missing attest engagement reports. If attest engagements were not conducted, provide this information to the Office of Enforcement and Compliance Assurance for appropriate action.

Response 5: OAR agrees with this recommendation. We are already working to address this concern as part of our ongoing compliance oversight efforts that we initiated in 2016. Furthermore, OAR has initiated a corrective action to address missing attest engagement reports going forward. In the Renewables Enhancement and Growth Support (REGS) Notice of Proposed Rulemaking (81 FR 80828; November 16, 2016), the Agency proposed to amend 40 CFR 80.130 to require auditors to submit reports directly to the Agency. In doing so, the auditors would need to register with the Agency and we would link them to a client, similar to what we do with independent laboratories and third-party Quality Assurance Plan providers. When finalized, this will help ensure that we receive all attest engagement reports. The timing for regulatory revisions will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned Completion Date: FY Q4 (September 2017). As noted above, the schedule to address missing attest engagement reports going forward will be determined pending further guidance on the Administrator's priorities.

Recommendation 6: Ensure the integrity of benzene credit trading by developing and implementing a process to verify the annual average benzene concentration and total volume values that facilities input into the trading database are supported by batch reports.

Response 6: OAR agrees that this recommendation would further enhance our oversight of the gasoline benzene program, but a decision to invest resources in new process improvements for this program must be considered in light of other opportunities to improve oversight in other programs. The timing for developing and implementing the recommended process requires additional resources, which will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned Completion Date: As noted above, the schedule will be determined pending further guidance on the Administrator's priorities.

Recommendation 9: Revise the annual benzene report so that facilities must report the number of benzene deficits or credits at the end of the current reporting year.

Response 9: OAR agrees that this recommendation could further enhance our oversight of the gasoline benzene program, but a decision to revise the annual benzene reporting requirements to improve this program must be considered in light of other program priorities. The timing for considering any regulatory revisions will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Planned Completion Date: As noted above, the schedule will be determined pending further guidance on the Administrator's priorities.

Recommendation 10: Provide to the appropriate enforcement staff, direct access to company reports submitted for fuel programs.

Response 10: OAR agrees with this recommendation. OECA staff already have access to gasoline benzene credit data in the EPA Moderated Transaction System through OAR's Data Analysis and Reporting Tool. OAR is also partnering with EPA's National Computer Center to implement a secure remote access solution that provides OECA direct access to the original files (which contain information claimed as confidential business information) submitted to the Agency. OECA will then have direct access to the remaining batch and annual compliance data which are treated as confidential business information.

Planned Completion Date: FY17 Q3 (June 2017)

* * *

If you have any questions regarding this response, please contact Benjamin Hengst, Associate Director, Office of Transportation and Air Quality, at (202) 564-1495.

Attachment

Cc: Betsy Shaw
Chris Grundler
Marc Vincent

TECHNICAL COMMENTS ATTACHMENT

OAR Comments – Pending

Pg 1 of first draft – OAR Comment:

"This should be focused on the benzene standard"

Pg 1 of first draft - OAR Comment:

"Should include a discussion of independent survey data here."

"Overall, benzene program has been effective at reducing benzene levels based on RFG Survey Association data of a statistically representative sample of retail stations that shows that RFG benzene levels were below the 0.62% standard for each year from 2013 – 2015. The Alliance of Automotive Manufacturers' third-party survey data sources also demonstrate widespread national aggregate compliance with the 0.62% standard until testing was discontinued in 2014."

Pg 3 of first draft – Noteworthy Achievements:

"There are several noteworthy achievements from OAR's perspective that we would be happy to discuss with OIG. First is EMTS, which is only briefly mentioned later in this document. EMTS adds significant oversight capabilities and controls on credit generation, buy and sell transactions and credit use. Second would be accessibility to EMTS data through the DART data access tool. DART enables OAR staff and enforcement officers (OECA and DOJ) direct access to data in a real time basis. In coming months, DART will also provide access to annual compliance reports including batch data."

Chapter 2 – Missing Reports and Data Quality Limitations (formerly Section 2 Data Quality)

For several of the following comments that include references to a need for added context in tables, we think it would be useful to provide the context in the tables themselves rather than solely in the narrative of the document.

Pg 5 of first draft, second paragraph

"EMTS addresses these issues going forward"

Pg 5 & 6 of first draft, last paragraph –

This is an overly simplistic description of data processing. Once a regulated party submits a file to CDX, OAR downloads the file extracts the information, translates it and loads it into Report Data Migrator (a tool we use for querying the database). The reports are processed and moved into the production database following basic quality checks for duplicates and resubmissions. Note that these are manual steps, none of the processes are automated, but some are batch processed.

2.3 Facilities Did Not Always Submit Required Reports, Table 1, pg 6 of first draft –

Facilities that did not submit reports - "Nature of parties? Volume Imported?"

Pg 7 Table 2 of first draft –

"To add context, it would help if these numbers showed the OIG calculated difference as a percentage by compliance year"

"High or low?" [context of total volumes not matching between reports]

Pg 8, Table 3 of first draft – [Same comments as on Table 2]

NOTE: Tables 2 and 3 were combined into one overall table in new report

Pg 8 Second paragraph of first draft –

"This is a routine part of the audit process – confirm with OECA. The report data should be consistent with the recordkeeping data…"

Pg 9 of first draft, Table 4 – "High or Low? Direction Matters"

NOTE: In paragraph underneath table, one sentence added that says "Based on our calculations, the net effect of the discrepancies was an overstatement of the amount of credits held by the facilities"

Pg 9 of first draft, first paragraph –

"What about understating their credits?"

Pg 10 of first draft, "Facility IDs Not Registered with EPA":

Submitters may have misidentified themselves (possibly independent lab data). Likely a reporting error.

All ID numbers are issued by EPA, no benefit to the submitter to make up a number. All registration information for current registrations is posted online.

EMTS will not allow access to the system let alone transactions for parties that are not properly registered.

Facility Reports Contained Other Data Quality and Reporting Errors

Page 10 of first draft – [Series of Comments]

"About 50,000 batch reports a year reside in the production database. The batch report dataset for the 2011 – 2014 period that was reviewed contains more than 200,000 reports".

Pg 10 – same comment on 3 cited numbers –

"Out of how many?"

[NOTE: The recent IG draft added in the last paragraph of the applicable section "We note that the total number of facilities (out of approximately 300) and batch reports (out of approximately 200,000) between 2011 and 2014 with the above reporting errors are relatively small."]

Pg 12 – Reporting System Does Not Flag Missing Data/Data Quality Problems

Response to 3 comments:

"According to OAR staff and managers, they are planning to slowly update the reporting process for all of the fuels programs to make it more automated with built-in data-quality checks. However, OAR did not provide us with any specific plans for such updates to the benzene reporting process." A decision to invest resources to improve this program must be prioritized with other program priorities. The timing for developing and implementing the recommended actions will depend on the Administrator's discretion to consider various factors, including how best to deploy extremely constrained program resources in light of many pressing Agency priorities.

Pg 16 – Not all Potential Non-Compliers Have Been Identified and Addressed

"No Acknowledgement of the difficulties overseeing very small importers, parties that come and go"

TECHNICAL CORRECTION
Pg 17 of last draft - "Further, at the end of each reporting period, facilities enter their annual average benzene concentrations and total volumes into the EMTS, and the system verifies that the credit balance for that year is accurate based on the reported annual average benzene concentration and total volume values."

CORRECTION – Refiners and Importers only enter their benzene concentration and total volume into EMTS when generating credits. If their benzene avg is above 0.62 volume percent, they cannot generate credits, in fact, EMTS will not permit generation of credits in this situation. Credit balances are maintained in real time through all credit types including generate, buy/sell and use.

Office of Enforcement and Compliance Assurance Response to Draft Report

MEMORANDUM

SUBJECT: Response to the Office of Inspector General Draft Report Project No. OPE-FY15-0051: Improved Data and EPA Oversight Are Needed to Assure Compliance With the Standards for Benzene Content in Gasoline

FROM: Lawrence Starfield
Acting Assistant Administrator

TO: Carolyn Copper
Assistant Inspector General
Office of Program Evaluations
Office of Inspector General

Thank you for providing the Office of Enforcement and Compliance Assurance (OECA) with the opportunity to respond to the findings and recommendations presented in the Office of Inspector General (OIG) Draft Report, "Improved Data and EPA Oversight Are Needed to Assure Compliance With the Standards for Benzene Content in Gasoline" (Draft Report). OECA's response starts with a summary that is followed by a response to the OIG's recommendations to OECA and technical comments on Chapter 3 of the Draft Report.

Enforcement is an important component of the fuels programs. Since fiscal year 2015, we have taken over 60 enforcement actions for violations of the EPA's fuels regulations. These actions have resulted in over $43 million in civil penalties and $93 million in injunctive relief. We agree that enforcement plays an essential role in maintaining robust compliance. A critical part of a strong enforcement program is identifying the most serious violations, and reserving our limited enforcement resources for the cases that can make the most difference. Like any other enforcement program, we do not investigate or take an enforcement action for every potential violation found. We appreciate the OIG's efforts to identify potential violations of the gasoline benzene regulations, and we have undertaken a number of actions consistent with the OIG's recommendations. We cannot, however, agree with the OIG's recommendations to conduct comprehensive compliance evaluations of every suspected incidence of noncompliance. We make careful and informed choices about where to conduct investigations and what enforcement actions to take across all of the fuels programs; decisions to pursue potential minor violations in one program divert resources away from higher-risk and higher-priority work. It is critical for OECA to retain discretion regarding whether to conduct a comprehensive compliance evaluation and take enforcement actions for specific violations, particularly in light of our current resource constraints. These decisions must be weighed carefully and prioritized among many competing interests across all programs.

Summary

In the gasoline benzene program, like many EPA programs, including other fuels programs, the regulated community self-certifies compliance. There are approximately 300 regulated refiners and importers subject to the gasoline benzene program. These entities produce and import between 112 to 118 billion gallons of gasoline each year. These entities are required to sample and test the benzene content of every batch of gasoline produced or imported, and to report that content to the EPA. Some facilities submit over 200 individual batch reports to the EPA each year. Additionally, if these entities participate in the averaging, banking, and trading (ABT) program, they are responsible for reporting, among other things, benzene credit transactions and balances.

As the OIG notes, refiners and importers sometimes make mistakes in the hundreds of reports they submit to the EPA. Although we acknowledge that reporting errors do exist, and that these errors, can in some instances pose problems for OECA in making compliance determinations, the data is sufficient for a big-picture analysis of whether the gasoline benzene program is achieving its intended goals. Our evidence suggests that the number of errors in the batch reports are likely too small to significantly impact the overall assessment of the benzene content of gasoline used in the United States. The following table shows the volume weighted benzene content of each batch of gasoline reported to the EPA, and shows that, on average, industry is meeting the annual refinery average standard of 0.62% benzene content by volume.[21]

Compliance Period	***Total Volume (gallons)***	***Benzene Value (% vol * gallons)***	***Average Benzene (% vol)***
2013	***110,579,255,976***	***68,980,358,589***	***0.6238***
2014	***117,181,032,538***	***72,009,917,291***	***0.6145***
2015	***120,849,280,190***	***73,484,799,746***	***0.6081***
2013-2015	***348,609,568,705***	***214,475,075,626***	***0.6152***

These findings are consistent with the results of a retail level survey conducted by the RFG Survey Association Inc. The survey collected samples at more than 4,600 retail stations located in reformulated gasoline (RFG) areas throughout the county during each year from 2013-2015, and found the average benzene content of the reformulated gasoline samples was below the 0.62% standard. Although these results represent a limited sample and do not cover conventional gasoline areas, this data supports the conclusion that as a whole, industry is meeting the 0.62% annual average benzene standard.

While industry, as a whole, may be achieving the annual refinery average of 0.62% benzene content by volume, OECA acknowledges that there are instances of potential noncompliance with the gasoline benzene standards at individual facilities. As stated in the Draft Report, in 2014, OECA began developing an enforcement sensitive compliance tool to assist in efficiently

[21] The table does not include compliance period 2016 because refiners and importers have until March 31, 2017, to submit their 2016 conventional gasoline batch reports and their fourth quarter (October 1- December 31) 2016 reformulated gasoline batch reports.

reviewing the reports that refiners and importers submit for all of the EPA's fuels regulations, including the gasoline benzene program. This tool allows OECA to take a more comprehensive approach to evaluating compliance by analyzing industry-wide data to flag potential compliance issues. We appreciate the OIG's recognition that OECA has made substantial progress by implementing the compliance tool. We understand the OIG used a commercial software tool to analyze the data contained in the reports. If the OIG thinks it would be helpful, we are interested in learning more about the commercial software. As discussed in more detail in our technical comments, many of the discrepancies or potential non-compliance issues identified by the OIG likely are reporting errors when evaluated in a more detailed manner using our compliance tool or based on information gathered through follow-up investigations.

Response to Recommendations

The Draft Report makes two recommendations to OECA about conducting compliance assessments at specific facilities and determining whether enforcement actions are warranted. The first recommendation relates to 16 facilities that the OIG stated it determined were in potential non-compliance with the benzene standards and stated that the EPA had not identified these facilities as potential non-compliers. The second recommendation relates to 15 facilities that OECA identified as potentially non-compliant, but has not taken any follow-up enforcement actions.

As more fully set forth in our response below, and in our technical comments, OECA has undertaken a number of actions to identify significant violations of the gasoline benzene program and plans to take some further actions that are consistent with the OIG's recommendations as part of our normal work process. We cannot, however, agree with the OIG's recommendations to evaluate specific companies because choices about investigative and prosecutorial discretion are reserved to OECA. In addition, OECA must maintain the ability to carefully weigh and prioritize enforcement actions among many competing interests across all programs.

Recommendation #7: "For each of the 16 facilities with instances of potential non-compliance identified by our review, conduct an assessment of each facility's compliance and if the non-compliance is confirmed, determine whether enforcement action is warranted."

OECA Response: We disagree with the recommendation to conduct an assessment of each facility's compliance. The OIG's findings of potential non-compliance are the result of its analysis of batch reports and annual benzene compliance reports. Based on our experience with the fuels programs, we expect some errors and discrepancies in the reports. However, we are operating in a time of constrained budgets and resources, and instances of potential noncompliance with the gasoline benzene program must be weighed carefully and prioritized among many competing priorities across all programs.

OECA has, however, conducted a high-level review all batch reports and annual benzene compliance reports submitted by refiners and importers subject to the gasoline benzene program, to identify basic errors in reported data. This high-level review included all 16 facilities identified by the OIG. Additionally, OECA has initiated a compliance analysis of 11 of the 16 facilities. To date, these evaluations have included an evaluation with the compliance tool on all

11 facilities, and conducting onsite audits at two of these facilities. We have also engaged in conversations with a number of these facilities and requested additional information necessary for conducting the evaluations. The potential gasoline benzene non-compliance issues at the remaining five facilities involve very low volumes of fuel or are likely to be the result of reporting errors. These facilities remain on OECA's list for completing its compliance tool analysis at a later date as part of its normal work process.

As an alternative to the recommendation made by the OIG, we offer the following: "To the extent that further investigations are consistent with OECA's competing priorities and resource limitations, conduct a compliance assessment of each of the 16 facilities with instances of potential non-compliance identified by our review, and if non-compliance is confirmed, determine whether enforcement action is warranted."

Recommendation #8: "For each of the 15 facilities EPA had identified as potentially not complying with a benzene standard but had not initiated enforcement, verify whether a violation occurred and determine whether enforcement actions are warranted."

OECA Response: We disagree with the recommendation to verify whether a violation has occurred and whether an enforcement action is warranted at each facility. Verifying whether a violation has occurred and gathering sufficient evidence for OECA to allege that a company violated the gasoline benzene regulations requires substantial enforcement resources. As stated above, instances of potential noncompliance with the gasoline benzene program must be weighed carefully and prioritized among many competing priorities across all fuels programs.

That said, based on follow-up investigations that occurred after OECA identified the potential noncompliance at three of the 15 facilities, OECA determined that two of these facilities had not violated the benzene standard requirements and that the violation at the third facility was de minimis. Seven other facilities are involved in ongoing case evaluations, which include assignment to an OECA technical case officer or attorney. Based on the results of the case evaluation, OECA will determine whether an enforcement action addressing noncompliance with the gasoline benzene regulations is warranted. Two more of the 15 facilities are currently in OECA's enforcement case pipeline, but have not yet been assigned to a technical case officer or attorney. The potential gasoline benzene noncompliance issues at the remaining three facilities involve very low volumes of fuel, and we will continue to evaluate them as part of our normal work process.

As an alternative to the recommendation made by the OIG, we offer the following: "To the extent that further investigations are consistent with OECA's competing priorities and resource limitations, verify whether a violation occurred at each of the 15 facilities EPA had identified as potentially not complying with the benzene standard, and determine whether enforcement actions are warranted."

Technical Comments

The Draft Report is divided into the following three chapters: (1) Introduction; (2) Missing Reports and Data Quality Limitations Hamper EPA's Ability to Asses Compliance; and (3)

Improvements Needed to More Comprehensively Identify Noncompliance and Take Timely Enforcement Actions. OECA's technical comments are limited to the third chapter, which addresses the role OECA plays in ensuring that refiners and importers are meeting EPA standards for benzene content in gasoline.

Page 21, Paragraph 3 & Page 22, Paragraph 1: The Draft Report summarizes OECA's process for assessing compliance with the gasoline benzene standards, and then states:

> "After assessing compliance based on facility-reported data or through an on-site audit, OECA may initiate an enforcement action if noncompliance is identified."

The summary of OECA's process fails to recognize that in addition to assessing compliance based on facility-reported data or through on-site audits, OECA will often conduct follow-up investigations to fully understanding any reporting errors, data quality issues, and nuanced scenarios involved in certifying and applying credits for given gasoline batches before initiating an enforcement action. We recommend that the sentence above, which follows the summary, be revised as follows:

> "After assessing compliance based on facility-reported data or through an on-site audit, OECA often will conduct follow-up investigations into areas of potential noncompliance by engaging in conversations with the facility or requesting additional information. If noncompliance is substantiated with sufficient evidence, OECA may initiate an enforcement action."

Page 22, Table 4: Table 4 identifies eight facilities that the OIG categorizes as "[f]acilities reviewed by OECA for the same period but OECA conclude there were no violations." On page 26 of the Draft Report, the OIG explains that in all eight cases, the differences in the conclusions were due to reporting errors, missing reports that the OIG had not received, or data quality problems that were identified based on additional follow-up conducted by OECA for these facilities. We recommend that the OIG add a footnote to Table 4 to clarify that the OIG is now in agreement with OECA that there are no benzene standards violations at these 8 facilities.

Page 23, First Paragraph: The Draft Report states that the OIG found 16 facilities that were in potential noncompliance with the benzene standards that OECA had not identified as potential noncompliers. Please add the date that the OIG conducted its review, and please clarify that since that date OECA has in fact initiated compliance assessments at many of those facilities.

Page 23, Second Paragraph: We ran our compliance assessment tool on the facility the OIG identified as exceeding the maximum average benzene standard of 1.30% and having benzene deficits in consecutive years. Our evaluation demonstrated that the cause of the potential maximum average benzene standard was an obvious reporting or data parsing error. The values the company reported in the benzene field are 197.8% or higher for at least 13 batches (and are likely distillation (temperature) properties and not benzene concentrations). As an important engineering consideration, concentrations of benzene in gasoline cannot be greater than 100%. We intend to conduct a follow-up investigation to obtain the correct benzene concentrations.

Page 23, Third Paragraph & Page 24, Table 5: The Draft Report states that the OIG estimated that the 16 facilities identified by the OIG as exceeding the annual average benzene concentration standard of 0.62% produced or imported over 13 billion gallons of gasoline that did not meet applicable standards during the period of 2011 through 2014, representing approximately 3% of the total volume of gasoline produced and imported during this period. Table 5 on page 24 shows the total volume of gasoline produced or imported by these 16 facilities, and the amount of credits needed to offset prior-year and current-year deficits and demonstrate compliance with the standard.

This statement and the table are misleading given the likelihood of reporting errors. For example, the facility included in Table 5 on the row for compliance period 2012-2014 is the same facility that the OIG had identified as exceeding the maximum average benzene standard of 1.30%. As stated in the comment above, OECA ran its compliance assessment tool on this facility and determined that there was an obvious reporting or data parsing error. According to Table 5, this specific facility produced or imported 191,226,378 gallons of gasoline and had a credit deficit of 52,281,474 benzene-gallons. The credits in deficit for this one facility account for 91 percent of the total credit deficit identified by the OIG for all 16 facilities over the time period assessed. When removed, the resulting Table 5 volume and credit deficit totals are 12,868,561,790 gallons and 5,461,843 benzene-gallons, respectively. This represents less than 0.2% of all gallons of benzene generated during the time period assessed, and as stated in our summary, on average, industry is meeting the annual refinery average standard of 0.62% benzene content by volume.

Page 24, First Paragraph: The Draft Report includes bullet points regarding the status of OECA's activities involving the 16 facilities the OIG found that were in potential noncompliance with the benzene standards that OECA had not identified as potential noncompliers. Please update the bullet points to read as follows:

- OECA ran its compliance assessment tool on three facilities and conducted an on-site audit at one of them, and found benzene standard compliance issues. OECA is currently in the process of conducting a follow-up investigation.
- OECA ran its compliance tool on eight additional facilities. Results are pending.
- OECA placed five low-volume facilities on the list for future compliance assessment tool analysis as part of its normal work process.

Page 24, Second Paragraph: The Draft Report states that OECA had identified potential noncompliance issues at 16 facilities, but had not yet conducted additional evaluations to determine whether a violation had actually occurred and whether enforcement action was warranted for 15 of those facilities. Please add the date that the OIG conducted its review, and please clarify that since that date OECA has in fact taken further action to determine whether a violation had actually occurred and whether enforcement action is warranted.

Page 24, Third Paragraph: The Draft Report states four of the 15 facilities where OECA identified potential noncompliance exceeded the maximum average benzene standard of 1.30%. OECA completed its evaluation of one of these facilities. We determined that the issue was a reporting error as opposed to a violation of the maximum average benzene standard. We took an enforcement action against the company for the reporting violation at the facility as well as for

other violations we had identified at other facilities. The volume of gasoline produced during the compliance periods at the three remaining facilities that may have violated the maximum average benzene standard is less than 78,000 gallons.

Page 25, First Paragraph: The Draft Report states that OECA and the OIG identified 11 facilities that did not have sufficient credits to offset both a prior-year deficit and any current-year deficit, and thus did not comply with the annual average benzene standard of 0.62 volume percent. We have completed our compliance evaluation of two of the 11 facilities and have determined that enforcement is not warranted. Follow-up investigations demonstrated that the potential noncompliance issues at both facilities resulted from reporting errors. After correcting for reporting errors, one facility did have a credit deficit, but the deficit was de minimis.

Page 25, Table 6: Table 6 lists 11 facilities in potential noncompliance with the annual average benzene standard of 0.62%. This table is misleading given the likelihood of reporting errors. As stated in the comment above, we have completed our compliance evaluation of two of the facilities and have determined that there are no benzene standard violations at those facilities. When removed, the resulting Table 6 volume and credit deficit totals are 4,344,709,954 and 1,338,222 benzene-gallons, respectively. This represents less than 0.04% of all gallons of benzene generated during the time period assessed, and as stated in our summary, we believe that, on average, industry is meeting the annual refinery average standard of 0.62% benzene content by volume.

Page 25, Third Paragraph: The Draft Report includes bullet points regarding the status of OECA's activities involving the 15 facilities that OECA had not yet conducted additional evaluations to determine whether a violation had actually occurred and whether enforcement action was warranted. Please update the bullet points to read as follows:

- OECA conducted follow-up investigations on three facilities and determined that enforcement is not warranted.
- Seven facilities have been assigned to an OECA technical case officer or attorney to further assess potential noncompliance and whether enforcement is warranted.
- Two facilities await technical case officers or attorneys to be assigned to them.
- OECA plans to continue to evaluate the remaining three facilities as part of its normal work process, since the facilities' production volumes were low.

Page 27, Second & Third Paragraphs: The Draft Report states EPA does not require facilities to report their benzene credits or deficits at the end of the current reporting year on their annual benzene reports, and that facilities are only required to report benzene credits or deficits carried over from the previous compliance year. The Draft Report goes on to state that both the credit or deficit for the current year, and the credit or deficit for the preceding year, are needed to assess compliance with the annual average standard of 0.62 volume percent. We agree with this observation, but would like to note that in 2014 and 2015, the Office of Transportation and Air Quality (OTAQ) modified the EPA Moderated Transaction System (EMTS) to include fuels ABT program credits (i.e., gasoline sulfur and benzene program credits). EMTS screens the generation and moderates the transfer of credits with built-in functions and data quality checks.

Now that all credit generation and trading transactions occur in EMTS, we anticipate that will be able to more efficiently identify facilities with benzene deficits in consecutive years.

Page 27, Third Paragraph: The Draft Report states that OECA does not have direct access to batch and annual benzene reports, and must go through OTAQ to get them. While we believe it would be more efficient to have direct access to these reports, we understand the security issues relating to confidential business information and appreciate how hard OTAQ works to accommodate our data requests given OTAQ's limited resources.

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