



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

MAR 22 2015

OFFICE OF
CONGRESSIONAL AND
INTERGOVERNMENTAL
RELATIONS

The Honorable Tim Murphy
Chairman
Subcommittee on Oversight and Investigations
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed please find the U.S. Environmental Protection Agency's responses to the Subcommittee's questions for the record following the October 8, 2015, hearing titled "Volkswagen Emissions Cheating Allegations: Initial Questions."

I hope this information is helpful to you and the members of the Subcommittee. If you have further questions, please contact me or your staff may contact Matthew Davis in the EPA's Office of Congressional and Intergovernmental Relations at davis.matthew@epa.gov or at (202) 564-1267.

Sincerely,



Nichole Distefano
Associate Administrator

Enclosure

Attachment 1-Additional Questions for the Record

The Honorable Tim Murphy

1. Vehicle technology is constantly changing. With vehicles operating potentially more than 100 million lines of code – more than an airliner or F-22 – these are incredibly complex machines, creating ample opportunities for the existence of intentional or unintentional functions that affect vehicle compliance with existing standards.

a. How does the EPA keep pace with advancements in vehicle technology?

Response: EPA's staff includes vehicle technology experts, many with automotive industry background. They include engineers who have industry experience using software development tools to calibrate engine management functions. Like other professionals, these employees maintain and expand their expertise through ongoing professional contacts and affiliations, as well as through specialized training. In addition, the EPA regularly conducts its own assessments to understand and/or improve upon emissions-related technologies.

b. How often does the agency evaluate the effectiveness of its testing relative to advancements in technology?

Response: We are continually looking at ways to improve our testing programs. We do this both formally and informally. We formally evaluate and update testing protocols through the rulemaking process, and do so informally, as we are doing now in light of the VW matter as new technologies and situations emerge. For example, within the last decade we updated testing protocols to accommodate plug-in hybrid and various other electric vehicle technologies. We also announced to manufacturers on September 25, 2015 that we would implement new protocols to screen for the presence of defeat devices, and we now are applying those procedures to both new and in-use vehicles, including gasoline and diesel.

c. When did EPA last revise testing standards for light duty vehicles?

Response: The EPA continually updates its testing procedures as technology advances for vehicles and testing equipment. Virtually every new vehicle regulation that the EPA issues includes some updates to the test procedures including the rulemaking that set our latest Tier 3 standards completed in 2014. Updates to the driving cycles used in the testing have been less frequent as changes to real world driving occur over a longer period. In the late 1990s, the EPA implemented three additional driving cycles to better represent operation during cold temperatures (20°F), high accelerations, high speeds, high temperature/heat load (95°F + high solar load), and air conditioning use. In total, the EPA light-duty vehicle regulations have five driving cycles that represent a robust wide range of in-use operating conditions.

2. Why did the EPA's testing fail to identify the existence of these defeat devices?

Response: It appears that the software on the 2.0L vehicles is designed to precisely recognize the test and to operate within legal limits during testing. Our efforts to learn the truth about emission exceedances and other irregularities were impeded and obstructed by material omissions and misleading information from VW.

In September, 2015, a few days after issuing the first Notice of Violation to VW, EPA notified manufacturers that it would expand its compliance oversight by testing vehicles in new and unpredictable ways, and began doing so (it was in fact this enhanced EPA screening that subsequently identified the defeat device in the 3.0L VW products). EPA continually updates its compliance oversight protocols. The VW experience has reinforced the need to constantly adjust our approach. We are currently using both laboratory and on-road testing technologies to monitor emissions performance.

3. Prior to the discovery of the defeat devices, did the EPA conduct in-use emissions testing of light duty vehicles?

Response: Yes.

a. If so, how frequently was this done and how did you select the vehicles to test?

Response: Although it would be infeasible for EPA to test each vehicle that is produced, EPA's approach to light-duty compliance oversight is comprehensive and multi-dimensional. We scrutinize certification applications for technical merit and design integrity before vehicle production begins. We test vehicles before, during, and after production, and even several years after vehicles are in customer hands. We review thousands of manufacturer in-use verification program test results as well as emissions defect reports. We use surveillance and, when potential problems are indicated, target specific vehicle models for testing or extra review based on a multiplicity of information sources. We also conduct random audits of manufacturer testing and compliance protocols. The EPA's in-use surveillance testing program involves recruiting approximately 150 customer-owned in-use light duty vehicles each year for testing at the EPA's National Vehicle Fuel and Emissions Laboratory in Ann Arbor, MI.

b. If not, why not?

Response: N/A (See response to question 3a.)

4. On September 25, 2015, the agency announced that it would be conducting additional in-use testing to evaluate the use of defeat devices in all vehicles.

a. How does this testing differ for standard emissions testing and affect the timing of the certification of conformity approvals?

Response: The EPA is not revealing the nature of the expanded testing so as to keep it unpredictable for manufacturers. It does involve running more tests than had previously been the standard and testing in additional conditions that may be expected to be encountered in normal operation and use. This additional testing may add two to three weeks to the confirmatory testing process. However this testing typically happens in advance of submission of the application for certification and can occur in parallel with other pre-certification activity, so this testing will not necessarily add time to the application review or unduly delay the issuance of the certificate.

b. Is EPA conducting this testing only to identify the use of "defeat devices"?

Response: The testing is designed to screen for defeat devices and to identify certain other kinds of emission problems that might not be seen on standard Federal Test Procedures.

- c. If the agency identifies anomalies in the additional testing procedures, what steps will it take to validate findings and disclose procedures and results to affected auto makers?**

Response: In general, the EPA will undertake additional investigation to understand the anomalies, potentially involving further testing and/or communication with the manufacturer. The specific next steps the Agency may take cannot be generalized because each case is different. EPA's follow-up will depend on the facts specific to each circumstance. Where appropriate, the EPA may share data and corroborate test results with the California Air Resources Board.

- 5. Of the three generations of VW vehicles, how did emissions differ from one generation to the next, according to data EPA, CARB collected?**

Response: This is the subject of ongoing investigations.

- a. What kind of data do you have for generation 3 vehicles?**

Response: This is the subject of ongoing investigations.

- b. Was the generation 3 technology getting closer to compliance with EPA emissions standards?**

Response: This is the subject of ongoing investigations.

- 6. On September 3, 2015, VW admitted to CARB and EPA that its vehicles contained defeat devices.**

- a. Was this the first time that the issue of potential defeat devices came up? Was EPA or CARB specifically looking to see if defeat devices existed prior to this point?**

Response: The EPA and CARB were looking for the cause of the excess emissions identified in the ICCT/West Virginia University study. Defeat devices were one potential cause that the agencies considered. It was not until and after the September 3, 2015 meeting that the admission of a defeat device and related details became clear.

- b. What prompted VW to admit the existence of a defeat device at this point in time?**

Response: As stated in our September 18, 2015 Notice of Violation, VW admitted to designing and installing a defeat device in the 2.0 liter diesel vehicles only after it became clear that CARB and the EPA would not approve certificates of conformity for the 2016 model year diesel product until VW could adequately explain the anomalous emissions from the earlier model year vehicles and assure the agencies that the 2016 vehicles would not have similar issues.

- c. Who provided this information to CARB and EPA? Were these the same individuals involved in the previous briefings or discussions?**

Response: The information was provided to CARB and the EPA by employees and managers from Volkswagen AG and Volkswagen Group of America. Due to the ongoing investigation, we cannot provide additional information at this time.

- d. Did they provide an explanation why they had not provided you with this**

information prior to this date?

Response: EPA cannot comment at this time due to the ongoing investigation.

i. Do you believe that the individuals you were engaged with since May 2014 were aware of the defeat device prior to the September disclosure?

Response: EPA cannot comment at this time due to the ongoing investigation.

7. In your written testimony, you stated that “after the high emissions were discovered, VW concealed the facts from the EPA, the State of California and from consumers.”

a. What specifically did VW conceal?

Response: For at least six years, VW has been installing illegal software in some of its diesel passenger cars. This software is designed to trick emissions tests into thinking VW’s diesel cars meet the standards that protect clean air. The software turns off emissions controls when driving normally, and turns them on when the car is undergoing an emissions test. This illegal practice was concealed from EPA and the California Air Resources Board. Due to the fact that the investigation is continuing additional facts may yet become known.

b. Do you believe the individuals EPA was interacting with had knowledge of the defeat device and intentionally withheld this information?

Response: EPA cannot comment at this time due to the ongoing investigation.

8. Please explain how EPA's recall process works:

Response: EPA has the authority under Section 207(c)(1) of the Clean Air Act to require a manufacturer to issue a recall when EPA determines that a substantial number of vehicles do not conform to EPA regulations. When EPA identifies an emissions problem that necessitates a recall, the manufacturer may and typically does choose to perform the recall voluntarily. If EPA orders a recall, EPA must first approve the manufacturer’s recall plan. Regardless of whether the recall is ordered or voluntary, the manufacturer must track and report customer participation. The regulations at 40 CFR Part 85 Subpart S contain the applicable requirements and process when EPA orders a recall.

a. Does EPA review and approve a proposed solution prior to a manufacturer pursuing a recall?

Response: Yes, for ordered recalls, EPA reviews a manufacturer’s proposed solution before approving a recall plan and before the manufacturer implements the recall.

b. What is the process for notifying customers?

Response: Manufacturers must describe the process they will use to notify customers in the recall plan they submit for EPA approval. Per Clean Air Act section 207 and EPA’s regulations in 40 CFR part 85, subpart S (40 CFR 85.1801-85.1808) manufacturers are, at a minimum, required to notify customers by mail. However, this does not preclude manufacturers from using additional means to contact their customers (e.g., email, telephone, social media, etc.).

c. Does EPA track recall compliance and, if so, how does that work?

Response: Yes. Once a recall is underway, manufacturers must submit quarterly reports to EPA summarizing overall recall response and repair rates.

9. On average, how many EPA/emissions-related compliance recalls are conducted annually?

Response: On average, about 30 - 40 separate EPA/emissions-related compliance recalls are conducted a year, affecting some 2 - 4 million vehicles. These include ordered and voluntary recalls, but the vast majority of emissions recalls are conducted voluntarily by the manufacturer. Many of these voluntary recalls are for minor fixes such as software improvements or upgrades.

a. What is the average take-rate, or consumer response, for EPA recalls?

Response: EPA recall regulations require manufacturers to report recall completion rates for six quarters following the start of a recall, whether the recall is ordered by EPA or initiated voluntarily by the manufacturer. The most recent analysis EPA has on emissions recall completion rates is from recalls that were initiated in 2010. It shows an overall average completion rate of 65% after six quarters of reporting.

10. What happens if a customer does not get their vehicle fixed once a recall is announced?

Response: Manufacturers are responsible for issuing recall notices and following up with vehicle owners. EPA does not interact directly with car owners on recalls. Some states with emissions inspections programs require proof of repair prior to inspection, and in some states, prior to annual registration (see below).

a. How many states are like California, which will withhold your registration if you don't comply with the recall?

Response: Vehicle owners who live in the 26 states with "enhanced" emissions inspection programs may be required to show proof that recall repairs have been completed prior to inspection. Of those states, 18 require diesel as well as gasoline vehicles to undergo inspections. Some states require proof that emissions recalls have been performed prior to issuing the vehicle registration.

11. According to the 2009-2011 EPA compliance report, manufacturers designed their vehicles to emissions levels "significantly below the level the standards allow."

According the report, VW vehicles were approximately 50% below the standard.

a. Since NOx emissions standards are based on fleet and not individual vehicles, has EPA determined that VW's fleet now exceeds emissions standards?

Response: Manufacturers are required to comply with both the fleet average NOx standard and a vehicle specific NOx standard selected by the manufacturer at the time of certification. Our investigation is ongoing, including investigating the impact of VW's use of the defeat device installed in the 2.0L VW vehicles on their fleet average NOx compliance.

12. EPA and CARB have stated that the defeat device results in on-road emissions of nitrogen oxides (NOx) that are 10 to 40 times higher than permitted by regulation. Please provide a detailed explanation or description of any assessments EPA has

conducted to evaluate the real-world effects of these emissions. In addition, please respond to the following questions:

Response: EPA cannot comment at this time due to the ongoing investigation.

a. Are these constant emissions or only under certain driving conditions?

Response: The 2.0L VW diesels are designed to have increased emissions under all driving conditions with the sole exception that when operated under the precise conditions of the Federal Test Procedures, the vehicles will have very clean emissions in order to appear to “meet” the emissions standards. The absolute level of excess emissions changes through different driving conditions. For example, emissions are higher driving uphill when compared to driving downhill. Emissions from the 2.0L vehicles generally are much higher in all real world driving.

b. What percentage of all U.S. domestic NOx emissions come from these vehicles, if they meet the standard?

Response: Our emissions models tell us that NOx emissions from light-duty diesel cars and trucks contribute less than 0.1 percent of NOx pollution from on-road vehicles. The fraction of U.S. domestic NOx emissions from all sources contributed by light-duty diesel vehicles is even smaller. The low contribution to NOx emissions from light-duty diesels is due to the relatively small number of light-duty diesel vehicles in the U.S. fleet, and to the small fraction of miles traveled by these vehicles compared to other vehicles. Light duty diesel vehicles comprise only about 1% of U.S. light duty vehicles. The vast majority of NOx from on-road vehicles comes from heavy-duty trucks and gasoline vehicles.

c. How does that change with use of this defeat device?

Response: EPA cannot comment at this time due to the ongoing investigation.

13. Please explain EPA’s pre-production confirmatory testing. In addition, please respond to the following questions:

Response: Prior to submitting an application for certification, manufacturers test pre-production vehicles using EPA test procedures. Manufacturers submit the test data and documentation to EPA. Experienced EPA engineers and scientists review manufacturer data and other certification application materials, request additional evidence, and perform confirmatory tests on a portion of the vehicles before reaching a decision to approve or deny an application. EPA audits between 15 and 20 percent of the vehicle models manufacturers submit for certification, and conducts the confirmatory testing at its National Vehicle and Fuel Emissions Laboratory in Ann Arbor, MI.

a. Is this what the VW software was designed to defeat?

Response: It appears that the 2.0L software is designed to precisely recognize the test and to operate within legal limits during testing. The software directed the emission control system to operate properly during testing but to shut off critical emission control functions during all other operating modes.

b. It appears that manufacturers are also required to conduct a number of in-use tests over the life of the vehicle once in production: what tests do they conduct? Do these include on road tests?

Response: Manufacturers are required to test in-use vehicles under the mandatory In-Use

Verification program. These tests are performed on one and four year old vehicles at about 10,000 and 50,000 miles, respectively. They are required to conduct Federal Test Procedure (FTP), highway, US06, and, for gasoline vehicles, 2 day evaporative emissions tests (these are all conducted in laboratories). They are not required to perform on-road tests. Last year, manufacturers tested about 1,600 vehicles under this program.

i. What testing did VW conduct and did EPA review the results of these tests? Did they include on-road testing?

Response: VW conducted the required in-use testing which EPA reviewed as part of our normal process. This did not include on-road testing.

c. EPA conducts in-use surveillance testing once a vehicle is in production. How does that work?

Response: EPA has broad discretion to conduct tests to verify vehicle performance with the emission regulations. As part of its ongoing compliance oversight, EPA tests production vehicles to ensure that they match the certified design. EPA also conducts audits and employs a variety of other tools to check manufacturer compliance. EPA's in-use surveillance typically involves laboratory testing, but EPA has the authority to conduct over-the-road and other types of testing as it deems necessary. EPA conducts in-use vehicle surveillance testing at the National Vehicle and Fuel Emissions Laboratory in Ann Arbor, MI. The purpose of the EPA surveillance program is to assess emissions performance a few years after vehicles enter the fleet. EPA typically recruits two- or three-year-old vehicles from volunteers in southeast Michigan. EPA selects vehicles for surveillance both randomly and based on certification data, manufacturer in-use verification data, vehicle production volume, new technology, and public complaints and inquiries. EPA typically tests approximately 150 surveillance vehicles a year.

i. Did the EPA conduct in-use surveillance testing of any of the vehicles affected by this alleged defeat device?

Response: EPA conducted surveillance testing of 2010 and 2013 model year test groups including VW Golf, Jetta, and Beetle diesel vehicles.

1. If so, how were the vehicles tested?

Response: These vehicles were tested over the Federal Test Procedure, the highway fuel economy cycle, and the US06 cycle.

2. If not, why not?

Response: N/A.

14. When it was introduced on these vehicles, VW's clean diesel technology was considered advanced/novel. What did EPA do to understand their technology?

Response: Please see answers to Question #1 and #13. Further, EPA's Ann Arbor laboratory participated in several research partnerships and was deeply involved in the development of clean diesel technology in general. EPA's National Center for Advanced Technology (NCAT) was doing its own engineering and feasibility analysis of clean diesel technology in the early and mid-2000 time frame. The NCAT staff included experts with deep understanding of diesel technology.

Attachment 2-Member Requests for the Record

During the hearing, Members asked you to provide additional information for the record, and you indicated that you would provide that information. For your convenience, descriptions of the requested information are provided below.

The Honorable Tim Murphy

- 1. Who from EPA was involved in the conversations with CARB and VW when the appropriate recall solution to fix the excess emissions issue was being discussed?**

Response: EPA cannot comment at this time due to the ongoing investigation.

The Honorable Morgan Griffith

- 1. After EPA has settled on an amount to fine VW, would it be appropriate for a portion of that fine to be given to West Virginia University for their efforts which helped discover the emissions deception?**

Response: Civil penalties under the CAA are required by law to be directed to the Treasury.

The Honorable Kathy Castor

- 1. Has VW provided EPA with an engine map that shows specifically how the defeat device works for each model car in which it was installed?**

Response: VW has provided EPA's Office of Transportation and Air Quality (OTAQ) a detailed description of the defeat device and examples of some of the engine maps from one model. This information has been requested by the Office of Enforcement and Compliance Assurance (OECA) under the provisions of section 208 of the Clean Air Act.

- 2. Please inform the Committee if VW does not provide EPA the results of their internal investigation.**

Response: VW is expected to comply with all requests for information related to the ongoing investigation. However, EPA will inform the Committee if VW does not provide EPA with results of their internal investigation.