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**OFFICE OF THE
NEW YORK STATE COMPTROLLER**

**DIVISION OF STATE
GOVERNMENT ACCOUNTABILITY**

**DEPARTMENT OF
ENVIRONMENTAL
CONSERVATION**

**POLLUTION TESTING ON
EXHAUST EMISSIONS
FROM HEAVY-DUTY
VEHICLES**

Report 2008-S-65

AUDIT OBJECTIVE

Our objective was to determine whether the Department of Environmental Conservation (DEC) is adequately fulfilling its responsibilities under New York State's Heavy-Duty Vehicle Emissions Testing Program.

AUDIT RESULTS - SUMMARY

In the State's Heavy-Duty Vehicle Emissions Testing Program, diesel-powered trucks and buses are tested to determine whether their exhaust emissions meet prescribed air quality standards. Mandatory annual tests are performed on vehicles registered in the New York City metropolitan area, and random roadside tests may be performed on such vehicles anywhere in the State.

The program is administered by three State agencies. The Department of Transportation (DOT) performs emissions tests on buses, the Department of Motor Vehicles (DMV) licenses the private inspection facilities performing annual emissions tests on trucks, and DEC performs roadside emissions tests on trucks. DEC also certifies the program's emissions testing equipment and inspects the licensed truck inspection facilities. Our audit focused on the responsibilities of DEC, and did not address the responsibilities of DMV and DOT.

If the emissions tests are to be effective, they must be performed in accordance with the required procedures by individuals who have been certified to perform the tests, and they must use appropriate pollutant-detecting technologies. We found that DEC's roadside tests were performed in accordance with the required procedures and all 18 truck inspection facilities we visited were equipped with emissions testing equipment that had been certified by DEC. In addition, when we

reviewed the certification status of selected individuals at DEC and the truck inspection facilities, we found that they were all certified to perform the tests.

However, we found indications technological advancements in diesel engines may have made the State's testing process questionable on engines manufactured after 1996. If this is the case, the process could be significantly compromised, as vehicles that emit exhaust with unacceptably high levels of pollutants during normal highway driving may not be detected by the tests. We recommend DEC determine whether the current testing process is, in fact, appropriate for newer diesel engines. We also identified other potential flaws in the testing process that need to be addressed by DEC.

As part of its vehicle emissions program, DEC is authorized to conduct inspections of the licensed truck inspection facilities to determine whether their emissions testing equipment is functioning properly and their emissions tests are properly documented. We found that DEC is conducting such inspections. However, we question whether the inspection coverage provided by DEC is adequate, as only 304 of the 619 licensed facilities (49 percent) were inspected in the two years covered by our audit period, and facilities that failed their inspections were not always re-inspected to ensure that they had corrected their problems.

DEC is not required to inspect each facility within a certain time frame. However, if the facilities are not inspected within a reasonable time frame and promptly re-inspected after inspection failures, there is an increased risk their emissions tests may not be valid and the objectives of the State's emissions testing program may not be fully met. We recommend DEC establish appropriate inspection time frames for these facilities and

perform inspections in accordance with these time frames.

We also found that DEC has done little to facilitate an evaluation of program effectiveness for the State's Heavy-Duty Vehicle Emissions Testing Program. DEC is not maintaining critical performance data for its own areas of program responsibility, and is not coordinating with DMV and DOT to ensure that such data is maintained for all aspects of the program. In the absence of such data, it is difficult for State policymakers to determine whether the program is operating as effectively as intended or whether improvements are needed in certain areas of the program.

Our report contains 12 recommendations for DEC. DEC officials generally agreed with most of our recommendations and have taken steps to implement changes.

This report dated March 22, 2010, is available on our web site at <http://www.osc.state.ny.us>. Add or update your mailing list address by contacting us at: (518) 474-3271 or Office of the State Comptroller
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BACKGROUND

Under New York State's Heavy-Duty Vehicle Emissions Testing Program, certain large vehicles are tested to determine whether their exhaust emissions meet prescribed air quality standards. The tests are performed on diesel-powered vehicles (generally trucks and buses) weighing more than 8,500 pounds. Certain types of vehicles (e.g., emergency vehicles, agricultural vehicles, off-road construction vehicles and military vehicles) are exempted from the requirements. If a vehicle's emissions do not pass the test, corrective

actions must be taken and the vehicle's owner/operator may be fined.

Two testing programs are in effect: a mandatory annual program and a random roadside program. The mandatory annual testing program applies to trucks and buses that are registered in the New York City metropolitan area (i.e., New York City, Long Island, and Westchester and Rockland Counties). The emissions from these vehicles are to be tested when their annual safety inspections are performed. The random roadside tests may be performed anywhere in New York State on vehicles that are registered both in and out of State.

The emissions tests are performed and overseen by a number of different entities. The mandatory annual tests on the trucks registered in the New York City metropolitan area are performed by private inspection facilities (vehicle repair shops and fleet garages). The facilities must be licensed to perform the tests by the Department of Motor Vehicles (DMV). The mandatory annual tests on the buses registered in the New York City metropolitan area are performed by the Department of Transportation (DOT), in conjunction with its ongoing bus safety inspection program. The random roadside tests may be performed by either DOT or the Department of Environmental Conservation (DEC), which monitors air quality in New York State.

The individuals performing the tests must be certified by DMV, DOT or DEC. To receive this certification, the individuals must be trained in the use of the emissions testing equipment. The equipment itself must be certified by DEC. In addition, DEC is to conduct inspections of the licensed truck inspection facilities to determine whether their emissions testing equipment is

functioning properly and their emissions tests have been properly documented.

The same emissions test is performed in both the mandatory annual and random roadside testing program. In this test (called a “snap test”), the vehicle is turned on, its accelerator is repeatedly floored and released to clear its exhaust pipe, and a sensor (smoke meter) is inserted into the exhaust pipe to measure the opacity of the emissions.

The opacity is measured because smoke, which consists of minute carbon particles, is the most noxious part of diesel engine exhaust. When a diesel engine is operating properly, its emissions should not be visible (i.e., little or no opacity). However, when the engine is poorly or improperly maintained, the emissions can be thick and dark. To pass the emissions test, a vehicle manufactured in 1991 or later cannot have an opacity measure of more than 40 percent (higher measures are permitted for older vehicles).

The fine for a first-time failure in the emissions test is \$700. Subsequent violations are assessed a fine of \$1,300. The first-time fine may be reduced to \$150, and subsequent fines may be reduced to \$500, if the violation is corrected and the vehicle is re-tested within 30 days.

New York State began requiring emissions testing on heavy-duty diesel vehicles in 1999. The testing program was undertaken as a result of New York State legislation which amended the Environmental Conservation Law by adding a new Section 19-0320 entitled, “Emission Inspections of Heavy Duty Vehicles.” While DMV, DOT and DEC are required by law to implement certain parts of the testing program, no single State agency has overall responsibility for the program. Our audit focused on the particular

responsibilities of DEC, and did not address the responsibilities of DMV and DOT.

DEC’s responsibilities under the program include certifying smoke meters for emissions testing, inspecting licensed truck inspection facilities, performing roadside tests, and certifying DEC employees for roadside testing. DEC’s Bureau of Mobile Resources and Technology Development, located in its Division of Air Resources, is responsible for monitoring the State’s Heavy-Duty Vehicle Emissions Testing Program. DEC’s regional offices are responsible for performing the roadside tests. Both the Bureau and the regional offices also have other responsibilities.

At the time of our audit, DEC had certified seven different manufacturers’ models of smoke meters for use in emissions testing, and was responsible for inspecting more than 600 licensed truck inspection facilities. DEC’s Division of Air Resources does not track the number of roadside tests that its regional offices performs, but its records indicate that a total of 922 emissions violations were detected in the tests conducted between April 3, 2006 and December 29, 2007 (the most recent data available at the time of our audit), an average of about 44 violations a month.

DEC schedules roadside tests for certain days and certain areas. The tests are usually performed by Environmental Conservation Officers. The Environmental Conservation Officers observe the trucks as they drive through the areas, and flag down and test the trucks with smoky emissions. The Environmental Conservation Officers who are certified to perform the tests may also do so during routine patrols if they observe trucks with smoky emissions. At the time of our audit, DEC had 108 smoke meters, and 166 of its employees (mostly Environmental

Conservation Officers) were certified to use the smoke meters to perform emissions tests.

AUDIT FINDINGS AND RECOMMENDATIONS

Emissions Testing

If the emissions tests are to be effective, they must be performed in accordance with the required procedures by individuals who have been certified to perform the tests, and they must use appropriate pollutant-detecting technologies. We observed DEC's roadside testing practices and we accompanied DEC inspectors on visits to 18 licensed truck inspection facilities.

We found that DEC's emissions tests were performed in accordance with the required procedures and all 18 truck inspection facilities were equipped with an appropriate type of smoke meter (i.e., one that had been certified by DEC). In addition, when we reviewed the certification status of selected individuals at DEC and the truck inspection facilities, we found that they were certified to perform the tests.

However, when we met with officials at DOT to discuss their coordination with DEC in the emissions testing program, we found that technological advancements in diesel engines may have made the current testing procedures questionable on engines manufactured after 1996. DEC officials stated they had no indication this was this case, but we recommend DEC investigate the matter further and determine whether the current testing procedures are, in fact, appropriate for newer diesel engines. We also noted that the testing procedures need to be modified to include a practice that is used by DEC's inspectors to ensure that the smoke meters are working properly.

Test Procedures

The procedures for the snap test are codified in DEC's regulations (NYCRR Subpart 217-5) and must be followed whenever the test is performed. DEC adopted the procedures because they were the standard industry practice, as specified in the Society of Automotive Engineers J1667 Recommended Practices: *Snap Acceleration Smoke Test Procedure for Heavy-Duty Powered Vehicles*, issued in February 1996.

To determine whether these procedures are being followed by DEC when it performs its random roadside tests, we observed the roadside tests that were performed by two of DEC's nine regional offices (Albany and New York City) on seven days between April 16, 2008 and July 2, 2008. We observed a total of 11 tests performed by six different Environmental Conservation Officers and found that all 11 tests were performed in accordance with the required procedures.

In addition, when we accompanied DEC inspectors on visits to 18 licensed truck inspection facilities, we examined the smoke meters at the facilities to determine whether they were one of the seven models that had been certified by DEC. We found that all the smoke meters at the facilities were models that had been certified by DEC. We did not observe whether the facilities were following the required test procedures, because no vehicle tests were performed while we were at the facilities.

According to the test procedures in DEC's regulations, the smoke meters are to be calibrated before the emissions tests are performed. This is done to ensure that the readings obtained during the tests are accurate. Certain diagnostic tests can also be performed on the smoke meters to ensure that they are functioning properly. DEC's

inspectors perform these tests on the smoke meters at the truck inspection facilities to determine whether those meters are functioning properly. However, the inspection facilities are not required by DEC's regulations to perform these diagnostic tests. We recommend that the regulations be amended to require that these diagnostic tests be performed on a daily basis at least and documentation of the tests be retained.

DEC officials acknowledged that these diagnostic tests should be performed. They noted that the manufacturer's recommendations do not specify how often the tests should be performed. However, the officials stated that their inspectors will advise inspection facility representatives to perform the tests at the beginning of each day.

Certification of Individuals Performing Tests

The DEC employees who perform random roadside tests and the employees who inspect licensed truck inspection facilities must be certified in the use of a smoke meter. To receive this certification, they must be trained by an authorized representative of a smoke meter manufacturer and successfully operate a smoke meter during a field test. In addition, the training course must meet criteria specified by the Society of Automotive Engineers.

We reviewed DEC's employee certification process and found that it meets all the requirements. The employees are trained by two DEC employees who are authorized representatives of a smoke meter manufacturer (they repair and maintain the smoke meters used by DEC), the training materials meet the criteria specified by the Society of Automotive Engineers, and the employees are required to pass an appropriate field test.

We also selected a random sample of 30 of DEC's 166 certified employees and reviewed documentation relating to their certification process to determine whether the employees were appropriately certified before they began performing emissions tests. For example, we reviewed sign-in sheets for the two-day training course, test papers from the course, the results of field tests, and the certificate of completion issued by DEC.

We found that all 30 employees completed the two-day training course. However, the certificates of completion for two employees were not issued in a timely manner, as the employees completed the course in October 2007 and March 2008, respectively, but their certificates of completion were not issued until July 26, 2008, after we performed our audit test and brought the matter to the attention of DEC officials.

To ensure that the employees performing emissions tests can show they are certified, promptly issue their certificates of completion of training. DEC officials acknowledged the delays in issuing the certificates for the two employees and stated that the problem had been rectified.

The individuals who perform emissions tests at licensed truck inspection facilities must be certified by DMV. We did not examine DMV's certification process, but we did contact DMV to confirm the certification status of the 33 employees who were performing these tests at the 18 inspections facilities we visited. We were informed by DMV that all 33 employees were certified to perform the tests.

Effectiveness of Testing Process

We met with officials at DOT to discuss their coordination with DEC in the emissions testing program. DOT officials told us that,

while the snap test is a valid test for heavy-duty diesel engines manufactured before 1996, they questioned whether technological advancements have made the test ineffective for engines manufactured after 1996. They noted that the newer electronic engines are programmed to control exhaust emissions during rapid and repeated acceleration, as is done during the snap test, and as result, the emissions produced during the testing process may be less “smoky” than the engine’s actual highway emissions. They further noted that a prominent manufacturer of heavy-duty diesel engines has explicitly stated that the snap test is not a valid test on its engines.

If the snap test is not valid for engines manufactured after 1996, the State’s testing process could be significantly compromised, as vehicles that emit exhaust with unacceptably high levels of smoke during normal highway driving may not be detected by the tests.

DEC officials stated that the snap test is the most appropriate procedure for testing emissions. They said they had no indication the test was not effective for newer engines. Also, three of the four states we surveyed (Connecticut, Massachusetts and New Jersey, but not Pennsylvania) use a snap test to test emissions. However, in view of the conflicting opinions about the test’s effectiveness, we recommend DEC investigate the matter further and determine whether the current testing procedures are, in fact, appropriate for newer diesel engines.

In addition, during the course of our audit, we observed that one of the smoke meter models certified by DEC may not be reliable. This model (the ESP brand) can fail its diagnostic test (indicating that it is not functioning properly), yet the smoke meter will continue to perform emissions tests. As a result, if the diagnostic test is not performed before the

model is used, there is a possibility that its readings could be unreliable and vehicles could pass the test even though they had unacceptably high levels of smoke in their exhaust. At the station where we observed this happen, the DEC inspector immediately informed the station operator that he could not perform any more tests using that machine until he had it fixed and sent such documentation to DEC. We recommend DEC evaluate whether the ESP smoke meter should continue to be used in the emissions testing program.

Hardship Waivers

DEC was required by law to consider establishing a hardship waiver for fines on emission test failures. The waiver would exempt a vehicle from a fine if the cost of the repair that was needed to bring its engine into compliance with the emissions standard exceeded a certain level.

DEC established such a waiver. The waiver can be issued when repairs cost \$1,000 or more on vehicles weighing between 8,500 and 18,000 pounds; when repairs cost \$2,000 or more on vehicles weighing between 18,001 and 26,000 pounds; and when repairs cost \$4,000 or more on vehicles weighing more than 26,000 pounds. These amounts may be adjusted by DEC to account for increases in the Consumer Price Index.

We examined whether hardship waivers were being granted in accordance with DEC’s regulations. We found that no hardship waivers had been granted by DEC since the inception of the State’s Heavy-Duty Vehicle Emissions Testing Program and, according to DEC officials, no hardship waivers had been requested.

Recommendations

1. Amend the regulations to require licensed truck inspection facilities to perform diagnostic tests on their smoke meters at least once a day and retain documentation of the tests.

(DEC officials replied that they agree with the recommendation.)

2. Ensure that employees obtain their certificates of completion before he/she performs an emissions test.

(DEC officials replied they will ensure the recommendation is implemented.)

3. Contact the DOT officials and the diesel engine manufacturer that question the effectiveness of the snap test on newer diesel engines, evaluate their concerns, and determine whether the test is, in fact, appropriate for such engines. If the test is still appropriate, document its effectiveness. If the test is no longer appropriate, develop a new test for these engines.

(DEC officials replied to our draft report that they maintain the position that the snap test is valid for 1996 and newer heavy duty diesel engines. They added that DEC ECO's have test results which show the opacity test from model year 1996 and newer HDDV engines.)

Auditor's Comments: We would urge DEC to also contact DOT and the engine manufacturer to further consult on this matter as our recommendation indicates.

4. Determine whether the ESP smoke meter should continue to be used in the emissions testing program.

(DEC officials replied to our audit report they have taken action to implement this recommendation.)

DEC Oversight

Trucks registered in the New York City metropolitan area must have their emissions tested annually at private inspection facilities that are licensed by DMV. In addition, if a truck fails a roadside emissions test, it may be re-tested at one of these facilities to have its fine reduced. As part of its vehicle emissions program, DEC is authorized to conduct inspections of these facilities to determine whether their smoke meters are functioning properly and their emissions tests have been properly documented.

We found that DEC is conducting such inspections. However, we noted that only 304 of the 619 licensed facilities (49 percent) were inspected in the two years covered by our audit, and facilities that failed their inspections were not always re-inspected to ensure that they had corrected their problems. As a result, we question whether the inspection coverage provided by DEC is adequate.

DEC is not required to inspect each facility within a certain time frame or re-inspect facilities that fail their inspections. In addition, DEC has assigned only two employees to the inspection function on a part-time basis. However, if the facilities are not inspected within a reasonable time frame and promptly re-inspected after inspection failures, there is an increased risk their emissions tests may not be valid and the objectives of the State's emissions testing program may not be fully met.

We note that automobile emissions must be tested during the vehicle's annual DMV safety inspection, and the facilities

performing these tests must be inspected at least once a year by DMV to ensure that their tests are valid. We recommend DEC establish comparable inspection time frames for truck inspection facilities, develop appropriate time frames for re-inspections, and identify the staffing resources that are needed to meet these time frames.

We also found that DEC has done little to facilitate an evaluation of program effectiveness for the State's Heavy-Duty Vehicle Emissions Testing Program. DEC is not maintaining critical performance data for its own areas of program responsibility, and is not coordinating with DMV and DOT to ensure that such data is maintained for all areas of the program. In the absence of such data, it is difficult for State policymakers to determine whether the program is operating as effectively as intended or whether improvements are needed in certain areas of the program.

While DEC is not required to maintain such data and does not have overall responsibility for the program, it is the State agency with the primary responsibility for air quality and pollution control. Accordingly, it would be appropriate for DEC to initiate an interagency effort to compile and assess performance data in the various areas of program responsibility.

Licensed Truck Inspection Facilities

At the time of our audit, there were 619 licensed truck inspection facilities in New York State, most of which were located in the New York City metropolitan area. The facilities are licensed to perform the annual safety inspection required for trucks. The emissions test is performed as part of this inspection.

Trucks that pass the emissions test are to be issued an emissions sticker, which is to be

affixed to the truck's front windshield. The inspection facility is to retain a record of the test results for two years. The results are to be printed out from the smoke meter (all the certified models are computerized) and attached to a form which accounts for the emissions stickers issued by the facility (DMV Form 1074SD). These stickers are issued in bulk to the facilities by DMV and are sequentially numbered.

DEC is required by law to conduct inspections of these facilities. During an inspection, DEC is to test the facility's smoke meter to ensure that it is functioning properly and review the DMV Form 1074SD to ensure that the form is properly completed and all the emissions stickers issued to the facility are accounted for. The inspection results are to be written out on a prescribed form, and a copy of the inspection report is to be given to a certified employee of the facility.

DEC performs the inspections on an unannounced basis. There are no prescribed time frames, as each facility does not have to be inspected within a certain period of time. DEC officials told us they routinely schedule inspections for newly-licensed facilities, obtaining a bi-monthly download from DMV to identify the facilities. They also said they inspect facilities when fraud is suspected. For example, if a truck with a recently issued emissions sticker fails a roadside test, DEC officials said they schedule an inspection for the facility that issued the sticker. The officials provided no other criteria, and had no written procedures, for scheduling inspections.

According to DEC's records, between April 1, 2006 and March 27, 2008 (a period of nearly two years), inspections were only conducted at about half the licensed truck inspection facilities in the State (304 of 619). At this rate, it would take DEC four years to

inspect all the facilities at least once. We question whether a four-year inspection cycle provides sufficient assurance of compliance on the part of the facilities, especially in light of the fact that 40 facilities failed their inspections between April 1, 2006 and March 27, 2008.

The emissions from automobiles and light trucks must be tested during those vehicles' annual DMV safety inspections, and the facilities performing those tests must be inspected by DMV at least once a year to ensure that their tests are valid (the facilities located in the New York City metropolitan area must be inspected twice a year). We recommend DEC establish comparable inspection time frames for truck inspection facilities.

We note that DEC has assigned only two employees to the inspection function on a part-time basis. Inspections are the primary responsibility of one employee, but the other mainly performs other duties. Moreover, both have to spend a good deal of work time traveling when they perform inspections, since they work out of an Albany office and most of the truck inspection facilities are located in the New York City metropolitan area.

DEC officials believe they have made good use of these limited staffing resources. They note that, during the period April 1, 2006 through March 27, 2008, the two employees spent a total of 135 days in the field performing inspections, visiting an average of 2.25 facilities per day.

We acknowledge the dedication of these employees, but believe more facilities could be inspected if additional staff were assigned to the inspection function. We further note that less time would be lost to travel and travel costs would be lower if some of these

staff were based in the New York City metropolitan area. We recognize that DEC has many other important responsibilities in addition to the State's Heavy-Duty Vehicle Emissions Testing Program, but we question whether adequate inspection coverage can be provided when there are only two staff performing inspections on a part-time basis.

If a facility fails an inspection because of a faulty smoke meter, it is instructed to stop performing truck emissions tests until the machine is repaired and to mail or fax proof of the repair to DEC. The facility is also told that DEC will re-inspect the facility to ensure that the problem was corrected. However, there is no written requirement that a re-inspection be performed and no suggested time frame for the re-inspection.

According to DEC's records, between April 1, 2006 and March 27, 2008, a total of 40 truck inspection facilities failed their DEC inspections at least once (some failed more than once). We reviewed DEC's records for these facilities to determine whether they were re-inspected, and if so, when the re-inspections were performed. We found that only 14 of the 40 facilities (35 percent) were re-inspected, and the re-inspections were performed an average of 89 days after the failed inspections. Some of the facilities were re-inspected the next day, but others were not re-inspected for several months, and in one case, more than nine months (291 days).

If facilities are not promptly re-inspected after inspection failures, there is an increased risk their emissions tests may not be valid. While these facilities are required to mail or fax proof to DEC showing that their smoke meters have been repaired, such "proof" can be unreliable; as a result, a facility with a faulty smoke meter could continue to use that meter for emissions tests. We recommend DEC establish suggested time frames for re-

inspections and perform re-inspections in accordance with these time frames.

We also identified other opportunities for improvement in DEC's inspection practices, as follows:

- The DEC inspector is supposed to use a manufacturer's "test" filter to determine whether the inspection facility's smoke meter is functioning properly. However, the Department has only one set of test filters and they stay with the primary inspector. As a result, when the second employee does an inspection, he cannot fully test the functionality of the smoke meter. DEC officials believe it would not be cost-effective to purchase an additional set of test filters, but we believe the cost (about \$1,000) is not prohibitive.
- The DEC inspector is supposed to perform a calibration test on the inspection facility's smoke meter to ensure that the meter is functioning properly. However, when we reviewed a sample of 74 inspection reports on file at DEC, we found that 20 of the reports did not indicate whether the smoke meter passed its calibration test. However, if the test is not performed, there is less assurance the smoke meter is functioning properly.
- The form used for the inspection report does not have a space for stating whether the facility passed or failed the inspection. As a result, when a facility fails an inspection, it may not always be clear to facility officials that corrective actions must be taken. DEC officials agreed the form does not contain a statement of pass/fail

and stated they will consider revising the form.

- There are no written procedures describing how inspections should be performed. In the absence of such procedures, misunderstandings may arise and it is more difficult to train new inspectors.

In addition, while DEC coordinates with DMV in the two agencies' oversight of the licensed truck inspection facilities, there are areas where additional coordination would be beneficial. For example, while some of the facilities are licensed to inspect both trucks and automobiles, others (244 at the time of our audit) are licensed only to inspect trucks. Both DEC and DMV perform inspections at the facilities that inspect trucks and automobiles, but only DEC performs inspections at the truck-only facilities. The truck-only facilities are required to comply with various DMV licensing requirements, but their compliance with these requirements is not verified during DEC inspections, because DEC indicates it lacks the training and the authority to do so. We believe the interests of the State would be served if DEC's inspections could address any common areas.

To help ensure that the best possible use is made of the two agencies' combined inspection resources, we recommend DEC work with DMV to further coordinate their inspection efforts in ways that benefit the State. DEC officials stated that the two agencies have worked well together coordinating enforcement efforts, but acknowledged that there might be the potential for additional coordination.

Performance Data

In the State's Heavy-Duty Vehicle Emissions Testing Program, trucks and buses are tested to determine whether their exhaust emissions meet prescribed air quality standards. Trucks are tested by DMV-licensed inspection facilities and DEC roadside inspections, while buses are tested by DOT. Data summarizing the results of these emissions tests would be useful to State policymakers. Such data could also be of interest to the public, whose tax dollars finance the testing program. However, DEC does not compile such data for its own areas of program responsibility, and is not coordinating with DMV or DOT to ensure that such data is maintained for all areas of the program.

DEC compiles certain data about its inspections of licensed truck inspection facilities (e.g., the number of facilities inspected and the number of passed/failed inspections). However, DEC does not compile data about the facilities' inspection results (e.g., the number of tests performed or the number failed), and does not analyze the performance of the various smoke meters to determine whether some models are more reliable than others.

DEC also does not compile data showing the total number of roadside tests performed by its regional offices or the total number passed. There is a record of test failures, as data is maintained about the tickets that are issued for emissions violations. However, this record is not complete, as DEC officials indicated that some violation data may have been lost when the database was converted to a web-based application.

We note that all smoke meters are computerized and have enough memory to store the results of a certain number of emissions tests. The results of these tests

could be downloaded and transmitted to DEC, and a comprehensive database of emissions test results could be created.

DEC currently downloads test results on a limited basis, as its inspectors encourage the licensed truck inspection facilities to save their test results on their smoke meters, and the inspectors download any saved tests to their laptop computers during their visits. These tests are then uploaded to a DEC database. Similarly, any tests stored on DEC's smoke meters are downloaded when the smoke meters receive their annual calibration check. However, only a small portion of the available test data is captured through these informal efforts.

We recommend DEC establish a formal process for capturing the results of all truck emissions tests (for example, the entities performing the tests could be required to save the test results on their smoke meters, download the results to computers, and periodically transmit the results to DEC). We also recommend that DEC coordinate with DOT to establish a similar process for capturing the results of bus emissions tests, and coordinate with DMV and DOT in the analysis of the data on the two databases. We further recommend DEC coordinate with the other two agencies to produce public reports summarizing the activities and analyzing the effectiveness of the State's Heavy-Duty Vehicle Emissions Testing Program.

DEC officials noted that the program was designed to identify gross polluting trucks and buses, and affect their repair. They stated this is occurring; consequently, they believe the purpose of the program is being met.

We acknowledge the fact that emissions tests are being performed on trucks and buses, as was intended. However, in the absence of appropriate performance data about these

tests, it is difficult for State policymakers to determine whether the program is operating as effectively and efficiently as intended or whether improvements are needed in certain areas of the program.

Recommendations

5. Develop appropriate time frames for the inspections of licensed truck inspection facilities, and perform the inspections in accordance with these time frames.

(DEC officials replied to our audit report a defined time frame for inspections would not be appropriate given DEC's limited resources and its many competing priorities.)

Auditor's Comments: We understand that resources are limited by fiscal realities. However, less than half of the licensed truck inspection facilities were visited during a two-year period. If inspections cannot all be accomplished on a set time frame, we urge DEC to consider limits for how long any particular station can go uninspected.

6. Identify the staffing resources that would be needed to inspect all licensed truck inspection facilities within a reasonable period of time, and develop a plan for obtaining those resources. To maximize the resources, determine the extent to which the inspections could be performed by staff who are based in the areas of the facilities.

(DEC officials replied to our audit report that, at this time, it is not feasible to develop a budget and staffing levels for a defined inspection timeframe. They added that at some staffing level it would be appropriate to assign staff to other

regional offices to reduce travel time and expense.)

7. Establish suggested time frames for the re-inspections of facilities that fail their inspections, and perform re-inspections in accordance with these time frames.

(DEC officials replied to our audit report that they disagree with the recommendation because a reinspection is not always necessary. They added the most common reason for a station to fail is a malfunctioning smoke meter. In those cases, the station cannot reopen until they document the meter was repaired. They added that verification can also be accomplished by a visit by a DEC inspector when there are problems with receipt of confirmation that a major repair was made. The Department should also consider what steps need to be taken when failures other than smoke meters are noted upon initial inspections.)

8. Ensure that all inspectors are equipped with a set of test filters and equipment for the calibration test when they are sent on inspections.

(DEC replied to our draft report that one set of filters is adequate for the two employers performing inspections. However, if additional staff is assigned, they will ensure they are appropriately equipped.)

9. Modify the inspection report format to provide space for a clear pass/fail statement.

10. Develop written procedures describing how inspections should be performed and monitor the inspections to determine whether they are being performed in accordance with these procedures.

(DEC officials replied to our draft report they agree with Recommendations 9 and 10 and will take corrective action.)

11. Work with DMV to further coordinate DEC's and DMV's emissions testing inspection efforts in ways that benefit New York State.

(DEC officials replied to our draft report that they agree with the recommendation and continue to work with NYSDMV. However, DEC does not have the authority or training to enforce DMV regulation and can merely pass on their observations to DMV.)

Auditor's Comments: We believe that DMV officials can train DEC officials to a level which allows them to check certain conditions. In addition, they can explore making DEC agents for DMV for these inspection facilities.

12. Facilitate an evaluation of program effectiveness for the State's Heavy-Duty Vehicle Emissions Testing Program by:

- establishing a process for capturing the results of all truck emissions tests and creating a database for the test results;
- coordinating with DOT to establish a similar process for capturing the results of bus emissions tests;
- coordinating with DMV and DOT in the analysis of the data on the two databases; and
- coordinating with DMV and DOT to produce public reports summarizing the activities and analyzing the effectiveness of the program.

(DEC officials replied to our draft report that they are meeting their responsibilities under the program. They added that

increased coordination with DOT, including collection of its data, could be beneficial in the evaluation of the program and they will consider it in context with the fiscal constraints of DEC. They added that they will not seek further coordination with DMV. Regarding changes to modernize the collection of data, DEC officials indicate electronic transmission of information would be overly burdensome to the stations.

AUDIT SCOPE AND METHODOLOGY

We audited DEC's implementation of its responsibilities under New York State's Heavy-Duty Vehicle Emissions Testing Program for the period April 1, 2006 through July 21, 2008. In particular, we audited DEC's practices for performing emissions tests, certifying its employees to perform such tests, inspecting licensed truck inspection facilities, and issuing hardship waivers.

To accomplish our objective, we met with DEC officials to confirm and enhance our understanding of their practices for performing the activities we audited. In addition, we interviewed appropriate DMV and DOT staff to discuss their coordination with DEC in the emissions testing program. We also reviewed DEC records; reviewed applicable laws, rules and regulations; and observed selected roadside emissions tests performed by DEC in two of its nine regions. Any issues relating to those two entities that we encountered while performing our audit were discussed informally with them.

We randomly selected a sample of 30 of the 166 DEC certified inspectors and reviewed documents supporting their attendance at the certification training course. We also reviewed a judgmental sample of 74 inspection reports, selecting a mix of failed and passed inspections. We also obtained a

download from DMV of all its licensed truck inspection facilities and compared the download to DEC's information to determine whether DEC's list was complete.

We visited 18 judgmentally selected truck inspection facilities between June 11, 2008 and June 25, 2008. We accompanied DEC inspectors and observed the inspection of the facilities. We confirmed with DMV that the 33 inspectors at these facilities were certified to perform emissions tests on trucks. Our sample consisted of six facilities that had previously failed their DEC inspection and 12 that had not been inspected during the period April 1, 2006 through March 27, 2008.

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

In addition to being the State Auditor, the Comptroller performs certain other constitutionally and statutorily mandated duties as the chief fiscal officer of New York State. These include operating the State's accounting system; preparing the State's financial statements; and approving State contracts, refunds, and other payments. In addition, the Comptroller appoints members to certain boards, commissions and public authorities, some of whom have minority voting rights. These duties may be considered management functions for purposes of evaluating organizational independence under generally accepted government auditing standards. In our opinion, these functions do not affect our

ability to conduct independent audits of program performance.

AUTHORITY

The audit was performed pursuant to the State Comptroller's authority as set forth in Article V, Section 1 of the State Constitution and Article II, Section 8 of the State Finance Law.

REPORTING REQUIREMENTS

A draft copy of this report was provided to DEC officials for their review and comment. Their comments were considered in preparing this final report, and are included in Appendix A. State Comptroller's comments to their response are also attached at the end of this report.

Within 90 days of the final release of this report, as required by Section 170 of the Executive Law, the Commissioner of the Department of Environmental Conservation shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons why.

CONTRIBUTORS TO THE REPORT

Major contributors to this report include Carmen Maldonado, Gerald Tysiak, Anthony Carbonelli, Joe Smith, Peter Schmidt, Deb Spaulding, Michele Turmel, Rebecca Vaughn, Anne Marie Miller, and Dana Newhouse.

APPENDIX A – AGENCY COMMENTS



DAVID A. PATERSON
GOVERNOR

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

ALEXANDER B. GRANNIS
COMMISSIONER

OCT 22 2009

Ms. Carmen Maldonado
Audit Director
Office of the State Comptroller
Division State Services
State Audit Bureau
123 Williams Street, 21st Floor
New York, New York 10038

Dear Ms. Maldonado:

DEC has reviewed the Office of the State Comptroller's draft report 2008-S-65 entitled "Pollution Testing on Exhaust Emissions From Heavy-Duty Vehicles" dated July 13, 2009. Enclosed please find DEC's response to the draft report.

Thank you for the opportunity to respond to the draft report. If you have any questions regarding DEC's response, please contact Tom Kulzer or Ronald Lassonde in DEC's Office of Internal Audit and Investigation at (518) 402-9147.

Sincerely,

A handwritten signature in black ink, appearing to read "A. Grannis".

Alexander B. Grannis

Enclosure

c: T. Lukacs, DOB
T. Kulzer
R. Lassonde

The New York State Department of Environmental Conservation's (DEC) response to the Office of the State Comptroller's (OSC) draft report 2008-S-65, "*Pollution Testing On Exhaust Emissions From Heavy-Duty Vehicles*" is presented below and broken into three sections.

- General Program Comments
- Specific Comments
- Response to Recommendations

General Program Comments

DEC has reviewed the OSC draft report 2008-S-65 in connection with OSC's audit of DEC's Heavy-Duty Truck Exhaust Emissions Program. Section 19-0320 of the New York State Environmental Conservation Law (ECL) established the Heavy Duty Diesel Vehicle Inspection & Maintenance (HDDVI&M) program. Pursuant to ECL19-0320, 6NYCRR Subpart 217-5 was developed and implemented by DEC in conjunction with the Department of Transportation (DOT) and the Department of Motor Vehicles (DMV). That regulation has served as the structural basis for both the HDDVI&M annual and roadside programs since it was promulgated in 1999. In addition to direct implementation of the HDDVI&M program, DEC Division of Air Resources (DAR) staff performs smoke meter certification, training, and meter maintenance for the roadside enforcement program. DEC believes the HDDVI&M program is a successful program that has reduced the number of gross emitting heavy duty vehicles on New York's highways while using limited resources (one field staff working on an almost full-time basis on the program, one field staff working on a part-time basis on the program, and one other central office staff working on a part-time basis on the program) from the DAR. During this time of fiscal constraint and increased state mandates, we are looking for efficiencies in the utilization of current staff resources in the HDDVI&M program which has required a degree of flexibility in staff assignments. The three employees who work on the HDDVI&M program also work to varying degrees in other air quality regulatory programs.

While DEC believes that this is an important program, as evidenced by our application of it through targeted Environmental Justice sweeps, it must be implemented within the context of our overall air quality improvement mission. The program is not a part of our federally enforceable State Implementation Plan (SIP) and therefore is assigned a lower priority.

Specific Comments

During the conduct of this review, OSC provided DEC with a Discussion Document, to which DEC responded. As noted in some of the specific responses below, it does not appear that all of DEC's responses and information provided in the "Response to OSC Discussion Document" have been considered in the development of the OSC "Draft Audit Report." Overall, we found the OSC report to contain a few partially incorrect statements regarding DEC's program implementation activities and the program itself. The following are responses to various statements and conclusions in the body of the report, followed by responses to the specific recommendations of the report.

1. **Page #4 of 14, Background, Column #1, Paragraph #3:**

"The fine for a first-time failure in the emission test is \$700. Subsequent violations are assessed a fine of \$1,300. The first-time fine may be reduced to \$150, and subsequent fines may be reduced to \$500, if the violation is corrected and the vehicle is re-tested within 30 days."

Department Response: This paragraph is correct in reference to fines for violations other than a missing or invalid annual emissions inspection certificate required for a heavy duty diesel vehicle (HDDV). For those violations, the first-time fine may be reduced to \$350, and subsequent fines may be reduced to \$750, if the violation is corrected within 30 days.

*
Comment
1

2. **Page #4 of 14, Background, Column #1, Paragraph #4:**

"New York State began requiring emissions testing on heavy duty diesel vehicles in 1999. The testing program was implemented as part of the State's efforts to comply with provisions of the Federal Clean Air Act."

Department Response: This emissions testing program was undertaken as a result of New York State legislation which amended the ECL by adding a new section 19-0320 entitled "Emissions Inspections of Heavy Duty Vehicles." The emissions testing program was not implemented as part of the State's efforts to comply with any specific provisions of the Federal Clean Air Act and is not included in the SIP as a federally enforceable component.

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Comment
2

3. **Page #11 of 14, Licensed Truck Inspection Facilities, Column #1, last paragraph:**

"The truck-only facilities are required to comply with various DMV licensing requirements, but their compliance with these requirements is not verified during (DEC) inspections, because DEC's inspections do not address these areas. We believe the interests of the State would be served if DEC's inspections did address any common areas."

Department Response: DEC does not have the authority or training to address DMV licensing requirements.

*
Comment
2

Response to Recommendations

The following presents DEC's response to each recommendation contained in the draft report.

Recommendation 1: Amend the regulations to require licensed truck inspection facilities to perform diagnostic tests on their smoke meters at least once a day and retain documentation of the tests.

Response to Recommendation 1: DEC agrees with the recommendation and plans to revise Subpart 217-5 in a future rulemaking to reflect the recommendation.

Recommendation 2: Ensure that employees obtain their certificates of completion before he/she performs an emissions test.

Response to Recommendation 2: DEC will ensure that certified employees receive their certificates of completion prior to their performance of an emissions (opacity) test. We had addressed this OSC concern previously during the audit process as noted on pages 3 and 6 in DEC's "Response to OSC Discussion Document." We also note that the event that precipitated this recommendation was an isolated incident that was promptly remedied.

Recommendation 3: Contact the DOT officials and the diesel engine manufacturer that question the effectiveness of the snap test on newer diesel engines, evaluate their concerns, and determine whether the test is, in fact, appropriate for such engines. If the test is still appropriate, document its effectiveness. If the test is no longer appropriate, develop a new test for these engines.

Response to Recommendation 3: DEC has previously noted its response to this item on pages 1 and 6 in the DEC's "Response to OSC Discussion Document." However, DEC has again investigated this concern and, based on our technical analysis, the SAE J1667 test procedure is acceptable and valid for 1996 and newer heavy duty diesel engines. Further, no diesel engine manufacturer has expressed concerns to DEC that the snap test is not appropriate for newer engines. Also, DEC has opacity test data from roadside testing conducted by DEC's Environmental Conservation Officers (ECOs) that document exceedances of the Subpart 217-5 standard for opacity from model year 1996 and newer HDDV engines (40% opacity standard). DEC worked with DOT in the development of this regulation, including adoption of the test procedure. DOT has not contacted the DEC to suggest that the SAE J-1667 test procedure is inappropriate for model year 1996 and newer heavy duty vehicle engines.

Recommendation 4: Determine whether the ESP smoke meter should continue to be used in the emissions testing program.

Response to Recommendation 4: DEC has determined that the meter should continue to be used in the program. It has been certified by the manufacturer as meeting the requirements of Subpart 217-5 and SAE J-1667 compliant. Regarding the linearity concern, the SAE J-1667 procedure *recommends* but does not require periodic linearity checks. Consequently, diagnostic linearity tests on a brand of smoke meter are not required to be performed per the meter manufacturer according to a schedule while maintaining compliance with SAE J-1667. When an ODEIS inspection is conducted, staff performs the linearity test. In those cases where there is failed linearity, DEC staff

requires the station to have the meter repaired and not perform HDDV emission inspections until the meter is repaired. All approved smoke meters have been certified by the manufacturers as SAE J-1667 compliant. For regulatory clarification, DEC is considering whether to include linearity testing of the meter on a daily basis by the ODEIS inspector in a future rulemaking.

Recommendation 5: Develop appropriate time frames for the inspections of licensed truck inspection facilities, and perform the inspections in accordance with these time frames.

Response to Recommendation 5: As we indicated in our previous response on p. 7 of the "Response to OSC Discussion Document," it is the objective of DEC to provide maximum possible coverage of station audits given the resource availability and competing agency priorities. DEC prioritizes the inspections by initially targeting facilities that we suspect may be violating the Subpart 217-5 emission inspection requirements and newly licensed facilities. Secondary targets are those emission inspection facilities that have not been recently visited. DEC also employs a system of inspecting facilities that are located within the same geographical area to maximize efficiency. For instance, when we visit an emission inspection facility that we suspect is a potential violator, we will attempt to visit facilities that have not been recently inspected within the same geographical area. While it may be desirable to visit each station at least once each year, no such inspection frequency is required, or demonstrated to be necessary. Under the current fiscal climate faced by the State and DEC a continuous evaluation of the deployment of resources is more important than ever. In assigning staff the DEC must consider the myriad priorities we face. In light of these competing priorities we believe that a defined time frame for inspections would not be appropriate.

Recommendation 6: Identify the staffing resources that would be needed to inspect all licensed truck inspection facilities within a reasonable period of time, and develop a plan for obtaining those resources. To maximize the resources, determine the extent to which the inspections could be performed by staff that are based in the areas of the facilities.

Response to Recommendation 6: DEC has determined that developing a budget and staffing level for a defined inspection timeframe is not feasible at this time given the state's fiscal constraints and competing agency priorities. There is no question that additional resources applied to the program would result in an increase in the number and frequency of station inspections. At some level of staffing, it would be appropriate to assign some portion of the staff to the Regional office in regions 1, 2 and 3 to reduce travel time and expense. DEC must, however, manage its resources to meet a number of competing priorities. (See also response to Recommendation 5)

Recommendation 7: Establish suggested time frames for the re-inspections of facilities that fail their inspections, and perform re-inspections in accordance with these time frames.

Response to Recommendation 7: DEC disagrees with the recommendation. As noted in our previous response on page 2 of the "Response to OSC Discussion Document," the most common reason for failure is a malfunctioning smoke meter. When DEC's inspector determines a station is not in compliance because of a malfunctioning smoke meter the inspector requires the facility to suspend performing diesel emissions inspections until the meter is repaired. DEC allows a station to resume diesel emissions inspection only after assuring the meter is repaired. One such method of assurance is a review by DEC's inspector of documentation that a repair was performed by a qualified person. These procedures are similar to those used in the DEC's NYTEST field inspections. Another method of verification is a visit by a DEC inspector, which would typically be done in cases such as: non-receipt of proof that a repair was made; the repair documentation submitted does not indicate a proper repair; or the existence of other violations. A reinspection of failed stations is not always necessary to assure program integrity.

Recommendation 8: Ensure that all inspectors are equipped with a set of test filters and equipment for the calibration test when they are sent on inspections.

Response to Recommendation 8: Since there are only two inspectors who perform audits of inspection stations and those inspectors do not usually perform their inspections at the same time due to other program duties, we have determined that one set of filters is adequate. The two staff have shared the filters when necessary. If DEC assigns additional staff to the program, we will ensure that they are appropriately equipped.

Recommendation 9: Modify the inspection report format to provide space for a clear pass/fail statement.

Response to Recommendation 9: DEC agrees with the recommendation to revise the inspection log form to indicate whether the station failed or passed the audit at the time of inspection.

Recommendation 10: Develop written procedures describing how inspections should be performed and monitor the inspections to determine whether they are being performed in accordance with these procedures.

Response to Recommendation 10: DEC agrees with the recommendation and will supplement the audit log sheet that DEC staff complete when conducting a station audit with a written test procedure.

Recommendation 11: Work with DMV to further coordinate DEC's and DMV's emissions testing inspection efforts in ways that benefit New York State.

Response to Recommendation 11: DEC agrees with the recommendation that we continue to work with the NYSDMV on this effort. The two agencies have worked well together coordinating enforcement efforts of inspection stations when necessary. DEC staff have also increased efforts to observe and report potential DMV violations at inspection facilities to the DMV when conducting inspections including missing DMV required inspection signage. However, DEC does not have the authority or training to enforce DMV regulations and we can merely pass on our observations to the DMV.

Recommendation 12: Facilitate an evaluation of program effectiveness for the State's Heavy-Duty Vehicle Emissions Testing Program by:

- establishing a process for capturing the results of all truck emissions tests and creating a database for the test results;
- coordinating with DOT to establish a similar process for capturing the results of bus emissions tests;
- coordinating with DMV and DOT in the analysis of the data on the two databases; and
- coordinating with DMV and DOT to produce public reports summarizing the activities and analyzing the effectiveness of the program.

Response to Recommendation 12: As stated in the OSC draft report, p. 4 of 14:

"DEC's responsibilities under the program include certifying smoke meters for emissions testing, inspecting licensed truck inspection facilities, performing roadside tests, and certifying DEC employees for roadside testing."

DEC believes that we have met our responsibilities as noted above. We acknowledge, however that increased coordination with DOT, including collection of its data, could be beneficial in evaluation of the program, and we will consider this aspect, along with the need for additional reporting, within the context of the fiscal constraints faced by the DEC, as previously identified. We don't believe we need to further coordinate with DMV on the analysis of data for this emissions test program because inspection stations are not required to provide their opacity data on a routine basis to the DEC. Further, DMV's primary role in the HDDVI&M program has been the licensing of heavy duty vehicle emission inspectors and some interaction with DEC on station enforcement efforts.

As previously noted on p. 8 of the "Response to OSC Discussion Document", at the time the Subpart 217-5 regulation was promulgated, DEC decided not to require electronic transmission of inspection data from the stations because it would have been overly burdensome to the stations. Subpart 217-5 does not require licensed truck inspection facilities to report or transmit their inspection data to DEC. Stations are required to maintain written records and keep copies of emission test results. We find this to be an effective and efficient use of staff and station resources. Records are reviewed by DEC when the facility is inspected.

The HDDVI&M program was designed to identify gross polluting HDDVs and require their repair. Vehicles that exceed the regulatory limits are subject to penalties that are reduced if the vehicle is repaired within a specified period of time and then passes the test as per the statute. In order to receive this penalty reduction, documentation must be provided to the Court handling the violation. DEC also keeps records regarding ODEIS inspections as well as maintaining an electronic copy of the inspection reports.

In conclusion, we view the HDDVI&M program as a successful and effective program that has reduced the number of gross emitting heavy duty vehicles on New York's highways while using limited resources.

APPENDIX B - STATE COMPTROLLER COMMENTS

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| <p>1. We did not include this background because the report does not include fines for a missing or an invalid annual emission inspection certificate.</p> | <p>2. The report was revised to reflect information provided in DEC's response.</p> |
|--|---|