

Smoke Opacity

(For Illustration Purposes Only)



40%



55%



70%



100%

Maryland's Diesel Vehicle Emissions Control Program

"On the road to clean air!"

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Maryland Department of the Environment
Air & Radiation Management Administration
Mobile Sources Control Program

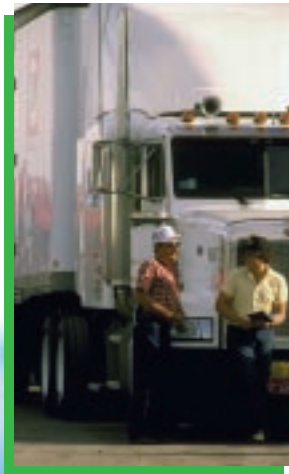
About the Program

On July 10, 2000 the Maryland State Police (MSP) began testing heavy-duty diesel vehicles with a gross vehicle or gross combination weight rating of over 10,000 pounds for exhaust smoke opacity. Opacity is a measurement of the ability of a substance to inhibit or block the passage of light. Smoke opacity, measured as a percent, is also representative of the amount of particulate matter (often referred to as soot) present in diesel exhaust. Vehicles covered under this program must meet certain smoke opacity standards.

The testing is conducted by teams from the Commercial Vehicle Enforcement Division (CVED) of the Maryland State Police and Maryland Transportation Authority Police (MdTAP). One police officer and one Emissions Inspector combine to form each team. These teams have the authority to administer a smoke test to vehicles registered within Maryland or to vehicles registered outside of Maryland (foreign registered vehicles). Vehicles can be pulled over and administered a smoke test at weigh and inspection stations or along any safe road-side location.

Why Do We Need Such a Program?

Controlling particulate matter remains an important health and aesthetic concern. Due to the small size of particulate matter, it is easily inhaled into the lungs where it may damage tissue. These particles are also known to carry harmful chemicals into the lungs where they can exacerbate conditions such as asthma and emphysema.



Some of the chemicals present in diesel exhaust, such as benzo[a]pyrene, have also been determined to be carcinogenic. Soiling and discoloration of buildings and any other surfaces exposed to deposits of soot is another concern.

Since 1984 most Marylanders have had their cars tested regularly for excessive emissions whereas diesel trucks and buses operating in and driving through Maryland have not had to be tested.



Smoke Opacity Standards

Heavy-duty diesel vehicles are prohibited from exceeding the following smoke opacity levels:

70% for model year engines 1973 and older.

55% for model year engines 1974 - 1990.

40% for model year engines 1991 and newer.

These opacity standards are supported by the Environmental Protection Agency, California Air Resources Board, Society of Automotive Engineers (SAE), Maryland Motor Truck Association, and are also used in other States.

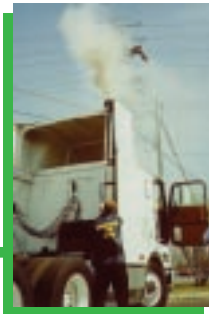
The Smoke Test

The smoke test currently in use by the Maryland State Police is the SAEJ1667 procedure developed by the Society of Automotive Engineers. The smoke test takes from five to ten minutes to complete.

A smoke opacity detector (smoke meter) is attached to the end of the vehicle's exhaust and the inspector directs the vehicle operator through the procedure. With the vehicle in neutral or park and safely secured from moving, the operator is asked if the vehicle's engine speed governor is in proper operating condition. In order to ensure a properly functioning governor, the operator may be asked to slowly depress the accelerator pedal until the engine reaches its maximum governed RPM. This initial check is intended to avoid damaging the engine by ensuring that the governor is working properly. The operator is then asked to rapidly depress the accelerator until the engine reaches its maximum governed RPM and then let up on the accelerator pedal when instructed to do so.

This cycle is repeated six times. The first three cycles are designed to remove any loose soot in the exhaust pipe. An average of the final three readings provides the mean smoke opacity of the vehicle's exhaust.

Smoke test being performed using an approved smoke meter on a truck modified to emit excessive smoke.



Penalties

If a vehicle's exhaust exceeds the applicable smoke opacity standard, the driver will either be given a Safety Equipment Repair Order (SERO) (for Maryland registered vehicles only) that requires the vehicle to be repaired and retested, or a Maryland Driver/Vehicle Inspection Report (MDVIR) (for foreign registered vehicles only) requiring the vehicle owner to demonstrate that the vehicle has been brought into compliance with the applicable smoke opacity standard. Either way, the SERO or MDVIR is issued to the vehicle's registered owner (the driver is responsible for forwarding the SERO or MDVIR to the registered owner) and it is up to the owner to ensure that the vehicle is brought into compliance.

If the owner of a Maryland registered vehicle that fails the smoke test fails to have the vehicle retested and submit the certified SERO copies to the appropriate agencies within 30 days of the issuance of that SERO, the owner will have that vehicle's registration suspended and will be subject to receiving a fine of up to \$1,000. The vehicle registration may be reinstated if the vehicle passes a re-test given by a Maryland Certified Diesel Emissions Retester or by one of the Maryland State Police or Maryland Transportation Authority Police Emissions Inspectors.

If the owner of a foreign registered vehicle that fails the smoke test fails to certify that the vehicle has been brought into compliance within 30 days of the issuance of the MDVIR, the owner will be reported to the Federal Motor Carrier Safety Administration as being in violation of Maryland State law under 49 CFR §392.2 and will be subject to receiving a fine of up to \$1,000.

Getting a Vehicle Retested

In order for a SERO to be certified, and thereby demonstrate that a vehicle has been repaired to meet the smoke opacity standards, the vehicle must be retested by an Emissions Inspector (who is employed by the MSP or the MdTAP) or a Maryland Certified Diesel Emissions Retester (CDER). The retest procedure is the previously mentioned SAE J1667 (the same test procedure used during the initial smoke opacity test).

Emissions Inspectors may be found at selected weigh and inspection stations located throughout the State. An Emissions Inspector from one of the State Police smoke opacity testing teams may also retest vehicles and certify SEROs issued for smoke opacity standards violations.

Maryland Certified Diesel Emissions Retesters may be found at certain diesel vehicle repair facilities and are able to both conduct retests and certify those SERO's issued only for smoke opacity standards violations (SEROs issued for other violations may not be certified by a CDER).

Becoming a Certified Retester

Individuals who wish to become a Maryland Certified Diesel Emissions Retester must pass a written and functional examination and must be employed at a diesel vehicle repair facility that has the appropriate smoke testing equipment. For more information see the web page (address provided on the next page) or contact the Maryland Department of the Environment.

Ways to Prevent Excessive Emissions

Proper maintenance of your vehicle can prevent excessive emissions. A maintenance schedule that includes changing air filters, ensuring that the fuel injector timing is correctly set, setting the smoke-limiter to the proper adjustment, and a thorough check for oil leaks through the turbocharger oil seal will all help to keep smoke emissions at a minimum. Careful monitoring of the engine oil level can also help to identify potential problems such as worn piston rings and cylinder liners, stuck piston rings, or a bad turbocharger oil seal. Worn or dirty fuel injectors can cause significant increases in hydrocarbon and particulate matter emissions, along with increased fuel consumption.

For more information about Maryland's Diesel Vehicle Emissions Control Program or to become a Maryland Certified Diesel Emissions Retester, please contact:



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www.mde.state.md.us/Programs/AirPrograms/Mobile_Sources/

To report smoking vehicles call:

1-866-677-2833