UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
AIR AND RADIATION

GUIDANCE TO STATES ON IN-USE SMOKE TEST PROCEDURE FOR HIGHWAY HEAVY-DUTY DIESEL VEHICLES

As part of its ongoing efforts to provide assistance to States regarding in-use testing programs and to promote uniformity with respect to smoke test procedures, the Environmental Protection Agency (EPA) is recommending the use of the SAE J1667 procedure for state-operated in-use testing programs for highway heavy-duty diesel vehicles (HDDV). This guidance document provides a technical recommendation that States can follow in the implementation of their in-use emission testing programs. Because highway HDDV travel across the country, EPA believes that the adoption of a common smoke test procedure by States would help address the concerns brought up by the trucking industry and heavy-duty engine manufacturers by promoting consistency between smoke measurements in state-operated in-use testing programs for HDDV.

The procedure SAE J1667, entitled *Snap Acceleration Smoke Test Procedure for Heavy-Duty Diesel Vehicles,* was developed between 1992 and 1996 by a committee of members representing the trucking industry, heavy-duty engine manufacturers, test equipment manufacturers, and state and federal regulators. SAE J1667, issued in February, 1996, recommends a smoke test method, instrument specifications and correction factors for ambient conditions, including altitude compensation. The SAE J1667 is a snap acceleration test under idle conditions, using engine inertia for loading, and is specifically designed for identifying excessive smoke emitters. Since it is a non-moving vehicle test, the SAE J1667 can be conducted along the roadside or in a test facility.

The Clean Air Act Amendments of 1990 do not require states to implement in-use testing programs for highway HDDV. However, as a means to address concerns about in-use emissions from HDDV, many states today are implementing in-use smoke testing programs. Excessive emission of black smoke from HDDV is one of the most common complaints received from the public by state and local air

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quality agencies. Since the excessive emission of black smoke is often an indicator that an engine is in need of maintenance and/or repair and gaseous/particulate emission levels may also be high, states are focusing on black smoke opacity measurements for their in-use testing programs.

EPA is aware of several states which are in various phases of considering, or have already adopted, some form of an in-use smoke emission test for HDDV. These states include: Arizona, California, Colorado, Connecticut, Illinois, Maryland, Massachusetts, Nevada, New Jersey, New York, Ohio, Utah and Washington. Even though most of the state-operated in-use programs include smoke measurements, not all programs use the same test procedure for in-use smoke evaluations. These inconsistencies have created major concerns for the trucking industry, since trucks that travel across the country may be subject to inspections in different states with different test procedures. By using similar test procedures, states would have the advantage of being able to compare test results. Therefore, testing and administrative costs could be minimized. Furthermore, any environmental benefits that could be derived from the implementation of these programs would be much easier to quantify in regions that use the same test methods.

For the reasons cited above, EPA believes that uniformity in smoke test procedures is appropriate and is recommending the use of the SAE J1667 procedure for smoke evaluations in state-operated in-use testing programs. The SAE J1667 test is a peer-reviewed procedure that has been developed by a joint government-industry committee to provide a reliable method for in-use smoke measurement. The procedure is currently being used by several states and is viewed favorably by the trucking industry and highway heavy-duty engine manufacturers.

Margo T. Oge, Director
Office of Mobile Sources

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