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MAY 04 2011

OFFICE OF  
AIR AND RADIATION

**Memorandum**

**Subject:** Improving I/M Performance and OBD Monitor Readiness

**From:** Leila Cook, Manager   
State Measures and Conformity Group  
Office of Transportation and Air Quality

**To:** Air Program Managers  
Regions I-X

This memorandum transmits an updated list of vehicles that exhibit issues related to OBD monitor readiness (formerly known as Appendix D<sup>1</sup>) and makes suggestions for how Inspection/Maintenance (I/M) programs can improve operational performance by addressing monitor readiness. I suggest this list be sent to all states in your Region that have I/M programs. This list will also be published on OTAQ's website and the OBD Clearinghouse. The OBD Clearinghouse has all of the referenced technical service bulletins.

Over the past few years, the Office of Transportation and Air Quality has worked with states and its contractor, ERG, to gather data on OBD inspections and investigate OBD monitor readiness problems. We have analyzed tens of millions of data records, identified potential problems, and worked with vehicle manufacturers to address these problems. The result is that we have prepared an updated list of vehicles that have OBD monitor readiness issues.

We now have well over 10 years of experience conducting OBD inspections and it is worthwhile to consider best practices to use in conducting these tests. In 2001, when we published guidance for states on conducting OBD tests, we recommended that states test older vehicles (model years 1996-2000) even if one or two monitors were not ready, and test newer vehicles (model years 2001 and newer) if one monitor was not ready (see § 51.357(a)(5) of the CFR). In light of our experience over the past decade, we would now suggest a more refined approach to monitor readiness. We are concerned about this because allowing vehicles to be tested without the monitors ready means there is some loss in emission reduction benefit for the program since some unready monitors may mask emission related problems with the vehicle. With this in mind, we have the following recommendations for I/M programs to consider when it comes to the general population of vehicles (i.e., not those listed on the attached readiness exception list):

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<sup>1</sup> Appendix D was part of the June 2001 guidance document, "Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program" (EPA420-R-01-015) available online at <http://www.epa.gov/otaq/regs/im/obd/r01015.pdf>

1. Allow only an evaporative system monitor to be not ready.  
The evaporative system monitor is the most difficult one to set because it often requires the vehicle to be operated within a specific temperature regime. Since the weather doesn't always cooperate with this requirement, getting this monitor to set can be time consuming. Thus, we recommend that states require all monitors to be set except for the evaporative system monitor.
2. Never allow the catalyst or O<sub>2</sub> sensor monitors to be not ready.  
Rather than a blanket exemption allowing any monitor (or two for older vehicles) to be not ready, limit the monitors that are allowed to be not ready. For example, the catalyst and the oxygen sensor monitors should always be required to be ready.
3. Never allow monitors previously ready or those that have exhibited a MIL on to be not ready on retest.  
All of the monitors that were ready on the initial test should be capable of setting and required to be ready upon retest. An exception might be for the evaporative monitor, as discussed above, assuming there was no evaporative system related failure indicated.
4. Consider providing motorists with data loggers that indicate when monitors are ready.  
When a motorist presents for an inspection with monitors unready, an inexpensive data logger could be installed in the OBD port that would provide the motorist with a visual indicator of when the monitors are all ready and the vehicle can be returned to the station for a retest. This, combined with any information available on appropriate driving cycles to exercise the monitors, will reduce the need for multiple trips. This option can be used in conjunction with any of the options described above.

We recommend that states employ these options to improve the emission reduction benefits of the I/M program. Use of these more restrictive requirements would, at least in the short run, increase rejection rates because of unreadiness. In time, however, that problem should lessen as repair technicians and motorists adjust to the change. A phased approach might make sense to prevent high volumes of rejection initially (e.g., start with the newest model year vehicles). We would be happy to answer any questions or provide any needed assistance to states interested in these recommendations. We are not planning, however, to make any changes in I/M regulations to require these options.

Please note that the attached list is designed around the existing guidance on monitor readiness. If a state wishes to employ one or more of the suggestions in this memo, a revised approach on problem vehicles would be necessary. We would be happy to work with any state that wishes to customize a list for a more restrictive monitor readiness approach.

Should you have any question please contact me or have your staff contact Gene Tierney at (202) 343-9267 or Tierney.Gene@epa.gov.

Attachment