

(b) If the average emission levels calculated in §1045.410(h) exceed any of the emission standards that apply, notify us within fifteen days of completing testing on this family. Otherwise follow the reporting instructions in §1045.420.

(c) We will consider failure rates, average emission levels, and any defects—among other things—to decide on taking remedial action under this subpart (see 40 CFR 1068.505). We may consider the results from any voluntary additional testing you perform. We may also consider information related to testing from other engine families showing that you designed them to exceed the minimum requirements for controlling emissions. We may order a recall before or after you complete testing of an engine family if we determine a substantial number of engines do not conform to section 213 of the Clean Air Act or to this part. The scope of the recall may include other engine families in the same or different model years if the cause of the problem identified in paragraph (a) of this section applies more broadly than the tested engine family, as allowed by the Clean Air Act.

(d) If in-use testing reveals a design or manufacturing defect that prevents engines from meeting the requirements of this part, you must correct the defect as soon as possible for any future production for engines in every family affected by the defect. See 40 CFR 1068.501 for additional requirements related to defect reporting.

(e) You may voluntarily recall an engine family for emission failures, as described in 40 CFR 1068.535, unless we have ordered a recall for that family under 40 CFR 1068.505.

(f) You have the right to a hearing before we order you to recall your engines or implement an alternative remedy (see §1045.820).

**§ 1045.420 What in-use testing information must I report to EPA?**

(a) In a report to us within three months after you finish testing an engine family, do all the following:

(1) Identify the engine family, model, serial number, and date of manufacture.

(2) [Reserved]

(3) Describe the specific reasons for disqualifying any engines for not being properly maintained or used.

(4) For each engine selected for testing, include the following information:

(i) Estimate the hours each engine was used before testing.

(ii) Describe all maintenance, adjustments, modifications, and repairs to each test engine.

(5) State the date and time of each test attempt.

(6) Include the results of all emission testing, including incomplete or invalidated tests, if any.

(b) Send electronic reports of in-use testing to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(c) We will send copies of your reports to anyone from the public who asks for them. See §1045.815 for information on how we treat information you consider confidential.

(d) We may ask for more information.

**§ 1045.425 What records must I keep?**

(a) Organize and maintain your records as described in this section. We may review your records at any time, so it is important to keep required information readily available.

(b) Keep paper records of your in-use testing for one full year after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

(c) Keep a copy of the written reports described in §1045.420.

(d) Keep any additional records related to the procurement process.

**Subpart F—Test Procedures**

**§ 1045.501 How do I run a valid emission test?**

(a) *Applicability.* This subpart is addressed to you as a manufacturer but it applies equally to anyone who does testing for you, and to us when we perform testing to determine if your engines meet emission standards.

(b) *General requirements.* Use the equipment and procedures for spark-ignition engines in 40 CFR part 1065 to determine whether engines meet the

duty-cycle emission standards in §§ 1045.103 and 1045.105. Measure the emissions of all exhaust constituents subject to emissions standards as specified in 40 CFR part 1065. Measure CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> as described in § 1045.235. Use the applicable duty cycles specified in § 1045.505. Section 1045.515 describes the supplemental procedures for evaluating whether engines meet the not-to-exceed emission standards in § 1045.107.

(c) *Fuels.* Use the fuels and lubricants specified in 40 CFR part 1065, subpart H, for all the testing we require in this part, except as specified in § 1045.515. Use gasoline meeting the specifications described in 40 CFR 1065.710 for general testing. For service accumulation, use the test fuel or any commercially available fuel that is representative of the fuel that in-use engines will use. You may alternatively use gasoline blended with ethanol as follows:

(1) You may use the ethanol-blended fuel for certifying engines under this part without our advance approval. If you use the blended fuel for certifying a given engine family, you may also use it for production-line testing or any other testing you perform for that engine family under this part. If you use the blended fuel for certifying a given engine family, we may use the blended fuel or the specified gasoline test fuel with that engine family.

(2) The blended fuel must consist of a mix of gasoline meeting the specifications described in 40 CFR 1065.710 for general testing and fuel-grade ethanol meeting the specifications described in 40 CFR 1060.501(c) such that the blended fuel has 10.0+1.0 percent ethanol by volume. You may also use ethanol with a higher or lower purity if you show us that it will not affect your ability to demonstrate compliance with the applicable emission standards. You do not need to measure the ethanol concentration of such blended fuels and may instead calculate the blended composition by assuming that the ethanol is pure and mixes perfectly with the base fuel.

(d) *Laboratory conditions.* Ambient conditions for duty-cycle testing must be within ranges specified in 40 CFR 1065.520, subject to the provisions of § 1045.115(d). Emissions may not be corrected for the effects of test tempera-

ture or pressure. Humidity levels must represent actual in-use humidity levels; however, you may correct emissions for humidity as specified in 40 CFR 1065.670.

(e) *Engine stabilization.* Instead of the provisions of 40 CFR 1065.405, you may consider emission levels stable without measurement after 12 hours of engine operation.

(f) *Maximum test speed.* Instead of the provisions of 40 CFR 1065.510(f), you may declare a value of maximum test speed for laboratory testing that is within 500 rpm of the corresponding measured value for maximum test speed.

(g) *Special and alternate procedures.* If you are unable to run the duty cycle specified in this part for your engine (such as with constant-speed engines), use an alternate test cycle that will result in a cycle-weighted emission measurement equivalent to the expected average in-use emissions. This cycle must be approved under 40 CFR 1065.10. You may use other special or alternate procedures to the extent we allow them under 40 CFR 1065.10.

(h) *Laboratory testing with portable analyzers.* You may use field-grade equipment for any laboratory testing with high-performance engines, as specified in 40 CFR 1065.901(b), without requesting approval.

[73 FR 59194, Oct. 8, 2008, as amended at 74 FR 56510, Oct. 30, 2009]

#### § 1045.505 How do I test engines using discrete-mode or ramped-modal duty cycles?

(a) This section describes how to test engines under steady-state conditions. We allow you to perform tests with either discrete-mode or ramped-modal sampling. You must use the modal testing method for certification and all other testing you perform for an engine family. If we test your engines to confirm that they meet emission standards, we will use the modal testing method you select for your own testing. If you submit certification test data collected with both discrete-mode and ramped-modal testing (either in your original application or in an amendment to your application), either method may be used for subsequent testing. We may also perform other