This engineering guide describes common issues and recommended approaches related to achieving maximum production rates during emissions testing of asphalt plants.

Question
What guidance and procedures should be used for determining an acceptable production rate during emissions testing at asphalt plants?

Answer
The Ohio Environmental Protection Agency (Ohio EPA) is aware that on any given day, an asphalt plant may not be able to achieve operational conditions that meet both United States Environmental Protection Agency's (U.S. EPA) April 27, 2009, National Stack Testing Guidance for “Representative Testing Conditions” and Ohio EPA’s “Test at Maximum” policy requirements while performing emissions testing.

The operational conditions specified in the U.S. EPA guidance and refined by the Ohio EPA policy, require that a source be run at or above 90% of its maximum rated capacity to ensure a demonstration of compliance with permit emissions limitations which were established based upon the source’s maximum rated capacity. This guidance makes sense for a lot of source types but, based on Ohio EPA’s experience, it does not work very well for asphalt plants. This is because asphalt plants often will not be able to achieve their maximum rated production capacity on the day of a scheduled compliance demonstration test. To allow asphalt plants to complete emissions testing in a timely manner and comply with both Ohio EPA and U.S. EPA testing requirements, the following guidance is being provided.

Discussion Concerning Maximum Rated Production Capacity for Asphalt Plants

For asphalt plants, the maximum rated production capacity refers to the maximum tons of asphalt that can be produced by the source during a production hour and is normally expressed in tons per hour (TPH). The source description included in most asphalt permits specifies the source’s maximum rated production capacity. The maximum rated production capacity is typically established by the manufacturer for a given type of plant and is calculated based on the incoming aggregate temperature, the mix discharge temperature, the specific heat of the aggregate, and the desired moisture content of the heated aggregate. Sometimes the maximum production capacity of an asphalt plant has been physically/operationally limited by a bottleneck in the process (e.g., aggregate conveyors or hot-mix asphalt elevator) that cannot support the manufacturer’s original rating for the asphalt plant. In these cases, when Ohio EPA has evaluated the true production capacity, a value other than the manufacturer’s rating may be accepted as the maximum rated production capacity. Generally, the reduced production rate is included in the emissions unit description for the source, has been used to establish the appropriate emissions limitations, and should be used to assess the acceptable production rate for emissions testing purposes.

In addition to the above variables, other variables can also affect the plant’s ability to achieve the designed maximum rated production capacity. These include, but are not limited to, the volume and velocity of the gases being pulled through the system, the percentage of RAP in the mix, the atmospheric conditions on any particular day, the type of asphalt mix being produced, the type of fuel used (natural gas, #2 fuel oil, etc.) and if other materials are included in

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1 This Engineering Guide is not binding, does not have the force and effect of law, is not a “rule” as defined in section 119.01(C) of the Revised Code, and is not a “policy” as defined in section 3745.30(A)(1) of the Revised Code.
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the mix (furnace slag, crumb rubber, etc.). All of these factors can significantly affect the ability to produce asphalt at or near the maximum rated production capacity on the day emissions testing is performed.

Pre-test Determination of “Worst Case” Conditions
As of March of 2016, the “worst case” emission testing term restated below has been required to be used in permits.

“During the emission testing, the emissions unit shall be operated under operational conditions approved in advance by the appropriate Ohio EPA District Office or local air agency. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.), or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under “worst case” conditions expected during the life of the permit. As part of the information provided in the “Intent to Test” notification form described below, the permittee shall provide a description of the emissions unit operational conditions they will meet during the emission testing and describe why they believe “worst case” operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the appropriate Ohio EPA District Office or local air agency that the proposed operating conditions constitute “worst case”. Failure to test under the approved conditions may result in Ohio EPA not accepting the test results as a demonstration of compliance.”

This term and condition require the facility to submit information describing why they believe they will be testing under “worst case” conditions. This information is submitted with the Intent-to-test (ITT) form. The district office or local air agency (DO/LAA) will need to review this information and determine if they believe the planned test will be done under “worst case” conditions. If the DO/LAA has concerns, they should discuss these with the facility such that these concerns are resolved prior to the test.

Note that in some cases, the facility will plan not to operate the asphalt plant under “worst case” conditions. See the Compliance Approaches When Testing at < 80% below.

Note also that “worst case” conditions may be different for different tests. For instance, the type of material additive (slag, RAP, etc.) is not likely to significantly influence NOx emissions because NOx emissions are generated by the burning of the fuel, not from the raw material processed. However, the amount of slag processed, and its sulfur content are critical factors to establish for “worst case” for SO2 testing because of the significant sulfur content of slag.

When scheduling a compliance demonstration for an asphalt plant, every attempt should be made to achieve the source’s maximum rated production capacity on the scheduled testing day. However, for asphalt plants, Ohio EPA is setting an alternative threshold for acceptable production rates instead of the 90% threshold. For asphalt plants, emissions test results that demonstrate compliance with the applicable emissions limitations can be accepted if the plant achieves ≥ 80% of the maximum rated production capacity during the emissions testing.

Compliance Approaches When Testing at < 80%
If the production rate during the test is < 80% of the maximum rated production capacity of the asphalt plant, then there are four options:

- **Retest.** For this option the facility will coordinate rescheduling the test with their respective DO/LAA when they can operate the plant at ≥ 80% of the maximum rated production capacity.

- **Determine the Historical Operating Rate.** This option is available if the facility can demonstrate that the tested production rate is representative of how the plant has been historically operated. The facility can demonstrate that the plant operates at a reduced rate by submitting the most recent two years of production data with the average daily production rate in tons produced per hour operated. This average is obtained by dividing the total tons of asphalt produced, each day, by the total number of hours the asphalt plant operated that day. Ideally, this evaluation will be made prior to emissions testing allowing for the historical production data to be reviewed and a suitable production rate to be agreed upon. It will also be acceptable to use this approach if the failure to achieve ≥ 80% of the maximum rated production capacity during emissions testing is unexpected. The highest
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average daily production rate from the most recent two years will be used to evaluate whether the emissions test results are acceptable. If the facility does not have the records necessary to determine average daily production rates, alternative records can be used to establish a suitable production rate and should be discussed with the DO/LAA and Central Office.

If the asphalt plant achieves ≥ 90% of the highest average daily production rate from the most recent two years, then the test results are acceptable.

If the asphalt plant doesn’t achieve ≥ 90% of the highest average daily production rate from the most recent two years, then it will be necessary to select another option.

- **Restrict the Permitted Operating Rate.** This option is available if the facility does not achieve either ≥ 80% of the maximum rated production capacity or ≥ 90% of the highest average daily production rate from the most recent two years. A facility may know that they don’t have enough production scheduled to achieve a suitable production rate during the emissions testing or the failure to obtain a suitable production rate during emissions testing may happen unexpectedly. In either case, the facility has the option to perform the emissions testing and accept permit terms and conditions to restrict the plant to 115% of the production rate achieved during the test. It is important for the DO/LAA to let the facility know that they will need to accept the restricted production capacity and associated terms and conditions in an administrative modification permit.

- **Submit a Hardship Request.** This option is only available if the facility is able to demonstrate compliance with each of the applicable emission limitations but is unexpectedly incapable of achieving a suitable production rate. The facility will need to submit the information necessary to determine whether the cost of doing additional testing is a hardship. These requests will consider the following:
  - Records demonstrating why the costs are a hardship;
  - An explanation of the capacity of the plant, the tested production rate, and the reason why the plant was not able to achieve a suitable production rate; and
  - The results of the test and the difference between the results and the limitations.

Central Office, in concert with the DO/LAA, will determine whether additional testing is necessary on a case-by-case basis.

**Testing Day**

On the day of the test, the DO/LAA will evaluate the production rate to confirm that the rate during the test is consistent with the ITT or otherwise agreed upon rate. The production rate achieved during the emissions testing should be well documented by the facility.

If the observed operating rate of the plant is below the expected production rate, then the DO/LAA should discuss the options above with the appropriate facility representatives and explain that if they continue the test, they may end up with production rate restrictions or the requirement for additional testing. If, after this discussion, the facility understands and agrees to one of the options discussed above, then the testing should continue. If the facility does not agree that production rate restrictions or additional testing may be needed, they may continue with the tests even though the results may not be accepted for compliance purposes.

**Compliance Report Review and Acceptance**

Compare the production rate documented during the test to the maximum rated production capacity. The emissions test results should include copies of the operating records and any other information necessary to demonstrate compliance with the applicable emissions limitations and/or operational restrictions and to determine whether or not the worst case testing requirements have been satisfied (e.g., the type of asphalt mix being produced during the test, the amount of RAP or slag added to asphalt mix, and the records for the fuel flow rate to the source's burner, if available). If the source’s production rate during the test was ≥ 80% of its maximum rated production capacity and the
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tested pollutant emissions rates were below the permitted emissions limitations, the source has demonstrated compliance for the fuel used during the tests and, in some cases, for particular raw material operating scenarios (e.g. percent RAP, employing slag, etc.).

If the source’s production rate during the test was < 80% of maximum rated production capacity and the emission test results were below the permitted emissions limitations, then test results may be accepted as a demonstration of compliance for the “worst case” operating conditions expected during the life of the permit, in accordance with one of the options discussed above.

**Report Review Follow-up**

When the results of the test are acceptable, a Notice of Compliance (NOC) letter stating that the testing was acceptable should be sent. Information that is relevant to the acceptance of the test (e.g. production rate, fuel type, percent RAP, slag sulfur content, etc.) should be documented in the Emissions Test Detail in Stars2 and can be included in the NOC letter.

When the results of the test are not acceptable because the plant did not achieve ≥ 80% of the maximum rated production capacity during the test, the following should be performed depending on the option selected:

- If the facility elects to retest:
  - Ohio EPA and the facility should be cognizant of the relevant testing deadline and compliance/enforcement policies should be followed if the retest will not occur prior to the established deadline;
  - Test results for emissions testing conducted below the required production rate should still be submitted and the results for each source and pollutant should be identified as ‘Invalid’ in the Emissions Test Detail in Stars2; and
  - Facilities are responsible for coordinating the retest date with the stack testing firm and the DO/LAA which may require the submittal of an updated ITT.

- If the facility elects to determine the historical operating rate:
  - The facility is responsible for providing the records necessary to determine the highest average daily production rate from the most recent two years. If the facility has elected this approach prior to conducting the emissions testing, the records can be submitted as an attachment to the ITT. This will allow the determination of the appropriate production rate prior to the test date. If the facility elects this approach as a result of unexpectedly failing to achieve ≥ 80% of the maximum rated production capacity on the day of testing, the records necessary to determine the highest average daily production rate from the most recent two years can be included in the test report;
  - If the asphalt plant achieves ≥ 90% of the highest average daily production rate from the most recent two years, then the test results are acceptable and the results for each source and pollutant should be identified as ‘Passed’ in the Emissions Test Detail in Stars2; and
  - A NOC letter should be sent to the facility after the test results have been approved.

- If the facility elects to restrict the permitted operating rate:
  - The facility should submit an administrative modification permit application in order to incorporate the restricted operating rate and the associated monitoring, recordkeeping, and reporting requirements into the applicable permit. The permit modification will restrict the production rate of the asphalt plant to 115% of the production rate achieved during the test. The facility can increase the restricted operating rate by performing additional emissions testing and the terms of the permit will be crafted such that additional permit modifications won’t be necessary;
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- Test results for emissions testing conducted below the required production rate should still be submitted and, upon receipt of the administrative modification permit application, the results for each source and pollutant should be identified as ‘Passed’ in the Emissions Test Detail in Stars2; and
- A NOC letter should be sent to the facility after the test results have been approved.

- If the facility elects to submit a hardship request:
  - Test results for emissions testing conducted below the required production rate should still be submitted and the facility is responsible for demonstrating that additional testing is a hardship; and
  - The facility should discuss what additional information is necessary with the DO/LAA and Central Office, and Central Office will determine whether the hardship request is acceptable.
  - If the hardship request is denied, the facility should work with the DO/LAA and Central Office to select another approach.
  - If the hardship request is approved, then the results for each source and pollutant should be identified as ‘Passed’ in the Emissions Test Detail in Stars2, and a NOC letter should be sent to the facility after the test results have been approved.

Revisions

Contact
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