



Maricopa County Air Quality Department
Substantive Policy Statement: SPS-2020-001
Hot Mix Asphalt (HMA) Plant Compliance
Issue Date: October 26, 2020

Approved by:

A handwritten signature in black ink that reads "Philip A. McNeely".

Philip A. McNeely, Director

A substantive policy statement is advisory only. A substantive policy statement does not include internal procedural documents that only affect the internal procedures of the county and does not impose additional requirements or penalties on regulated parties or include confidential information or rules or ordinances adopted pursuant to Arizona Revised Statutes (A.R.S.) Title 49 (The Environment), Chapter 3 (Air Quality). [A.R.S. §§ 11-1601(8), 49-471(17)]

If you believe that this substantive policy statement does impose additional requirements or penalties on regulated parties, you may petition the agency under A.R.S. § 41-1033 for a review of the statement. [A.R.S. § 41-1033]

An applicant for a license subject to A.R.S. Title 11 (Counties), Chapter 11 (County Regulations), Article 1 (General Provisions) may request a county to clarify its interpretation or application of a statute, ordinance, regulation, delegation agreement, or authorized substantive policy statement affecting the procurement of that license by providing the county with a written request that satisfies the requirements of A.R.S. § 11-1609(A). [A.R.S. § 11-1609]

I. Purpose

This Substantive Policy Statement (SPS) provides guidance regarding compliance testing and alternative compliance procedures for hot mix asphalt (HMA) plants.

II. Applicability

This SPS applies to an owner or operator of an HMA plant.

III. Statutory Authority

- A.** A.R.S. § 41-1009 [Title 41-State Government, Chapter 6-Administrative Procedure, Article 1-General Provisions, Section 1009-Inspections and Audits; Applicability; Exceptions]
- B.** A.R.S. § 49-471.03 [Title 49-The Environment, Chapter 3-Air Quality, Article 3-County Air Pollution Control, Section 471.03-Inspections]

- C. A.R.S. § 49-480 [Title 49-The Environment, Chapter 3-Air Quality, Article 3-County Air Pollution Control, Section 480-Permits; Fees]

IV. Divisions Affected

- A. Compliance and Enforcement
- B. Permitting

V. Definitions

For the purposes of this SPS, the following definitions apply. If any of the rules referenced for these definitions are revised, the most recently revised rule for that definition applies.

- A. **AP-42** - The U.S. Environmental Protection Agency (EPA) document "Compilation of Air Pollutant Emission Factors".
[Maricopa County Air Pollution Control Regulations Rule 100-General Provisions and Definitions]

- B. **Best Available Control Technology (BACT)** – An emission limitation, based on the maximum degree of reduction for each pollutant, subject to regulation under the Clean Air Act, which would be emitted from any proposed stationary source or modification, which the Maricopa County Air Quality Department (MCAQD), on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of such pollutant.

1. Under no circumstances shall BACT be determined to be less stringent than the emission control required by an applicable provision of the Maricopa County Air Pollution Control Regulations or of any State or Federal laws, which include the EPA-approved State Implementation Plan (SIP).
2. If MCAQD determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice, or operation, and shall provide for compliance by means which achieve equivalent status.

[Maricopa County Air Pollution Control Regulations Rule 100-General Provisions and Definitions]

- C. **Continuous Emission Monitoring System (CEMS)** – The total equipment required to sample and analyze emissions or process parameters, such as opacity, nitrogen oxide, oxygen, or carbon dioxide and to provide a permanent data record.

[Maricopa County Air Pollution Control Regulations Rule 322-Power Plant Operations]

D. Conventional Air Pollutant – An air pollutant for which the Administrator of the EPA has promulgated a primary or secondary national ambient air quality standard, including precursors to such pollutants (e.g., particulate matter (PM), ozone, carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), and lead).

[Maricopa County Air Pollution Control Regulations Rule 100-General Provisions and Definitions]

E. Hot Mix Asphalt (HMA) Plant – A plant used for the manufacture of asphalt, macadam, or other forms of coated roadstone, sometimes collectively known as blacktop or asphalt concrete. The manufacture of coated roadstone demands the combination of a number of aggregates, sand, and a filler (such as stone dust), in the correct proportions, heated, and finally coated with a binder, usually bitumen based (a sticky, black, and highly viscous liquid or semi-solid form of petroleum). The temperature of the finished product (212°-392°F) must be sufficient to be workable after transport to the final destination.

1. HMA plant production requires drying and heating of aggregates so that bitumen can be coated easily.
2. The drying process involves drying of the aggregates in a rotating, slightly inclined dryer drum equipped with a burner.

F. Major Source Threshold – The lowest applicable emissions rate for a pollutant that would cause the source to emit more than or have the potential to emit more than 100 tons per year of any conventional air pollutant or more than 70 tons per year of PM₁₀.

VI. Discussion

HMA plants emit conventional air pollutants and are subject to Maricopa County Air Pollution Control Regulations Rule 220 (Non-Title V Permit Provisions), Rule 270 (Performance Tests), and Rule 316 (Nonmetallic Mineral Processing).

HMA plants are not subject to Rule 330 (Volatile Organic Compounds (VOCs)) or Rule 340 (Cutback and Emulsified Asphalt). Rule 330 limits the emission of VOCs from the use of organic solvents or processes that emit VOCs. Cement used at HMA plants contains no solvent. Tests would yield a VOC content of zero. Rule 340 applies to the application of cutback or emulsified asphalt or tar materials for paving or construction. Even though cutback asphalt can contain up to 45 percent liquid organic diluent, it is not exposed to flame in an HMA plant and the diluent is typically mineral spirits, which usually contain less than 20 percent VOC.

In accordance with Rule 220 (Non-Title V Permit Provisions), an HMA plant must provide assurance that performance tests are conducted under representative operating conditions and that these conditions can be tracked on an ongoing basis. Such

“representative operating conditions” must ensure continuous compliance with allowable emission limits and requirements and must be enforceable and verifiable.

As the chief means of demonstrating compliance with air quality requirements, including emissions standards, HMA plants have been required by MCAQD to conduct performance testing on a periodic basis. MCAQD has recognized that performance testing, even if it is conducted frequently (i.e., annually) does not necessarily demonstrate continuous compliance. Any source, including HMA plants, must take measures to ensure compliance is demonstrated continuously, which includes measures in addition to performance testing. The following concerns will be addressed within any HMA permit to adequately address the issue and ensure compliance demonstration on a continuous basis: (1) whether the HMA plant is being operated in a manner that is representative of normal operations during the period of the performance test and (2) whether the HMA plant continues to be operated in a manner consistent with operations during a successful performance test during periods when testing is not being conducted.

In the case of HMA plants, emissions are strongly affected by tuning and operating conditions (i.e., conditions that can change and therefore cause emissions to differ from those measured during a source test). A single source test performed every five years is not, by itself, sufficient to provide assurance of continuous compliance. More frequent testing and/or additional measures must be taken in order to demonstrate continuous compliance.

VII. Procedures

A. Performance Tests

1. The HMA plant must conduct a performance test under representative operating conditions in accordance with Rule 270 (Performance Tests), Section 403 (Testing Conditions), and 40 CFR 60.8(c) (Standards of Performance for New Stationary Sources-Performance Tests).
 - a. The HMA plant must conduct a performance test to ensure that emissions remain below regulatory thresholds.
 - b. The HMA plant must demonstrate compliance with allowable emission limits and standards.
 - c. If the HMA plant utilizes performance test data in place of using AP-42 emission factors to increase throughput above what would otherwise trigger an applicable requirement, then annual testing is required for each conventional air pollutant for which test data is utilized.
 - d. For pollutants not subject to annual monitoring, the HMA plant must conduct a performance test every five years from the initial test date. Testing must measure the concentrations of NO_x, SO_x, CO, PM, and VOCs in the drum dryer stack exhaust system.

- e. Failure to conduct a performance test will be considered a violation of an enforceable requirement and may trigger a revision to the permit.
2. The performance test must be conducted at 100 percent of thermodynamic capacity.
 - a. For HMA plants, due to the inherent connection between emissions and production rate, a permit condition limiting the maximum hourly production rate will be established as an enforceable condition.
 - b. The HMA plant must submit an application for a permit modification to limit the production rate to 1.25 times the rate during the most recent five-year performance test, if the performance test is conducted at an hourly rate that is lower than the maximum hourly production rate allowed by the permit.
 - c. The hourly production rate must be tracked for the duration of the performance test.
 3. The HMA plant must continuously monitor the temperature at the outlet of the drum dryer to measure the asphalt temperature during the performance test.
 - a. The HMA plant must not operate the drum dryer in such a way that the temperature of the hot aggregate mixture is equal to or greater than the smoke point of the material being processed.
 - b. A permit condition limiting the asphalt temperature to less than the smoke point of the material being processed will be established as an enforceable condition.
 - c. The HMA plant must demonstrate continuous compliance by using temperature monitoring equipment that must have data logging capacity.

B. Performance Test Deadline Extension Requests Due To Low Production

1. The HMA plant must notify MCAQD when the HMA plant is unable to conduct a performance test due to low production.
 - a. Sufficient asphalt production to conduct a performance test is total asphalt production on a single day of at least 2000 tons and/or two consecutive days of at least 2500 tons.
 - b. 2000 tons of asphalt production is based on past performance test observations of HMA plants that have asphalt production permit limits of 300-400 tons per hour.
 - c. MCAQD may issue a Notice of Noncompliance for failure to conduct a performance test, if daily production records indicate the HMA plant

produced a total of 2000 tons or more of asphalt on a single day and/or 2500 tons of asphalt during a two consecutive-day period.

2. MCAQD may grant a 60-day extension of the performance test deadline upon notification prior to the performance test deadline that the HMA plant is unable to conduct a performance test due to low production. If the HMA plant has not had sufficient asphalt production to conduct a performance test within the 60-day extension, the HMA plant must:
 - a. Notify MCAQD seven days prior to the end of the 60-day extension.
 - b. Submit detailed daily production records since the initial test deadline to verify low production.
3. MCAQD may grant an additional 90-day extension, upon verification of low production during the initial 60-day extension:
 - a. If the HMA plant has not had sufficient asphalt production to conduct a performance test within the 90-day extension, the HMA plant must:
 - (1) Notify MCAQD seven days prior to the end of the 90-day extension.
 - (2) Submit detailed daily production records during the 90-day extension to verify low production.
 - b. MCAQD may continue to grant 90-day extensions, as long as the HMA plant can continue to demonstrate low production.
4. During the next inspection of the HMA plant, the HMA plant must produce the daily production records since the initial test deadline.

C. Continuous Compliance with Allowable Emission Limits and Standards

1. The HMA plant bears full responsibility for providing assurances of continuous compliance with allowable emission limits and standards.
2. The HMA plant must test the exhaust from the drum dryer baghouse for PM every 12 months.
3. If the HMA plant accepts an emission limit to avoid an applicable regulatory requirement, such as BACT or the major source threshold, then the HMA plant must test the drum dryer baghouse exhaust annually for each conventional air pollutant for which a limit is taken. Due to their inverse relationship, CO and NO_x must be tested in unison, even if a limit was taken for only one of those pollutants.
4. The HMA plant must identify one method per pollutant by which compliance can be determined on a continuous basis and must submit such method(s) as part of

the permit application, which may include, but is not limited to one or more of the methods listed in Sections VII(C)(5)(a)-(h) below.

5. The following tests may be used in lieu of conducting performance tests:

a. Bag Leak Detection System:

- (1) As an alternative to annually testing the exhaust from the drum dryer for PM and PM₁₀, the HMA plant may use a bag leak detection system. Each bag leak detection system must meet the following specifications and requirements:
 - (a) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 1.0 milligram per dry standard cubic meter (0.00044 grains per actual cubic foot) or less.
 - (b) The bag leak detection system sensor must provide output of relative PM loadings. The HMA plant must continuously record the output from the bag leak detection system using electronic or other means (e.g., using a strip chart recorder or a data logger).
 - (c) The bag leak detection system must be equipped with an alarm system that will sound when the system detects an increase in relative particulate loading over the alarm set point established according to Section VI(C)(5)(a)(1)(e) of this SPS, and the alarm must be located such that it can be heard by the appropriate plant personnel.
 - (d) In the initial adjustment of the bag leak detection system, the HMA plant must establish, at a minimum, the baseline output by adjusting the sensitivity (range) and the averaging period of the device, the alarm set points, and the alarm delay time.
 - (e) Following initial adjustment, the HMA plant must not adjust the averaging period, alarm set point, or alarm delay time without approval from the Control Officer, except as otherwise provided in Section VII(C)(5)(a)(1)(f) of this SPS.
 - (f) Once per quarter, the HMA plant must adjust the sensitivity of the bag leak detection system to account for seasonal effects, including temperature and humidity, according to the procedures identified in the site-specific monitoring plan required by Section VII(C)(5)(a)(2) of this SPS.
 - (g) The HMA plant must install the bag leak detection sensor downstream of the fabric filter.

- (2) The HMA plant must develop and submit to the Control Officer, Attn: Permitting Division Manager, for approval of a site-specific monitoring plan for each bag leak detection system. The HMA plant must operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. For each monitoring plan, the HMA plant must describe the following items:
 - (a) Installation of the bag leak detection system;
 - (b) Initial and periodic adjustment of the bag leak detection system, including how the alarm set-point will be established;
 - (c) Operation of the bag leak detection system, including quality assurance procedures;
 - (d) How the bag leak detection system will be maintained, including a routine maintenance schedule and spare parts inventory list;
 - (e) How the bag leak detection system output will be recorded and stored; and
 - (f) Corrective action procedure, as specified in Section VII(5)(a)(3) of this SPS. In approving the site-specific monitoring plan, the Control Officer may allow the HMA plant more than three hours to alleviate a specific condition that causes the alarm, if the HMA plant:
 - (i) Identifies in the monitoring plan this specific condition as one that could lead to an alarm,
 - (ii) Adequately explains why it is not feasible to alleviate this condition within three hours of the time the alarm occurs, and
 - (iii) Demonstrates that the requested time will ensure alleviation of this condition as expeditiously as practicable.
- (3) For each bag leak detection system, the HMA plant must initiate procedures to determine the cause of every alarm within one hour of the alarm. The HMA plant must alleviate the cause of the alarm within three hours of the alarm by taking whatever corrective action(s) are necessary. Corrective actions must include, but are not limited to, the following:
 - (a) Inspecting the fabric filter for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in PM emissions;
 - (b) Sealing off defective bags or filter media;

- (c) Replacing defective bags or filter media or otherwise repairing the control device;
- (d) Sealing off a defective fabric filter compartment;
- (e) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system; or
- (f) Shutting down the process producing the PM emissions.

b. Drum Dryer Baghouse Black Light Test:

- (1) As an alternative to annually testing the exhaust from the drum dryer for PM and PM₁₀, the HMA plant may perform a black light test on the drum dryer baghouse within 180 days of the issuance of a permit and every five to seven months thereafter.
 - (a) The HMA plant must notify MCAQD in writing at least two weeks in advance of the black light test performed on the drum dryer baghouse within 180 days of the issuance of a permit and performed every five to seven months thereafter.
 - (b) If the HMA plant performs a black light test on the drum dryer baghouse more frequently (i.e., for maintenance), the HMA plant is not required to notify MCAQD about such performance tests.
- (2) The HMA plant must perform the test according to the procedure provided by the baghouse manufacturer and must incorporate such procedure into the baghouse's Operation & Maintenance (O&M) Plan.
- (3) If the test shows any leaks, then the HMA plant must:
 - (a) Repair each leak noted from the examination of the tubesheet and bags.
 - (b) Re-test the baghouse using another color of fluorescent powder.
 - (c) Repair all leaks prior to resuming operations.
- (4) The HMA plant must keep records of baghouse setting, test procedure, and the results for each test performed. At a minimum, the records must include all of the following:
 - (a) Name of the person(s) conducting the test;
 - (b) Date and time test was conducted;
 - (c) Calculation of the baghouse's cloth surface area;

- (d) Amount and color of fluorescent color used;
- (e) Temperature, pressure drop, and damper or fan speed setting of the exhaust flow at the time of fluorescent powder injection;
- (f) Time the fluorescent powder was injected;
- (g) Time the baghouse was shut down after injection of the fluorescent powder;
- (h) The HMA plant must complete and submit a separate test report to MCAQD within 30 days after completion of testing for each black light performance test. This requirement does not apply to additional tests performed for routine maintenance, which is not part of performance testing; and
- (i) Test results. If the baghouse fails the test:
 - (i) Identify the corrective actions taken (e.g., bag replacement, seal replacement, baghouse crack repair).
 - (ii) Record the information identified in Sections VII(C)(5)(b)(5)(a)-(h) of this SPS for the second test after corrective actions taken.
 - (iii) Record the test results for the second test after corrective actions taken.

c. Continuous Automated Combustion Control System:

- (1) As an alternative to annual CO and NO_x testing, the HMA plant may install and operate a continuous automated combustion control system, which must be able to automatically control the dryer process.
- (2) The continuous automated combustion control system must demonstrate that the proposed VOC, NO_x, and CO emissions rates have been achieved.

d. Burner Combustion Optimization:

- (1) As an alternative to annual CO and NO_x testing, the HMA plant may conduct burner combustion optimization every year or 200,000 tons of HMA production, whichever occurs first.
- (2) The optimization must include the following procedures:
 - (a) Draft pressure levels at the front of the drum dryer must be optimized to assure the most efficient burner operation.

- (b) Draft pressure levels must be measured by means of a pressure gauge/controller that controls the damper position.
 - (c) Daily record of the draft pressure at the front of the drum and damper position must be kept to ensure compliance.
- (3) The combustion optimization must be based on burner tune-up procedures that result in maximum combustion efficiency and a low NO_x operating curve. The curve must determine the operating range of combustion variables, such as CO and O₂ at set points within the following ranges: 20-30 percent load, 45-55 percent load, 70-80 percent load, and 95-100 percent load, for those set points that represent at least 10 percent of operating hours in a typical year.
 - (4) A continuous combustion analyzer or portable combustion analyzer must be used to monitor the operation of the combustion unit in accordance with the combustion efficiency and low NO_x operating curve established by the process. The analyzer must monitor the combustion parameters for CO and O₂ or monitor NO_x directly. The fuel flow rate must also be monitored.
 - (5) Following optimization, the HMA plant must monitor the operation of the drum dryer in accordance with the air permit to ensure ongoing compliance.
 - (6) The HMA plant must submit a test report to MCAQD within 30 days of completing the burner combustion optimization test.

e. Blue Smoke Eliminator:

- (1) In lieu of VOC testing, the HMA plant may install and operate a blue smoke eliminator that captures and controls emissions from the drum dryer and during loadout from the dryer. Emissions from the blue smoke eliminator must not exceed 5 percent opacity and must contain no more than 0.04 gr/dscf (grains per dry standard cubic feet) or 90 mg/dscm (milligrams per dry standard cubic meter) of PM.
- (2) The HMA plant must submit an approvable O&M Plan for the blue smoke eliminator to the Control Officer, Attn: Permitting Division Manager, within 45 days of the initial startup of the blue smoke eliminator, in accordance with the following requirements:
 - (a) The O&M Plan must specify key system operating parameters, such as temperatures, pressures, and/or flow rates, necessary to determine compliance and describe in detail procedures to maintain the blue smoke eliminator. The HMA plant must monitor, operate, and maintain the equipment in accordance with the approved O&M Plan.

- (b) Changes to the existing O&M Plan must be made by submitting a complete, revised O&M Plan along with a cover letter identifying all changes and the reason for such changes. The HMA plant may implement the changes addressed in the revised O&M Plan after submitting the revision to the Control Officer. Unless disapproved in writing by the Control Officer, the HMA plant may continue to operate in accordance with the revised O&M Plan.
- (c) If the blue smoke eliminator is found to be operating outside a specified range, the HMA plant must immediately take corrective action to bring the device back into the specified operating range or shut down the device and the associated equipment vented to it.
- (d) If a pattern of excursions, as determined by the Control Officer or the HMA plant, of operation outside the specified operating range develops, the HMA plant must submit, for Control Officer approval, a Corrective Action Plan to bring the blue smoke eliminator back into the specified operating range. The Corrective Action Plan must be submitted to the Control Officer, Attn: Compliance and Enforcement Division Manager, within 30 days of the determination of the existence of excursions.
- f. **BACT:** The HMA plant must apply BACT for each pollutant for which an annual performance test would otherwise be required under Section VII(A) of this SPS.
- g. **CEMS:** The HMA plant may install and operate a CEMS, which must meet both of the following criteria:
 - (1) Be able to detect one or more of the following pollutants: CO, CO₂, NO_x, sulfur dioxide (SO₂), and total hydrocarbons (THC); and
 - (2) Have data logging capability to ensure continuous compliance.
- h. **Other Method(s):** The HMA plant may propose other method(s) as approved by MCAQD.

VIII. References

- A. Decommissioned TG-98-003-VOC and Asphalt Plants dated May 27, 1998
- B. Decommissioned Hot Mix Asphalt (HMA) Compliance Assurance Policy dated February 17, 2010
- C. Decommissioned HMAPs Postponing Performance Test Due to Low Production dated 2013

IX. Revision History

Version	Date	Description
1.	10-26-2020	Initial version; combines and supersedes decommissioned documents listed in Section VIII-References