



United States Environmental Protection Agency General Permit for New or Modified Minor Sources of Air Pollution in Indian Country

<https://www.epa.gov/tribal-air/tribal-minor-new-source-review>

Background Document: General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants in Indian Country

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Version 1.0

1. Hot Mix Asphalt Plants Source Category Definition

For purposes of this General Permit, a hot mix asphalt (HMA) plant is a facility which manufactures hot mix asphalt by heating and drying aggregate and mixing with asphalt cements. An HMA plant is comprised of any combination of the following activities: dryers, liquid asphalt storage tanks, fuel oil storage tanks, auxiliary heaters (including hot oil heaters), material storage handling and transfer systems, generators, storage bins/silos, storage piles, and haul roads. An HMA plant can be constructed as a permanent plant, a skid-mounted (easily relocated) plant, or a portable plant. The General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants in Indian Country covers HMA operations that are located at New Source Review (NSR) minor sources.

2. Source Category Characterization

HMA paving materials are a mixture of size-graded, high quality aggregate (which can include reclaimed asphalt pavement (RAP)), and liquid asphalt cement, which is heated and mixed in measured quantities to produce HMA. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture. Aside from the amount and grade of asphalt cement used, mix characteristics are determined by the relative amounts and types of aggregate and RAP used. A certain percentage of fine aggregate (less than 74 micrometers in physical diameter) is required for the production of good quality HMA. (AP-42, Chapter 11.1 – Hot Mix Asphalt Plants) There are four types of HMA plants based on manufacturing process: (1) batch mix plants, (2) continuous mix (mix outside dryer drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. About 85 percent of plants being manufactured today are of the counterflow drum mix design, while batch plants and parallel flow drum mix plants account for 10 percent and 5 percent, respectively (AP-42, Chapter 11.1 – Hot Mix Asphalt Plants).

Emissions from HMA plants consist of: (1) combustion emissions from mixer/dryers, auxiliary heaters, and generators; and (2) particulate emissions from the mixing/drying process, material handling process, and fugitive emissions from haul roads. Carbon monoxide (CO) emissions from batch mix plants are significantly higher than the CO emissions from drum mix plants due to the incomplete combustion process occurring in the batch mixer/dryers.

3. State Minor Source Permit Programs

The U.S. Environmental Protection Agency (EPA) researched state government websites for general permits for this source category and examined them for applicability to a permit for Indian Country. The EPA selected appropriate elements in developing the documents and regulations in the General Permit for this source

category. Specifically, we reviewed the following states and local governments with general permits (or similar programs) for HMA plants: [Alaska](#), [Arkansas](#), [Arizona](#), [Mississippi](#), [New Mexico](#), [Pennsylvania](#), [South Carolina](#), [Washington](#), [Wisconsin](#), and [West Virginia](#). The requirements for the state permitting programs related to HMA plants are summarized in Attachment A. General Permits from these states were chosen for examination because of characteristics they possess:

- Readily available;
- Clear throughput limits; and
- Organization of the regulations followed the typical form for federal NSR permits:
 - Limitations and standards, and
 - Monitoring, testing, recordkeeping, and reporting requirements.

For the ten state general permit programs reviewed, the permit requirements can be categorized into the following four categories:

- Emission Limits: Most of the state permit programs reviewed contain emission limits for all criteria pollutants. The emission limits typically range from 80 tons per year (tpy) to 100 tpy. The permit programs in Arkansas and New Mexico have a lower emission limitation of 50 tpy for sulfur dioxide (SO₂).
- Production/Capacity Limits: Most of the state permit programs reviewed include asphalt production limits. The limits vary depending on the type of mixer and the attainment status of the location where the plant will be located. The permit program for Washington also includes a capacity limit of 150 MMBtu/hour for the drum mixer/dryer. The permit program for Wisconsin includes a capacity limit of 700 tons/hour for the asphalt plant. The capacity limits for heaters and engines can be found in the state permit programs for New Mexico and South Carolina.
- Fuel Limits: All of the state permit programs reviewed, except for the permit program for Arizona, include some kind of fuel restriction, such as on the fuel types allowed, fuel usage limits, and sulfur content limits. In general, all the state programs reviewed allow the use of natural gas, propane and No.2 fuel oil (diesel). Few state programs allow the use of waste oils. The state program for Mississippi also includes a hazardous air pollutant (HAP) content limit for waste oil.
- Other requirements: Most of the state permit programs reviewed include requirements for a fugitive dust control plan. The specific requirements in this control plan vary by state. Some of the states include operating hour limits for the production unit and/or emergency generator. The state permit program for Alaska includes setback requirements for the production unit and generator engine from the nearest residence. The state permit program for West Virginia also includes capacity limits for storage tanks.

In addition, all the state general permits reviewed incorporate the requirements of [NSPS, Subpart I](#) (Standards of Performance for Hot Mix Asphalt Facilities) and [NSPS, Subpart Kb](#) (Standards of Performance for Volatile Organic Liquid Storage Vessels, (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984).

4. Requirements for General Permit

4.1 Documents for General Permit

The EPA developed a standardized set of permit documents in support of the General Permit for HMA plants. These consist of the following documents:

- Questionnaire: Assists the facility owner or operator in determining whether they are eligible for a General Air Quality Permit;
- Request for Coverage under the General Air Quality Permit: States the criteria for qualification, gathers information on the source, the facility's actual emissions for those sources undergoing modifications, facility location, and source contact, and requests technical information on facility equipment, throughput, and attainment status;
- Instructions: Guides the applicant in filling out the Request for Coverage under the General Air Quality Permit;
- General Air Quality Permit, Terms and Conditions: Contains the requirements and regulations with which the source must comply. The emission limitations, monitoring, recordkeeping and reporting requirements are in the permit, including requirements for sources located in nonattainment areas; and
- Potential to Emit (PTE) Calculator Spreadsheet: Allows applicants to calculate their PTE, based on owner inputs of the specific equipment present at their source, assuming continuous operation throughout the year. The PTE Calculator spreadsheet generates potential emissions, based on these inputs. The spreadsheet illustrates the correlation between equipment, raw material throughput, and emissions.

4.2 Exemption and Qualification for General Permits

Facilities applying for the General Permit must meet the emissions limitations established for the General Permit.

New facilities with a PTE (or modifications to existing facilities with an increase in potential emissions) lower than the minor NSR thresholds specified in the provisions of the Federal Indian Country Minor NSR Rule at 40 CFR 49.153 are exempt from the minor NSR program. The minor NSR thresholds are listed in Table 1 below. Facilities applying for the General Permit may calculate their PTE using the PTE calculator provided to determine if they are below these thresholds and, thus, exempt from the minor NSR program.

Table 1: Minor NSR Thresholds in 40 CFR 49.153

Pollutant	Attainment Area	Nonattainment Area
CO	10 tpy	5 tpy
Particulate Matter	10 tpy	5 tpy
PM ₁₀	5 tpy	1 tpy
PM _{2.5}	3 tpy	0.6 tpy
SO ₂	10 tpy	5 tpy
Nitrogen Oxides (NO _x)	10 tpy	5 tpy
Volatile Organic Compounds	5 tpy	2 tpy

Under current EPA policy, true or synthetic NSR minor sources qualify for the General Permit. Facilities will be required to compare their PTE to the NSR major source thresholds to determine if they qualify for the General

Permit. The NSR major source threshold for attainment areas is 250 tpy for any criteria pollutant. The NSR major source thresholds for nonattainment areas are summarized in Table 2 below:

Table 2: NSR Major Source Thresholds for Nonattainment Areas

Pollutant	Nonattainment Classification	NSR Major Source Threshold
Ozone	Marginal	100 tpy of VOC or NO _x
	Moderate	100 tpy of VOC or NO _x
	Serious	50 tpy of VOC or NO _x
	Severe	Not eligible for the General Permit
	Extreme	Not eligible for the General Permit
PM ₁₀	Moderate	100 tpy
	Serious	70 tpy
CO	Moderate	100 tpy
	Serious	50 tpy
SO ₂ , NO _x , PM _{2.5}	No nonattainment classification	100 tpy

If the facility's PTE is above the NSR major source threshold of 250 tpy, or above the applicable nonattainment area thresholds listed in Table 2 (for any pollutant for which the area in which the source is locating or modifying is designated nonattainment), then the facility does not qualify for the General Permit. Sources that will be synthetic minor sources and relying on the conditions in the General Permit to qualify as minor sources should use the conditions in the permit (such as limits on production and throughput) to determine their PTE and eligibility for the General Permit. However, until coverage under the General Permit is obtained, the source is a major source. The following documents are available to assist sources in the screening and application process:

- Questionnaire;
- Request for Coverage under the General Air Quality Permit;
- Instructions for the Request for Coverage under the General Air Quality Permit; and
- PTE calculator.

For facilities not exempt from the minor NSR program and having a PTE below the NSR major source thresholds, the facilities will further evaluate if they meet the throughput limits and operating requirements established in this General Permit. The specific requirements for the General Permit are discussed in Sections 4.3 and 4.4. The emissions associated with the throughput limits are lower than the NSR major source thresholds and were derived as described below in Section 5.

4.3 Specific Permit Requirements for General Permits

The terms and conditions of the General Permit were established according to the required permit content and analyses in the Federal Indian Country Minor NSR Rule. The required permit content is listed in 40 CFR 49.155(a) – *What information must my permit include?* Below we describe the basis for the permit conditions.

40 CFR 49.155(a)(1) – General Requirements

The rule establishes general requirements that each permit must identify: the effective date of the permit; the date by which the owner/operator must commence construction in order for the permit to remain valid; the emission units subject to the permit and their associated emission limitations; and monitoring, recordkeeping, and reporting requirements to assure compliance with the emission limitations.

The General Permit contains all of this required information, except for the emission units subject to the permit. Because of the nature of general permits we believe it is more appropriate to identify the emission units covered by the General Permit in the Approval of the Request for Coverage. The General Permit incorporates the Approval of the Request for Coverage into the General Permit. Each permit contains a separate section that specifically identifies the emission limitations and standards, monitoring and testing, recordkeeping, and reporting and notification requirements.

40 CFR 49.155(a)(2) – Emission Limitations

The permit must contain the emission limitations determined by the reviewing authority under 40 CFR 49.154(c) for each affected emissions unit. 40 CFR 49.154(c) – *How will the reviewing authority determine the emission limitations that will be required in my permit?* – identifies the case-by-case control technology review that must be used by the reviewing authority to determine the appropriate level of control. In carrying out the case-by-case control technology review, the reviewing authority must consider the following factors:

1. Local air quality conditions;
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas;
3. Anticipated economic growth in the area; and
4. Cost-effective emission reduction alternatives.

In addition, the reviewing authority must require a numerical limit on the quantity, rate or concentration of emissions for each regulated NSR pollutant emitted by each affected emissions unit, for which such a limit is technically feasible. The emission limitation required may also be included as pollution prevention techniques, design standards, equipment standards, work practices, operational standards or any combination thereof. However, the emission limitations must assure that each affected emission unit will comply with all requirements of 40 CFR parts 60, 61, and 63, as well as any federal or tribal implementation plans that apply to the unit. Finally, the emission limitations required may not rely on a stack height that exceeds good engineering practice or any other dispersion technique, except as allowed by 40 CFR 51.118(b).

To address the requirements for establishing emission limitations, the following considerations were used for setting the limits in the General Permit for HMA plants:

1. Local air quality conditions – To address this requirement, the General Permit does not allow sources to locate in severe or extreme ozone nonattainment areas and requires sources locating in certain other nonattainment areas to meet more stringent requirements. This includes more stringent emission limitations, as well as, more stringent fuel use limits. In some cases, we included more stringent production limits in addition to limiting fuel use for sources in nonattainment areas to ensure sources would still be below the major source thresholds. Fuel use limits also have the effect of limiting a source's production.
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas – For sources locating in attainment areas we looked at the control requirements specified by 40 CFR parts 60, 61 and 63. These regulations establish minimum technology and emission limitations that must be met nationally and also meet the requirements of 40 CFR 49.154(c)(4) to ensure compliance with parts 60, 61, and 63. For this General Permit we considered regulations that apply to the equipment at HMA facilities:
 - 40 CFR 60 Subpart I – Standards of Performance for Hot Mix Asphalt Facilities;

- 40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984;
- 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines; and
- 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

These regulations cover emissions from dryers and mixers at HMA facilities:

- The South Coast Air Quality Management District Rule for nitrogen oxides (NO_x) Reductions from Miscellaneous Sources ([CA Rule 1147](#)) for operations located in ozone nonattainment areas;
- The South Coast Air Quality Management District Rule for NO_x Reductions from Miscellaneous Sources ([CA Rule 1155](#)) for operations located in particulate matter less than 2.5 micrometers (PM_{2.5}) nonattainment areas; and
- California San Joaquin Valley Rule for Dryers, Dehydrators, and Ovens ([San Joaquin Rule 4309](#)) for operations located in CO nonattainment areas.

The General Terms and Conditions in the General Permit are a standardized set of boilerplate conditions included with general permits. The conditions in the Specific Terms and Conditions section of the General Permit are developed from the Federal Indian Country Minor NSR Rule, NSPS, National Emissions Standards for Hazardous Air Pollutants (NESHAP), and the state permit examples.

The derivation of the emissions limitations and the production and fuel usage limits in the applicability questionnaire, application, and Specific Terms and Conditions section of the General Permit are discussed fully in Section 5. The minor NSR thresholds are based on provisions of the Federal Indian Country Minor NSR Rule at 40 CFR 49.153 and are also discussed fully in Section 5.

The affected emission units under this General Permit include the following:

- Dryers;
- Systems for screening, handling, storing, and weighing hot aggregate;
- Systems for mixing hot mix asphalt;
- Loading transfer, and storage systems associated with emission control equipment;
- Fuel storage tanks; and
- Stationary engines.

Review of the regulations resulted in permit conditions requiring dryers/mixers to be controlled by a baghouse or venturi scrubber, limiting PM emissions from the mixers/dryers to 0.04 gr/scf, limiting opacity to 20% from each affected emissions unit, requiring fugitive emissions to be controlled by a fugitive dust control plan, requiring new stationary engines to be certified to Tier standards, and requiring existing stationary engines to meet maintenance requirements, a 49 ppm CO at 15% O₂ limit, or a 23 ppm CO at 15% O₂ limit based on engine size.

In addition, we also included conditions that fuel used in the dryer/mixer and auxiliary heaters must be limited to natural gas, distillate fuel, and biodiesel. The stationary engines are limited to using diesel and biodiesel as fuels. All liquid fuels are limited to no more than 0.0015 percent sulfur by weight. These

conditions represent the standard fuels used for this equipment and the standard sulfur content these fuels must attain.

For CO and VOC emissions, we looked at San Joaquin Valley Unified Air Pollution Control District Rule 4309 for Dryers, Dehydrators and Ovens. Based on the limits in this rule, we set a CO emission limitation of 600 ppm at 3% O₂ for dryers burning liquid fuels and 400 ppm @ 3% O₂ for gaseous fuel. This limit will ensure good combustion practices for the dryers, which will also limit VOC emissions.

Although we reviewed the NSPS requirements for tanks, we did not include any limits in the permit as the tanks used by HMA facilities will not need to meet the control requirements of the NSPS. The questionnaire limits eligibility for the General Permit to tanks less than 151m³ that store liquids with a true maximum vapor pressure less than 4.0 psi.

The General Permit includes the following requirements from the applicable NSPS and NESHAP requirements:

- 40 CFR 60.92(a)(1) – particulate matter standard;
 - 40 CFR 60.92(a)(2) – opacity standard;
 - 40 CFR 60.4204 and 60.4201(a) – certification to Tier standards;
 - 40 CFR 62.6603, 63.6640, and Table 2d to 40 CFR 63 Subpart ZZZZ – Emission limitation and operating standards;
 - 40 CFR 63.6612, 63.6625, 63.6630 and Table 5 to 40 CFR 63 Subpart ZZZZ – Initial compliance requirements;
 - 40 CFR 63.6640 and Table 6 to 40 CFR 63 Subpart ZZZZ – Continuous compliance requirements; and
 - 40 CFR 63.6604 – Fuel requirements.
3. Anticipated economic growth in the area – The reviewing authority may consider anticipated economic growth when determining whether coverage under the General Permit is justifiable. Considering, however, that the General Permit sets emission standards that are consistent with what is required by HMA across the country in both attainment and non-attainment areas, we expect that this will rarely be a factor.
 4. Cost-effective emission reduction alternatives – The General Permit sets emission standards that are consistent with what is required by HMA facilities across the country, based on the particular attainment status where the source is locating. As such, the chosen technologies are considered widely available and consideration of more cost-effective alternatives is not necessary at this time. We intend to periodically review technology costs in the future to determine when more stringent, cost-effective technologies become widely available.
 5. Co-location with another source – The General Permit allows for a HMA operation to be co-located with a stone quarrying, crushing, and screening (SQCS) operation also operating under a general permit. In addition, sources may request to take voluntarily lower material throughput limits to keep a co-located source below the Title V threshold. The material throughput limits and fuel consumption limits for co-located SQCS and HMA plants are specified in the respective permits.

40 CFR 49.155(a)(3) – Monitoring Requirements

The General Permit must include monitoring that is sufficient to assure compliance with the emission limitations that apply to the source. The General Permit requires monitoring that assures that the baghouse or venturi scrubber is operating properly, that opacity is observed on a weekly basis, that fugitive emissions surveys are conducted weekly, that a burner tune-up is required each time the source is relocated, and that stationary engines with oxidation catalyst monitor the inlet temperature and pressure drop. The venturi scrubber requires continuous monitoring, as compared to a baghouse because it is an active control device instead of a passive control device. The General Permit also requires initial and continuing compliance testing for the mixer/dryer and engine(s). In lieu of an initial compliance test, the permit allows the source to substitute the results of a recent performance test, provided that the recent performance test was conducted within the past two years and meets the performance test requirements specified in the permit.

40 CFR 49.155(a)(4) – Recordkeeping Requirements

The General Permit must include recordkeeping that is sufficient to assure compliance with the emission limitations and monitoring requirements, including certain statements listed in 40 CFR 49.155(a)(4)(i) and (ii). In addition to the recordkeeping requirements in 40 CFR 49.155(a)(4)(i), the General Permit also requires records of the amount of asphalt produced each month, baghouse inspections, scrubber performance data, visible emission surveys, corrective actions taken, results of corrective actions taken, results of source tests, results of the dryer/mixer tune-ups, maintenance activities of stationary engines, and oxidation catalyst performance data, as applicable, for stationary engines.

40 CFR 49.155(a)(5) – Reporting Requirements

The General Permit includes the reporting requirements listed in 40 CFR 49.155(a)(5)(i) and (ii) related to annual reports and reporting of deviations.

40 CFR 49.155(a)(6) – Severability Clause

The General Permit includes a severability clause to ensure the continued validity of the other portions of the permit in the event of a challenge to a portion of the permit.

40 CFR 49.155(a)(7) – Additional Provisions

The General Permit contains the additional provision required for each permit. These conditions are found in the General Provisions of the General Permit.

The questionnaire and the application for the HMA permit contain questions designed to limit the availability of this General Permit to sources that have tanks that are not subject to the requirements of the following: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (NSPS, Subpart Kb). In the permitting documents the EPA basically specifies that facilities with tanks greater than 151 m³ in capacity (39,890 gallons) and 27.6 kPa (4 psi) vapor pressure are ineligible for the General Permit. Other than the production limit and fuel usage limits, the Emission Limitations and Standards section of the permit includes the following additional requirements which are necessary to ensure the emissions from the entire asphalt plant will be below the emission limitations and production limits:

(1) Limitations for Combustion Units

The source definition for HMA plants includes all the combustion units on site. The most common combustion units include hot oil heaters, engines, and emergency generators. In order to limit the combustion emissions from these combustion units, the permit is limited to the following fuels:

- Natural gas, propane, distillate fuel, and biodiesel in the dryer/mixer and auxiliary heaters; and
- Diesel and biodiesel in the stationary engines and generators.

In addition, the total maximum heat input capacity of the auxiliary heaters must be less than 10 MMBtu/hour. This ensures the oil heaters at the affected facilities do not trigger the requirements of [NSPS, Subpart Dc](#) (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units). These limits are necessary to ensure that the SO₂, CO and NO_x emissions from all the combustion units (including dyers, auxiliary heaters, and engines/generators) will not exceed the emissions limitations.

(2) Requirements to Limit Particulate Emissions

Particulate emissions are another concern for asphalt plants. Since asphalt plants may be subject to NSPS, Subpart I which was promulgated before January 1, 1980, fugitive emissions from asphalt plants must be included in total facility emissions for Title V and PSD major source determination purposes. Therefore, while considering the emissions limitations for this General Permit, fugitive emissions from asphalt plants must be taken into account. In order to limit the particulate emissions from the asphalt plants covered by this General Permit, the permit includes the following additional PM control requirements:

- Require the mixer/dryer be controlled by a baghouse or venturi scrubber; and
- Require the facility to operate the production equipment in accordance with the Fugitive Dust Control Plan specified in Attachment B of this document and Attachment C of the General Permit. This dust control plan is adopted from the General Permit for Hot Mix Asphalt Plants developed by Wisconsin.

The above PM related requirements are necessary because the throughput limits were derived assuming that all the particulate emission units at the affected asphalt plants are properly controlled.

(3) Monitoring Requirements

In order to demonstrate continuous compliance with the PM and opacity limits, the General Permit includes the following monitoring requirements:

- Weekly visible emissions surveys.
- Inspections for emissions units controlled by baghouses:
 - Inspect inside the baghouse for “clean” side deposits and evidence of defective bags or leakages between the kiln or “dirty” side and stack or “clean” side of each baghouse used at least once per week when the associated emission unit is in operation; and
 - Inspect and replace filter bags according to the manufacturer’s documentation or more frequently as indicated by weekly inspections for “clean” side deposits.
- Continuous monitoring of pressure drop and liquid flow rate for emissions units controlled by a venturi scrubber.

The Recordkeeping Requirements section of the permit includes necessary recordkeeping requirements to demonstrate compliance with the production and liquid fuel usage limits, fuel type limits, unit capacity limits, and records associated with the operation of control devices. The General Permit does not include the following limitations which are common in the state permits reviewed. (See Attachment A for a listing of the state permit requirements.) The reasons for not including these limits in this General Permit are explained below:

- Plant Capacity Limit: Some state programs include asphalt plant capacity limits (in tons/hour) and dryer capacity limits (in MMBtu/hour) in their general permit programs. In general, the plant capacity is

limited to less than 700 tons/hour and the dryer capacity is limited to less than 150 MMBtu/hour. Since emission factors for asphalt mixer/dryers in AP-42, Chapter 11.1 for Hot Mix Asphalt Plants are in units of lb/ton and the emissions are calculated based on the amount of asphalt produced, the capacity of the asphalt plant does not determine the actual emissions from the dryer/mixer. Therefore, the permit does not include these dryer capacity limits since it is not necessary to show compliance with the emission and throughput limits in this General Permit.

- Total Fuel Usage Limit for the Dryer: Since emission factors for asphalt mixer/dryers in AP-42, Chapter 11.1 for HMA plants are based on the amount of asphalt produced, limiting the annual production of the asphalt plant will effectively limit the emissions from the dryer/mixer. Limiting the amount of fuel used in the dryer/mixer is not necessary. Note that the definition of HMA plants in this General Permit includes engines/generators. The CO emissions from engines/generators can be significant. Therefore, a total fuel usage limit for the engine/generators is necessary and has been included in the General Permit.

4.3.1 Requirements for Sources Located in Nonattainment Areas

For sources located in nonattainment areas we looked at the control requirements required in other nonattainment areas in the country, specifically:

- South Coast Air Quality Management District Rule 1147 for Nitrogen Oxides (NO_x) Reductions from Miscellaneous Sources – this rule is in an ozone nonattainment area; and
- South Coast Air Quality Management District Rule 1155 for Particulate Matter (PM) Control Devices – this rule is in a PM₁₀ and PM_{2.5} nonattainment area.

This resulted in applying a PM limit of 0.01 gr/scf (filterable and condensable) for sources located in PM₁₀ or PM_{2.5} nonattainment areas and a NO_x limit of 40 ppm at 3% O₂ for liquid fuel and 36 ppm at 3% O₂ for gaseous fuel for sources located in ozone nonattainment areas. The other limits for attainment areas also apply to these sources. We did not discover any feasible control technologies or more stringent emission limits that could apply in CO nonattainment areas.

There are additional requirements for sources located in nonattainment areas that go beyond those found in the NSPS and NESHAP requirements. Since some tribes are located in ozone, PM₁₀, PM_{2.5}, and CO nonattainment areas, additional requirements for emissions from HMA plants located in nonattainment areas are necessary. Note that this General Permit does not cover facilities located in severe or extreme ozone nonattainment areas. This General Permit does cover facilities located in serious CO nonattainment areas. In order to develop additional requirements for HMA plants in ozone nonattainment areas, the EPA has reviewed the policy and procedures developed by the South Coast Air Quality Management District and added the following additional requirements for facilities located in nonattainment areas: for sources located in a serious ozone nonattainment area or located in a serious PM₁₀ nonattainment area, NO_x emissions from the dryers shall not exceed the limits specified in Table 3 below.

Table 3: NO_x Emission Limits for Facilities Located in Ozone, NO₂, and PM_{2.5} Nonattainment Areas

Type of Fuel	NO _x Emission Limitation for Dryers
Gaseous Fuel	36 ppmvd at 3% O ₂
Liquid Fuel	40 ppmvd at 3% O ₂

The NO_x emission limitation specified in Table 3 for gaseous fuel was based on the Best Available Control Technology (BACT) determination for asphalt batch plants developed by South Coast Air Quality Management District ([CA BACT Guidelines, Part D](#)). The NO_x emission limitation specified in Table 3 for liquid fuel was adopted from the South Coast Air Quality Management District (AQMD) Rule for NO_x Reductions from Miscellaneous Sources ([CA Rule 1147](#)).

If located in a PM_{2.5} or PM₁₀ nonattainment area, PM emissions (including both filterable and condensable PM) from the dryers shall not exceed 0.01 gr/dscf. This PM emission limitation is based on the PM emission limitation for HMA production equipment in South Coast AQMD Rule for Particulate Matter (PM) Control Devices ([CA Rule 1155](#)).

If located in a CO nonattainment area, CO emissions from the dryers shall not exceed the limits specified in Table 4 below:

Table 4: CO Emission Limits for the Facilities Located in CO Nonattainment Areas

Type of Fuel	CO Emission Limitation for Dryers
Gaseous Fuel	42 ppmvd at 19% O ₂ (= 400 ppmvd at 3% O ₂)
Liquid Fuel	64 ppmvd at 19% O ₂ or (= 600 ppmvd at 3% O ₂)

The CO emission limits in Table 4 above are adopted from the CO emission limits in San Joaquin Valley Unified Air Pollution Control District Rule for Dryers, Dehydrators, and Ovens ([San Joaquin Rule 4309](#)).

The EPA will require performance stack testing to demonstrate compliance with the additional NO_x, CO, or PM emission limits for the facilities located in nonattainment areas. These tests should be repeated every 5 years. The affected facilities are required to perform stack testing for NO_x, PM and CO according to the test methods prescribed in 40 CFR part 60, Appendix A.

4.4 Information on Completing Screening Processes that Have to Be Satisfied to Request Coverage under the General Permit

Prior to obtaining coverage under this General Permit, owners and operators must satisfactorily complete the screening processes for their source that are specified for threatened and endangered species and historic properties. Attached to the Request for Coverage Forms for the general permits, the EPA provides guidance to assist sources in completing these processes.

5. Emission Limitations¹ and Surrogate Throughput Limits

5.1 Developing the Surrogate Limits and Limitations

Emission limitations on production and fuel usage limits as surrogate emissions limitations were established below the major source thresholds for the NSR and Title V permitting programs. The NSR and Title V major source emission thresholds for sources located in attainment areas are 100 tpy for all criteria pollutants. The NSR and Title V major source emissions thresholds for facilities located in nonattainment areas vary for each pollutant and nonattainment status, as shown in Table 2.

In general, CO and NO_x are the pollutants of concern emitted by HMA plants. Because the major source thresholds in CO attainment, unclassifiable or attainment/unclassifiable area and moderate nonattainment areas are identical (100 tpy), we believe there is no reason to establish separate asphalt production limits as surrogates for emissions limitations in these areas. The major source threshold for serious CO nonattainment areas is 50 tpy. Although there are currently no CO nonattainment areas in the United States, we have decided to allow coverage of the HMA General Permit in serious CO nonattainment areas, but with reduced production and fuel usage limits. Should an area become nonattainment for CO in the future, this restriction will prevent an HMA plant located in that area from violating the NSR thresholds.

Diesel-fired internal combustion engines that generate mechanical and electrical power at HMA plants can emit NO_x at levels high enough to make NO_x a secondary pollutant of concern. For this reason, we found it necessary to establish fuel usage limits as surrogate emissions limitations for the engines that are part of the stationary source. Because the major source threshold for NO_x is 50 tpy in serious ozone nonattainment areas, we found it necessary to establish a lower limit for HMA plants in serious ozone nonattainment areas. The fuel usage limits as surrogate emissions limitations do not apply to nonroad engines, such as engines that operate mobile equipment (e.g., trucks and loaders) and portable engines that remain at one location for less than 12 months. The throughput and fuel usage limits are set at levels intended to keep the sources emissions below the NSR major source thresholds in Table 2, with an adequate margin to account for other pollutants emitted by the source. Table 5 shows the emission rates used to determine the throughput and fuel usage limits in the permit for HMA plants located alone. Table 6 shows the emission rates used to determine the throughput and fuel usage limits in the permit for HMA operations co-located with stone quarrying, crushing, and screening operations and voluntarily taking lower limits to avoid the Title V program.

¹ The definition of emission limitation used in this Background Document is the one provided in the Federal Indian Country NSR rule (described in Section 4.3) and includes requirements established by the reviewing authority that relate to the operation of a source, which allows for the use of production throughput limits.

Table 5: Emission Rates used to Determine Throughput and Fuel Usage Limitations for HMA Plants

Pollutant of Concern	Attainment, Unclassifiable or Attainment/ Unclassifiable Areas	Nonattainment Areas
CO	80 tpy	80 tpy (moderate areas)
		40 tpy (serious areas)
PM ₁₀ *	26 tpy	26 tpy (moderate areas)
		26 tpy (serious areas)
PM _{2.5} *	14 tpy	14 tpy
SO ₂	18 tpy	18 tpy
NO _x	71 tpy	45 tpy (serious ozone areas)
		71 tpy (marginal and moderate ozone areas)
VOC	28 tpy	18 tpy (serious ozone areas)
		28 tpy (marginal and moderate ozone areas)

Located Alone

*Note: The emission limitations for these pollutants include fugitive emissions.

Table 6: Emission Rates used to Determine Throughput and Fuel Usage Limitations for HMA Plants Co- Located with a Stone Quarrying, Crushing, and Screening Operation

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
CO	78 tpy	78 tpy (moderate)
		Not applicable
PM	86 tpy	Not applicable
PM ₁₀	63 tpy	63 tpy (moderate)
		63 tpy (serious)
PM _{2.5}	30 tpy	30 tpy
SO ₂	18 tpy	18 tpy
NO _x	90 tpy	Not applicable (serious ozone)
		90 tpy (marginal and moderate ozone areas)
VOC	27 tpy	Not applicable (serious ozone)
		27 tpy (marginal and moderate ozone areas)

The General Permit includes the surrogate throughput and fuel usage limits listed in Table 7 for batch mix and drum mix HMA plants located in serious ozone nonattainment areas and other areas. The two production limits are set at varying levels because potential emissions from this source category are governed by both fuel usage and tons of asphalt processed. They are set at levels intended to keep the sources emissions below the emissions rates in Table 5 (NO_x and CO are the controlling pollutants; the throughput calculations are contained in Attachment C).

Table 7: Surrogate Throughput Limits for HMA Plants

Type of HMA Plant	Attainment Status	Asphalt Production Limit (tons/month)	Fuel Usage Limit for Engines/Generators (gallons/month)
Drum Mix	Attainment, Unclassifiable or Attainment/Unclassifiable for All Pollutants	83,000	12,500
	Serious Nonattainment for Ozone	83,000	5,200
	Serious Nonattainment for CO	33,000	12,500
Batch Mix	Attainment, Unclassifiable or Attainment/Unclassifiable for All Pollutants	27,000	12,500
	Serious Nonattainment for Ozone	27,000	5,200
	Serious Nonattainment for CO	11,000	12,500
Drum Mix, Co-Located	All Areas Except, Serious Ozone and CO Nonattainment Areas	73,000	18,000
Batch Mix, Co-Located	All Areas Except, Serious Ozone and Co Nonattainment Areas	25,000	18,000

5.2 Emission Limitations

Two considerations form the basis for the emission limitations for the General Permit:

1. Are there any EPA regulation-based emission limitations?
2. Where do state programs establish eligibility limits?

5.2.1 EPA Regulation-Based Emissions Limitations

Facilities in attainment areas with criteria pollutant emissions greater than 100 tpy are subject to Title V operating permit programs. This General Permit is not intended to cover Title V major sources. Therefore, the emissions limitations included in the permit are based on the Title V major source threshold of 100 tpy for each criteria pollutant for HMA plants subject to this General Permit and located in attainment areas.

For facilities located in nonattainment areas, this General Permit is not intended to cover NSR major sources and facilities located in severe and extreme ozone nonattainment areas or serious CO nonattainment areas. The NSR major source thresholds vary depending on the classification of the nonattainment areas. For PM₁₀ nonattainment areas, the threshold is 70 tpy for serious areas and 100 tpy for moderate areas. For ozone

nonattainment areas, the NSR major source thresholds are 50 tpy for VOC or NO_x for serious areas and 100 tpy for VOC or NO_x for marginal and moderate areas. The permit uses the same VOC and NO_x thresholds as the emission threshold for this General Permit. For CO nonattainment areas, the NSR major source threshold is 100 tpy for moderate areas. For SO₂ and PM_{2.5} nonattainment areas, the NSR major source thresholds are 100 tpy. The emission limitations established in the permit are based on these NSR major thresholds.

5.2.2 State Program Limits

The EPA researched similar types of permits developed by the states of Alaska, Arkansas, Arizona, Mississippi, New Mexico, Pennsylvania, South Carolina, Washington, Wisconsin, and West Virginia. The requirements for each state program are summarized in Attachment A. Based on the search results, most of the state general permits set the emission limitations to be close to 100 tpy for all criteria pollutants and the emission limits range from 80 tpy to 100 tpy. As a result, establishing the emissions limitations in the permit using 100 tpy for all criteria pollutants for facilities located in attainment areas is within the range of the emission limits in the state programs reviewed.

5.3 Calculating the Throughput Limits

The EPA back-calculated the production limits and fuel usage limits for the engines/generators that resulted in emissions rates at the emission thresholds listed in Tables 5 and 6. For these calculations we made the following assumptions:

- The dryer is controlled by a baghouse or venturi scrubber;
- All production equipment is properly operated in accordance with the fugitive dust control plan;
- Natural gas, propane, distillate fuel, and biodiesel are used in the dryer;
- Natural gas, propane, distillate fuel, and biodiesel are used as fuels in the auxiliary heaters;
- Diesel and biodiesel are used in the engines/generators;
- The sulfur content of liquid fuel is 0.0015% by weight or less; and
- The total heat input capacity of all the auxiliary heaters at the affected facilities is 10 MMBtu/hour.

Attachment C contains sample calculation for a hot mix asphalt plant located alone showing how the production and fuel usage limits in Table 7 were calculated to correspond to the upper CO emission rates in attainment and nonattainment areas as shown in Table 5. Although emissions from asphalt plants include PM and all criteria pollutants, CO is the controlling pollutant of concern when developing the production and fuel usage limits. CO is emitted from the mixer/dryer, asphalt load-out/silo filling operations, auxiliary heaters, and engines/generators.

References:

2008 National Emission Inventory Data, U.S. Environmental Protection Agency.

<http://www.epa.gov/ttn/chief/net/2008inventory.html>

40 CFR 49.151 – 40 CFR 49.165, Federal Minor New Source Review (NSR) Program in Indian Country.

http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=ffc06a883374e41e6772cd842b1ac2d4&tpl=/ecfrbrowse/Title40/40cfr49_main_02.tpl

40 CFR Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=4502b9bec7883393acc0ba9745803908&rgn=div6&view=text&node=40:6.0.1.1.1.12&idno=40>

40 CFR Part 60, Subpart I, Standards of Performance for Hot Mix Asphalt Facilities.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f2c4f71bd50d2a8883adafec36732010&rgn=div6&view=text&node=40:6.0.1.1.1.20&idno=40>

40 CFR Part 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f2c4f71bd50d2a8883adafec36732010&rgn=div6&view=text&node=40:6.0.1.1.1.25&idno=40>

40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f2c4f71bd50d2a8883adafec36732010&rgn=div6&view=text&node=40:6.0.1.1.1.98&idno=40>

40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f2c4f71bd50d2a8883adafec36732010&rgn=div6&view=text&node=40:6.0.1.1.1.99&idno=40>

40 CFR Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutant for Reciprocating Internal Combustion Engines (RICE).

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div6&view=text&node=40:13.0.1.1.1.1&idno=40>

Alaska Dept. of Environmental Conservation, "Minor General Permit 3 for Asphalt Plants."

<http://dec.alaska.gov/air/ap/docs/GP3MG3applic%204-8-10.pdf>

AP 42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources.

<http://www.epa.gov/ttn/chief/ap42/index.html>

CA BACT Guidelines, Part D - Best Available Control Technology Guidelines for Non-Major Polluting Facilities, South Coast Air Quality Management District.

<http://www.aqmd.gov/bact/PartD-10-3-2008.pdf>

San Joaquin Valley Rule 4309 - Dryers, Dehydrators, and Ovens, San Joaquin Valley District, California.
<http://www.valleyair.org/rules/currnrules/r4309.pdf>

South Coast Air Quality Rule 1147- NO_x Reductions from Miscellaneous Sources.
<http://www.aqmd.gov/rules/reg/reg11/r1147.pdf>

South Coast Air Quality Rule 1151- Particulate Matter (PM) Control Devices.
<http://www.aqmd.gov/rules/reg/reg11/r1151.pdf>

Attachment A – Summary of the State Permitting Programs for HMA Plants

State	Permit Type	Emission Limits	Production/Capacity Limits	Fuel Limits	Other Requirements	Weblink
AK	General Permit	PM ₁₀ < 100 tpy NO _x < 100 tpy SO ₂ < 100 tpy	N/A	For SO ₂ protection Area: 1) Use diesel fuel with a sulfur content of ≤ 0.075% by weight or use NG and 2) Diesel electric generators or other diesel engines may not be used.	Setback from nearest residence of 330 feet, and 800 feet if more than two construction seasons.	http://dec.alaska.gov/air/ap/docs/GP3MG3applic%204-8-10.pdf
AR	General Permit	PM < 10 tpy PM ₁₀ < 6.5 tpy NO _x < 95 tpy CO < 95 tpy VOC < 95 tpy SO ₂ < 50 tpy	Production Limit: < 475,000 tpy for aggregate; and < 100,000 tpy for recycled shingle.	Fuel Oil Usage Limit: 1) < 2,300,000 gallons/year for fuel oils with sulfur content < 0.5% and 2) < 1,150,000 and gallons/year for fuel oils with sulfur content < 1 %.	< 1,500 hours (hrs)/year for reclaimed asphalt pavement processing operations; dust control requirements; and PM, NO _x , CO, VOC and opacity stack testing for the asphalt plant (every	http://www.adeg.state.ar.us/air/branch_permits/pdfs/1912-AGP-000.pdf
AZ	General Permit	< 90 tpy for all criteria pollutants	Production Limit: < 5,280 tons/day for PM ₁₀ attainment area; and < 3,150 tons/day for PM ₁₀ nonattainment area.	HAP content limits for fuels.	Fugitive Dust Control Plan.	http://www.azdeg.gov/enviroment/air/permits/download/gnhmapapp.pdf
MS	Multimedia General Permit	< 100 tpy for all criteria pollutants	Production Limits: < 360,000 tpy (batch mix); and < 500,000 tpy (drum mix).	Fuel Type Limit: NG, LPG, fuel oil, liquid bio-derived fuel and waste oil. Sulfur content of the liquid oil < 1%. HAP content limits for waste oils.	N/A	http://www.deq.state.ms.us/MDEQ.nsf/pdf/epd AsphaltGeneralPermit/\$ File/01General.pdf?OpenElement

State	Permit Type	Emission Limits	Production/Capacity Limits	Fuel Limits	Other Requirements	Weblink
NM	General Construction Permit	PM < 95 tpy NO _x < 95 tpy CO < 95 tpy VOC < 95 tpy SO ₂ < 50 tpy Single HAP < 8 tpy Total HAPs < 23 tpy	Production Limit: < 600 tons/hour Capacity Limit: < 180 hp for generators.	Fuel Type Limit: 1) NG, LPG, Gasoline, and 2) No. 2 fuel oil with sulfur content < 0.05%.	Operation Hours < 4,380 hrs/year; and Fugitive Dust Control Plan.	http://www.nmenv.state.nm.us/aqb/permit/Permit_Apps/Permit_Apps_4_GCP-3.html
PA	General Permit	PM < 0.009 gr/dscf PM ₁₀ < 0.021 gr/dscf NO _x < 60 ppm _{vd} @15%O ₂ CO < 200 ppm _{vd} @15%O ₂ VOC < 30 ppm _{vd} @15%O ₂	N/A	Sulfur Content Limits: 1) ≤ 0.3% for No.2 fuel oil, biodiesel and alternative fuels; 2) ≤ 0.5% for No.4 fuel oil and waste-derived liquid fuel; and 3) HAP content limits	Fugitive dust control requirements.	http://www.dep.state.pa.us/dep/deputate/airwaste/aq/permits/gp/Final_General_Permit-13_Conditions.pdf
SC	General Permit	< 100 tpy for criteria pollutants < 10/25 for HAPs	Production Limits: < 250 tons/hour; < 493,515 tpy (batch mix); and < 1,509,015 tpy (drum mix). Capacity Limit: < 10 MMBtu/hour for heaters.	Fuel Type Limit: NG, propane, LPG, and approved waste oil.	< 14 hrs/day for units using No. 2 fuel oil; and < 250 hrs/year for emergency generators.	http://www.scdhec.gov/environment/baq/Permitting/GeneralPermits/hot_mix_asphalt.asp

State	Permit Type	Emission Limits	Production/Capacity Limits	Fuel Limits	Other Requirements	Weblink
WA	General Order for Drum Mix Asphalt Plants	CO < 80 tpy NO _x < 80 tpy SO ₂ < 80 tpy VOC < 5.76 tpy (BACT)	Production Limits: < 500 tons/hour; < 6,000 tons/day; and < 300,000 tpy. Capacity Limit: < 150 MMBtu/hour for drum mixer/dryer.	Fuel Type Limit: NG, LPG, and Diesel with sulfur content < 0.0015%.	N/A	http://www.ecy.wa.gov/programs/air/AOP_Permits/Boiler/GeneralOrders.htm
WI	General Permit	SO ₂ < 80 tpy	Production Limits: < 700 tons/hour and < 625,000 tons/month.	Total Fuel Usage < 125,000 gallons/month Fuel Usage for Engines < 14,167 gallons/month Sulfur content of the fuel < 1.3% Fuel Type Limit: NG, propane, gasoline, diesel, biodiesel, and No. 2 through No. 6 fuel oil.	Fugitive Dust Control Plan; and Stack Height Requirements	http://dnr.wi.gov/air/pdf/HMAGOPfact.pdf
WV	General Permit	< 100 tpy for all criteria pollutants	N/A	Sulfur Content Limits: ≤ 0.5% for fuel oils. HAP content limits for used or recycled oils.	Fugitive dust control requirements and Storage tank capacity limit.	http://www.dep.wv.gov/daq/permitting/Documents/GeneralPermits/G20-B%20Permit-%202009.pdf

Attachment B – Fugitive Dust Control Plan

1. Site Roadways and Plant Yard

- a. The dust on the site roadways/plant yard shall be controlled by applications of water, calcium chloride or other acceptable and approved fugitive dust control compound. Applications of dust suppressants shall be done as often as necessary to meet all applicable emission limits.
- b. All paved roadways/plant yards shall be swept as needed between applications.
- c. Any material spillage on roads shall be cleaned up immediately.

2. Plant

- a. The drop distance at each transfer point shall be reduced to the minimum the equipment can achieve.
- b. The transfer point from the re-circulating belt to the feed belt shall be equipped with an enclosed chute.

3. Storage Piles

- a. Stockpiling of all nonmetallic minerals shall be performed to minimize drop distance and control potential dust problems.
- b. Stockpiles shall be watered on an as needed basis in order to meet the opacity limits. Also, equipment to apply water or dust suppressant shall be available at the site, or on call for use at the site, within a given operating day.

4. Truck Traffic

- a. Vehicles shall be loaded to prevent their contents from dropping, leaking, blowing or otherwise escaping. This shall be accomplished by loading so that no part of the load shall come in contact within six (6) inches of the top of any side board, side panel or tail gate; otherwise, the truck shall be tarped.
- b. A speed limit sign of 15 miles-per-hour or lower shall be posted on site so that it is visible to truck traffic.

5. Corrective Actions

If corrective action needs to be taken, the permittee shall consider and use one or more of the following options: adjust the watering and/or sweeping frequencies, reduce drop distances, increase cover, and/or take other actions to reduce fugitive dust emissions.

Attachment C – Sample Emissions Calculations for Production Limits and Engine/Generator Fuel Usage Limits for Drum Mix Asphalt Plants Located Alone

Type of Mixer: Drum Mix

Emissions are estimated based on the following assumptions:

- The dryer is controlled by a baghouse or venturi scrubber;
- All production equipment is properly operated in accordance with the fugitive dust control plan;
- Both natural gas and No. 2 fuel oil are used in the dryer;
- Natural gas, propane, and No. 2 fuel oil are used as fuels in the auxiliary heaters;
- Both gasoline and diesel are used in the engines/generators;
- The sulfur content of the No. 2 fuel oil is 0.5% by weight or less; and
- The total heat input capacity of all the auxiliary heaters at the affected facilities is 10 MMBtu/hour.

(A) Limits for Facilities Located in Attainment, Unclassifiable or Attainment/Unclassifiable for All Pollutants Areas and Marginal or Moderate Ozone Nonattainment Areas

Production Limit: 83,000 tons per month of asphalt

Total Fuel Usage Limit for Engines/Generators: 12,500 gallons per month

The PM and criteria pollutant emissions from all the equipment at this drum mix asphalt plants are summarized below (SO₂ emissions were not calculated because ultra low sulfur fuel is required):

Process	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂
Dryer/Mixer	11.5	1.44	18.9	64.7	15.9	5.48
Load-out/Silo Filling	0.55	0.55	-	1.22	8.02	-
Conveying	2.74	2.74	-	-	-	-
Screening	0.37	0.02	-	-	-	-
Storage Piles	1.35	0.20	-	-	-	-
Lime Silo Loading	4.82	4.82	-	-	-	-
Auxiliary Heater	1.03	0.80	6.26	3.61	0.48	0.1
Engine/Generator	3.23	3.23	45.5	9.8	3.62	3.01
Total Emissions	25.54	13.81	70.67	79.37	28.06	8.55

Based on the total emissions, CO and NO_x are considered the pollutants of concern since they are the pollutants with emissions closest to the emission limitation of 100 tpy. By limiting CO and NO_x to less than 100 tpy, PM, PM₁₀, PM_{2.5}, and VOC emissions are maintained below the major source thresholds for both attainment, unclassifiable or attainment/unclassifiable areas and allowed nonattainment areas. The CO emissions are from the dryer/mixer, load-out/silo filling operations, auxiliary heaters, and engine generators. Emissions were calculated very conservatively assuming full utilization of 10 MMBtu auxiliary heaters for 8,760 hours per year and uses AP-42 factors for the dryer/mixer and the engines. The CO emissions for each of these processes are detailed below:

1. CO Emission from the drum mix dryer/mixer
= Emission factor x production limit x lbs to tons conversion
= 0.13 lbs/ton x 83,000 tpy x 1 ton/2,000 lbs
= 64.7 tpy

Where the CO emission factor is from AP-42, Table 11.1-7.

2. CO Emission from the asphalt load-out operation
= Emission factor x production limit x lbs to tons conversion
= 0.01349 lbs/ton x 83,000 tpy x 1 ton/2,000 lbs
= 0.67 tpy

Where the CO emission factor is from AP-42, Table 11.1-14.

3. CO Emission from the asphalt silo operation
= Emission factor x production limit x lbs to tons conversion
= 0.001109 lbs/ton x 83,000 tpy x 1 ton/2,000 lbs
= 0.55 tpy

Where the CO emission factor is from AP-42, Table 11.1-16.

4. CO Emission from the auxiliary heaters
= Capacity limit x fuel heat content x emission factor x 8,760 hrs/year x lbs to tons conversion
= 10 MMBtu/hour x 1 MMSCF/1,020 MMBtu x 84 lb/MMSCF x 8,760 hrs/year x 1 ton/2,000 lb
= 3.61 tpy

Where the CO emission factor is for natural gas combustion (worst case scenario among using natural gas, propane, and No. 2 fuel) and is from AP-42, Chapter 1.4.

5. CO Emission from the engine/generator
= Fuel usage x 12 months/year x fuel heat content x emission factor x lbs to tons conversion
= 17,340 gallons/month x 12 months/year x 1.37 MMBtu/gal x 0.95 lb/MMBtu x 1 ton/2,000 lbs
= 9.8 tpy

Where the CO emission factor is from AP-42, Table 3.3-1.

6. Therefore, the total CO emissions from the entire source are:

$$\begin{aligned} &= 67.7 \text{ tpy} + 0.67 \text{ tpy} + 0.55 \text{ tpy} + 3.61 \text{ tpy} + 9.8 \text{ tpy} \\ &= 79.37 \text{ tpy} \end{aligned}$$

(B) Limits for Facilities Located in Serious Ozone Nonattainment Areas

Production Limit:

83,000 tons per month of asphalt

Total Fuel Usage Limit for Engines/Generators: 5,200 gallons per month

The PM and criteria pollutant emissions from all the equipment at this drum mix asphalt plants are summarized below:

Process	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂
Dryer/Mixer	11.5	1.44	18.9	64.7	15.9	5.48
Load-out/Silo Filling	0.55	0.55	-	1.22	8.02	-
Conveying	2.74	2.74	-	-	-	-
Screening	0.37	0.02	-	-	-	-
Storage Piles	1.35	0.20	-	-	-	-
Lime Silo Loading	4.82	4.82	-	-	-	-
Auxiliary Heater	1.03	0.80	6.26	3.61	0.48	0.1
Engine/Generator	3.23	3.23	18.9	4.1	1.51	1.25
Total Emissions	25.54	13.81	44.12	73.65	25.94	6.80

Emissions were calculated in the same way as in the attainment area example above. In this case, the limiting pollutant is NO_x. The potential to emit at full production appears to be very close to the major source threshold. However, this value was very conservatively calculated because it assumes full utilization of 10 MMBtu/hour auxiliary heaters for 8,760 hours per year, uses AP-42 factors for the dryer mixer where the permit requires more stringent emission limits, and uses the AP-42 emission factors for small diesel engines rather than the higher factors for engines > 600 hp.