



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

<http://www.epa.gov/air/tribal/tribalnsr.html>

Background Document: General Air Quality Permit for New or Modified Minor Source Sawmill Facilities in Indian Country

Version 1.0

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1. Sawmill Source Category Definition

A sawmill facility is an operation that processes raw timber into dimensional lumber for shipping and eventual sale. A modern sawmill's basic operation is much like those of hundreds of years ago; a log enters on one end and dimensional lumber exits on the other end. Sawmill activities include sawing, planing, sanding, chipping and drying wood. The General Air Quality Permit for New or Modified Minor Source Sawmill Facilities only covers sawmill operations that are located at minor New Source Review (NSR) sources.

2. Source Category Characterization

A sawmill's basic operation involves several steps to turn logs into dimensional lumber:

- Logs are brought in by logging truck, rail or a log drive to the sawmill;
- Logs are scaled either on the way to the mill or upon arrival at the mill;
- Debarking removes bark from the logs;
- Decking is the process for sorting the logs by species, size and end use (lumber, plywood, chips);
- The head saw, head rig or primary saw, breaks the log into cants (unfinished logs to be further processed) and flitches (unfinished planks) with a smooth edge;
- Depending upon the species and quality of the log, the cants will be further broken down by either a resaw or a gang edger into multiple flitches and/or boards;
- Edging trims all irregular edges off of the flitch, leaving four-sided lumber;
- Trimming squares the ends at typical lumber lengths;
- Drying removes naturally occurring moisture from the lumber (this can be done with kilns or the lumber can be air-dried);
- Planing smooths the surface of the lumber leaving a uniform width and thickness; and
- Shipping transports the finished lumber to market.

Sawmills typically derive their power from the electric grid. Dryers may be either direct-fired or indirect-heated. Boilers are typically used to provide the heat for dryers. In direct-fired dryers, hot combustion gases from an onsite boiler are blended with recirculated exhaust from the dryer to lower the gas temperature to a level that will not scorch the lumber. In indirect-heated dryers, air is warmed over steam coils and then circulated over the lumber. Dryers typically have one to three heated zones followed by a cooling zone or section. Each heated zone has a hot air source, fans to move the warm air, and an exhaust vent or stack. The cooling section circulates ambient air over the wood to reduce the temperature just before it exits the dryer. The lumber must be cooled before proceeding to the next step in the process.

Criteria pollutant emissions of concern are primarily particulate matter (PM) from sawing and planing (PM emissions from re-entrained road dust or sawdust particles can also be a concern), volatile organic compound (VOC) emissions from drying, and nitrogen oxides (NO_x) from boilers and emergency diesel generators. For

sources with available water, water sprays may be used to control PM emissions. Dry PM control methods (i.e., baghouses, fabric filters and cyclones) may also be used to control PM emissions.

Sawmill facilities are common in areas with ample supplies of timber, including the southeast and northwest.

3. State Minor Source Permit Programs

The U.S. Environmental Protection Agency (EPA) researched state air quality permitting websites for examples of general permits for sawmill facilities. The EPA examined these documents for their applicability in developing a general permit for Indian country. The EPA incorporated elements from these permits in developing the documents and regulations in the General Permit for sawmill facilities. The EPA examined general permit documents for sawmill facilities in Oregon and Texas. The EPA chose general permits from these states 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.

Very few states appear to issue air general permits for sawmill facilities. The Texas Commission on Environmental Quality (TCEQ) refers to its permit as a standard permit. The Texas standard permit contains a processed lumber production limit of 25 million board-feet per any consecutive 12-month period for mills. Under this limit, air quality modeling used in the drafting of the permit indicates no adverse effects to human health. Emissions associated with production rates in excess of this figure would require a case-by-case analysis to ensure protection of human health. In order to ensure there are no adverse health effects, the TCEQ performed air quality modeling to determine an appropriate setback distance from the site property line and operating restrictions for sawmill equipment.

The permit covers sawmills as facilities that process logs into lumber, including debarking, sawing, planing, drying, trimming, production of wood chips, and loading of lumber and wood residue. The permit does not authorize the manufacture of other wood products or the chemical treatment of lumber.

If a site's potential to emit (PTE) is at or above a major source threshold for the Federal Operating Permits Program, a certification must be submitted to the commission to avoid the requirement to obtain a federal operating permit. The commission expects most sawmills authorized by this standard permit will not be subject to the requirements of the Federal Operating Permits Program.

Facilities that are ineligible to use the standard permit include those that cannot meet setback requirements, major sources or major modifications that require federal NSR permitting, or those that are located at a site that constitutes a major source as defined by TCEQ regulatory code, 30 TAC Chapter 116. The standard permit cannot be used to authorize sawmills manufacturing wood products, except for wood chips, or chemically treating lumber.

The TCEQ permit requirements include:

- Restrictions on hours of operation;
- Open burning prohibition;
- Fire prevention measures;
- Minimum 150 foot setback from the sawmill property line;
- Fugitive dust controls;
- Sawmill residue and disposal removal maintenance in a manner minimizing entrainment;
- Prohibition on visible emissions at or beyond the property line;
- Opacity restrictions;
- Best available control technology requirements for boilers and other heating devices; and
- Records of monthly and annual throughput of hardwood lumber converted to board-feet and fuel usage.

Oregon's permit covers more activities than the Texas permit. It covers: saw milling, planing, milling, or mill working (including kitchen cabinets and structural members), 25,000 or more board feet/shift finished product and plywood manufacturing and/or veneer drying. All of the following conditions must be met in order for a source to qualify for the Oregon sawmill general permit:

- The permittee is performing activities listed on the cover page, including sawing, planing, sanding, chipping, kiln drying, plywood pressing and surface coating, along with supporting activities such as material conveyors (mechanical and pneumatic), veneer dryers, and boilers;
- A Simple or Standard Air Contaminant Discharge Permit is not required for the source; and
- The source is not having ongoing, recurring or serious compliance problems.

The permit includes the following emission standards and limits:

- Visible opacity limits;
- PM limits for fuel burning equipment, non-fuel burning equipment and fugitive emissions sources;
- Combined PM emissions from all veneer and plywood mill sources within the plant site, including, but not limited to, sanding machines, saws, presses, barkers, hogs, chippers, and other material size reduction equipment, process and space ventilation systems, and truck loading and unloading facilities, must not exceed a plant specific average hourly emission rate (excluded from this standard are veneer dryers, fuel burning equipment, and refuse burning equipment);
- PM limits for veneer dryers;
- Fugitive dust controls;
- PM fallout restriction;
- Nuisance and odor restriction; and
- Fuel type and fuel sulfur content restrictions.

4. Requirements for General Permits

4.1 Documents for General Permits

The EPA developed a standardized set of permit documents in support of the General Permit for sawmill facilities located in Indian country. These consist of the following documents:

- Questionnaire: Assists the facility owner or operator in determining whether they are eligible for the General Permit;
- Request for Coverage Form under the General 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 Form for the General Permit;
- General 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
- 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 emission 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
Carbon Monoxide (CO)	10 tons per year (tpy)	5 tpy
PM	10 tpy	5 tpy
PM ₁₀	5 tpy	1 tpy
PM _{2.5}	3 tpy	0.6 tpy
Sulfur Dioxide (SO ₂)	10 tpy	5 tpy
Nitrogen Oxides (NO _x)	10 tpy	5 tpy
Volatile Organic Compounds (VOC)	5 tpy	2 tpy

Under current EPA policy, true or synthetic NSR minor sources qualify for the General Permit for sawmill facilities. Facilities will be required to compare their PTE to the NSR major source thresholds to determine if they qualify for the General Permit for sawmill facilities. 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	25 tpy of VOC or NO _x
	Extreme	10 tpy of VOC or NO _x
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.

The questionnaire and the application for the sawmill facilities permit contain questions designed to limit the availability of this General Permit to minor source sawmill facilities. 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, 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.

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 sawmill facilities:

1. Local air quality conditions – To address this requirement, the General Permit requires sources locating in ozone nonattainment areas to meet more stringent emissions limitations for VOC emissions from kiln drying, the main source of VOC emissions at sawmill facilities. This will also ensure these sources are not major sources in those areas. Also, PM emission may be a concern at sawmill facilities, some of which can be fugitive. The permit contains a requirement to take corrective action if fugitive dust is visible beyond the property line. This will aid in reducing local PM air quality impacts.
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas – For sources locating in attainment areas the EPA looked at the control requirements required 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 the EPA considered the following regulation that applies to the equipment at sawmill facilities: Subpart Dc of 40 CFR Part 60 - New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units.¹ This regulation covers emissions from boilers at sawmill facilities.

The derivation of the emission limitations in the General Permit are discussed fully in Section 5. The minor NSR thresholds are based on provisions of the *Review of New Sources and Modifications in Indian Country* rule at 40 CFR 49.153 and are provided in Table 1.

If located in an ozone attainment, unclassifiable, or attainment/unclassifiable area or marginal, moderate, or serious ozone nonattainment area, the combined maximum heat input capacity for all boilers at the source must be less than 30 million British thermal units (MMBtu)/hour (hr), which excludes gaseous or liquid-fueled auxiliary heaters. Gaseous or liquid-fueled auxiliary heaters shall not exceed a maximum combined input capacity of 10 MMBtu/hr.

If located in a severe or extreme ozone nonattainment area:

- The combined maximum heat input capacity for all boilers at the source must be less than 50 MMBtu/hr in a severe area and less than 20 MMBtu/hr in an extreme area; and
- Only natural gas may be used as a fuel in boilers at the source.

VOC emissions from all lumber drying kilns in ozone nonattainment and attainment areas must not exceed certain ton per year emissions limitations. Emissions from all planer mills shall be conducted within an enclosed building and emissions to the atmosphere shall be controlled using a baghouse/fabric filter during all times that the affected emissions unit operates. Emissions from outdoor sawmill operations shall be covered at all times that the affected emissions unit operates and all material handling operations must be controlled by a cyclone or baghouse/fabric filter. Emissions to the atmosphere from indoor sawmill operations shall be controlled by a baghouse/fabric filter during all times that the affected emissions unit operates. Lumber produced at each sawmill facility shall not exceed 25,000,000 board-feet per year based on a 12-month rolling total. This production limit is consistent with the two state general permits reviewed.

Liquid fuels shall contain no more than 0.0015 percent sulfur by weight. The permittee must keep a supply of extra bags and other spare parts for the baghouse that must be maintained onsite. The permittee must comply with the permit's fugitive dust control plan. Each affected emissions unit at the facility must not cause to be discharged into the atmosphere any gases that exhibit 20 percent opacity or greater averaged over any six-consecutive-minute period. All VOC-containing material (e.g., coatings,

¹ This General Permit does not include requirements for emergency engines. However, sources can qualify for the General Permit with "exempt" emergency generator engines present at sources pursuant to section 49.153(c) of the Federal Indian Country Minor NSR rule. Under the Federal Indian Country Minor NSR rule, emergency generator engines are "exempt" provided the combined maximum engine power of all emergency generator engines at the permitted source is below 1,000 horsepower (hp) in attainment areas or 500 hp in ozone nonattainment areas classified as serious or lower. There are no exemptions for emergency generator engines located in ozone nonattainment areas classified as severe or extreme. Therefore, your source does not qualify for the General Permit if it contains an emergency engine and is located in a severe or extreme ozone nonattainment area.

thinners, and clean-up solvents) must be stored in closed containers. All waste materials containing VOC (e.g., soiled rags) must be stored in sealed containers until properly disposed.

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 of sawmill facilities in states in both attainment and nonattainment areas, we expect that this will not be a factor.
4. Cost-effective emission reduction alternatives – The General Permit sets emission standards that are consistent with what is required of sawmill facilities in states, 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. The EPA intends to periodically review technology costs in the future to determine when more stringent, cost-effective technologies become widely available.

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. For sawmill facilities, the General Permit requires inspections of baghouses/fabric filters and cyclones (once during each calendar week and month, respectively); weekly visible emissions surveys; weekly fugitive emissions surveys; and initial performance tests for affected emissions units.

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 annual operating parameters for affected emissions units and products processed. The total VOC emitted from the lumber kilns must be recorded for each month since the last report and the permittee must show the 12-month total VOC mass emissions ending with that month. The permittee must calculate the tons per year of VOC emissions in accordance with formula provided in an attachment to the permit. Each month's lumber drying kiln VOC emissions shall be determined as illustrated in Attachment A.

The permittee must record the types and monthly fuel use combusted in each emission unit on a continuous rolling 12-month period; dates and results of baghouse/fabric filter and cyclone inspections, visible emission surveys, and fugitive emission surveys; corrective actions taken as a result of each inspection and survey; results of corrective actions taken; and results of performance tests.

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

The General Permit includes the reporting requirements listed in 40 CFR 49.1559(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. This condition is found in the General Provisions of the General 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.

4.3.1 Requirements for Sources Located in Nonattainment Areas

We did not include any additional requirements for sources locating in ozone nonattainment areas, other than the limits on fuel use. However, we do include ton per year emissions limitations that are lower as the classification of ozone nonattainment goes from marginal/moderate to serious, severe and extreme, which will ensure that the General Permit only applies to minor sources locating or expanding in these nonattainment areas.

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 or endangered species and historic properties. Appendices A and B to the Request for Coverage contain the EPA's guidance to assist source owners and operators in completing these processes.

5. Emission Limitations²

5.1 Developing the Surrogate Limits and Limitations

The General Permit includes ton per year VOC emissions limitations that apply to sources in both attainment and nonattainment areas. The permit does include surrogate emissions limitations as follows:

- Throughput of wood logs shall not exceed 110,000 tons per year based on a 12-month rolling total in serious PM₁₀ nonattainment areas and PM_{2.5} nonattainment areas or 175,000 tons per year based on a 12-month rolling total in all other areas. The 12-month rolling total is determined by the sum of the current month's production and the previous 11 month's production.
- If located in an ozone attainment, unclassifiable, or attainment/unclassifiable area or marginal, moderate, or serious ozone nonattainment area, the combined maximum heat input capacity for all boilers shall be less than 30 MMBtu/hr, excluding gaseous- or liquid-fueled auxiliary heaters.
- If located in an ozone attainment, unclassifiable, attainment/unclassifiable area or marginal, moderate, or serious ozone nonattainment area, the total maximum heat input capacity of all gaseous- or liquid-fueled auxiliary heaters shall be less than 10 MMBtu/hr.
- If located in a severe or extreme ozone nonattainment area:
 - The combined maximum heat input capacity for all boilers and heaters shall be less than 50 MMBtu/hr in a severe area and less than 20 MMBtu/hr in an extreme area.
 - Only natural gas may be used as a fuel in boilers.
- Optional synthetic minor HAP limit of 17.5 tons per year for total HAP emissions from kilns and coating operations and 8 tons per year for a single HAP from kilns and coating operations.

² The definition of emission limitation used in this background document is the one provided in the Federal Indian Country Minor 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.

But for the “controlling” pollutant – VOC -- the General Permit provides the permittee the emissions factors and formulas for the source to calculate compliance with the ton per year VOC emissions limitations that apply to sources in both attainment and nonattainment areas on a monthly basis. Attachment A contains a sample calculation using VOC emission factors provided by the EPA.

The tpy emission limitations used to determine eligibility for the General Permit for sources located in attainment and nonattainment areas corresponds to the source-wide PTE at which a source would become a major source and subject to Title V permitting (referred to hereafter as “the Title V major source threshold”). In attainment areas, the Title V major source threshold is 100 tpy for any criteria pollutant, 10 tpy for a single hazardous air pollutant (HAP), and 25 tpy for any combination of HAPs. The Title V major source threshold in nonattainment areas varies by the pollutant and the nonattainment classification.

The General Permit’s VOC emission limitations reflect the emission rates listed in Table 3 for sawmill facilities located in attainment and nonattainment areas. They are set at levels intended to keep the sources emissions below the Title V major source thresholds (VOC is the controlling pollutant).

Table 3: Emission Rates Used to Determine Emission Limitations for Sawmill Facilities

Pollutant of Concern	Attainment Areas	Nonattainment Areas
CO	83.8 tpy	83.8 tpy
NO _x	41.1 tpy	39.0 tpy (marginal, moderate ozone areas)
		39.0 tpy (serious ozone areas)
		21.5 tpy (severe ozone areas)
		8.6 tpy (extreme ozone areas)
VOC	82.9 tpy	83.0 tpy (marginal and moderate ozone areas)
		43.0 (serious ozone areas)
		21.2 tpy (severe ozone areas)
		8.5 tpy (extreme ozone areas)
PM	145.0 tpy	NA
PM ₁₀	79.4 tpy	79.4 tpy (moderate) 55.0 tpy (serious)
PM _{2.5}	53.1 tpy	53.1 tpy

5.2 Emission Limitations

Two considerations form the basis for the upper eligibility 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

A production-based limit and tpy VOC limitations were established below the thresholds for the major NSR and Title V permitting programs. The emission threshold for sources located in attainment areas is 100 tpy, which is the threshold for Title V operating permit program. The emissions thresholds for facilities located in nonattainment areas are set at the thresholds in Table 2 for each pollutant and nonattainment status, which serve as the thresholds for both the major NSR and Title V permitting programs.

In general, PM/PM₁₀/PM_{2.5} and VOC are the pollutants of concern emitted by sawmills. The limits on production and VOC emissions ensure that all sources applying for the General Permit are below the attainment and nonattainment area major source thresholds.

Table 4 shows the throughput and other limits, emission limitations and other controls required by sawmill permits for the two states reviewed: Oregon and Texas.

Table 4: State Sawmill Permit Throughput Limits and Emission Limitations

State	Throughput Limits	Criteria Pollutant Emission Limitations?	Engine Fuel or Size Limit?	Setback Required?	Fugitive Dust Controls Required?	PM Emissions Controls Required?
Oregon	25,000 or more board-feet/shift finished product.	PM 24 tpy; PM ₁₀ 14 tpy; PM ₁₀ 4.5 tpy; 49 pounds (lbs) per day (Medford-Ashland AQMA); SO ₂ 39 tpy; NO _x 39 tpy; CO 99 tpy; and VOC 39 tpy.	Yes.	No.	Yes.	Yes.
Texas	25 million board-feet per any consecutive 12-month period.	No.	No.	Yes.	Yes.	Yes.

References

40 CFR 49.151 – 40 CFR 49.173, Indian Country Air Quality Planning and Management. http://www.ecfr.gov/cgi-bin/text-idx?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://www.ecfr.gov/cgi-bin/text-idx?SID=fe1381d2a7d4ee8c16a4aac98b6c6d29&node=40:7.0.1.1.1.12&rgn=div6>

Federal Register Vol. 76, No. 127, July 1, 2011, Pages 38748-38808, “Review of New Sources and Modifications in Indian Country; Final Rule” (Indian Country NSR rule).
<https://www.federalregister.gov/articles/2011/07/01/2011-14981/review-of-new-sources-and-modifications-in-indian-country>

Oregon Department of Environmental Quality, “General Air Contaminant Discharge Permit.”
<http://www.deq.state.or.us/aq/permit/acdp/general/AQGP-010.pdf>

Texas Commission on Environmental Quality, “Air Quality Standard Permit for Sawmills.”
http://www.tceq.texas.gov/permitting/air/newsourcereview/mechanical/sawmill_sp.html

**Attachment A:
Emissions Calculations for Sawmills**

Example 1: VOC and HAP Calculation for Western Hemlock with a Maximum Kiln Temperature Less than or Equal to 200 degrees Fahrenheit

Methodology:

- VOC emissions (tons/month) = kiln throughput (thousand board feet (MBF)/month)*VOC emission factor (lbs/MBF)*1 ton/2,000 lbs
- HAP emissions (tons/month) = kiln throughput (MBF/month)*HAP emission factor (lbs/MBF)*1 ton/2,000 lbs

Sample:

- Assume kiln throughput: 1 MBF/month
- VOC emission factor for western hemlock with kiln firing temperature $\leq 200^{\circ}$; emissions factor: 0.5253 lbs/MBF
- VOC emissions (tons/month) = 1 MBF/month*0.5253 lbs/MBF*(1 tons/2,000 lbs) = 2.63×10^{-4} tons/month
- Single HAP emission factor (Methanol) for western hemlock with kiln firing temperature $\leq 200^{\circ}$ F: 0.1484 lbs/ MBF
- Total HAP emission factor (Methanol) for western hemlock with kiln firing temperature $\leq 200^{\circ}$ F: 0.2921 lbs/ MBF Highest Single HAP emissions (tons/month) = 1 MBF/month*0.1484 lbs/MBF*(1 tons/2,000 lbs) = 7.42×10^{-5} tons/month
- Total HAP emissions (tons/month) = 1 MBF/month*0.2924 lbs/MBF*(1 tons/2,000 lbs) = 1.46×10^{-4} tons/month

The permittee must use the emission factors shown in the tables below, and use the temperature dependent factor that corresponds to the drying kiln's temperature capability.

Species	Maximum Kiln Temperature °F	WPP1 VOC ¹ (lbs/MBF)
Non-Resinous Softwood Species		
White Fir ²	≤ 200	0.8388
	> 200	1.0902
Western Hemlock	≤ 200	0.5253
	> 200	0.6615
Western Red Cedar	≤ 200	0.3631
	> 200	1.1453
Resinous Softwood Species (Non-Pine Family)		
Douglas Fir	≤ 200	1.1576
	> 200	1.6969
Engelmann Spruce	≤ 200	0.1775
	> 200	0.2161
Larch	≤ 200	1.1576
	> 200	1.6969
Resinous Softwood Species (Pine Family)		

Species	Maximum Kiln Temperature °F	WPP1 VOC ¹ (lbs/MBF)
Lodgepole Pine	≤200	1.5293
	>200	1.5293
Ponderosa Pine	≤200	2.3450
	>200	3.8087
Western White Pine	≤200	2.8505
	>200	3.8087

¹VOC emissions approximated consistent with EPA's Interim VOC Measurement Protocol for the Wood Products Industry - July 2007 (WPP1 VOC), <http://www.epa.gov/ttnemc01/prelim/otm26.pdf>. WPP1 VOC underestimates emissions when the mass-to-carbon ratio of unidentified VOC exceeds that of propane. Ethanol and acetic acid are examples of compounds that contribute to lumber drying VOC emissions (for some species more than others), and both have mass-to-carbon ratios exceeding that of propane.

²White fir in this context refers to a common name for a mixture of several species of true fir grown in the West. This mixture includes the following species: white fir, grand fir, noble fir and subalpine fir.

Species	Maximum Kiln Temperature °F	Highest Single HAP (methanol, lb/MBF)	Total HAPs (lb/MBF)
Non-Resinous Softwood Species			
White Fir ²	≤200	0.1484	0.2107
	>200	0.4200	0.4956
Western Hemlock	≤200	0.1484	0.2921
	>200	0.2195	0.3661
Western Red Cedar	≤200	0.1484	0.2939
	>200	0.4200	0.5784
Resinous Softwood Species (Non-Pine Family)			
Douglas Fir	≤200	0.0690	0.1409
	>200	0.1170	0.1913
Engelmann Spruce	≤200	0.0250	0.064
	>200	0.0780	0.1201
Larch	≤200	0.0690	0.1409
	>200	0.1170	0.1914
Resinous Softwood Species (Pine Family)			
Lodgepole Pine	≤200	0.0628	0.1166
	>200	0.0628	0.1166
Ponderosa Pine	≤200	0.0740	0.1271
	>200	0.1440	0.2029
Western White Pine	≤200	0.0740	0.1271
	>200	0.1440	0.2029

¹ HAP emissions approximated consistent with EPA's Interim VOC Measurement Protocol for the Wood Products Industry - July 2007 (WPP1 VOC), <http://www.epa.gov/ttnemc01/prelim/otm26.pdf>.

²White fir in this context refers to a common name for a mixture of several species of true fir grown in the western U.S. This mixture includes the following species: white fir, grand fir, noble fir and subalpine fir.

Example 2: Coating Emissions

Methodology:

- VOC emissions (tons/month) = solvent usage (gallons (gal))*density (lbs/gal)*% VOC*1 ton/2000 lbs
- Single HAP emissions (tons/month) = solvent usage (gal)*density (lbs/gal)*% HAP*1 ton/2000 lbs
- Total HAP emissions (tons/month) = solvent usage (gal)*density (lbs/gal)*% HAP*1 ton/2000 lbs

Sample:

- Assume: 5 gal of coating used in a month, coating density of 5 lbs/gallon, coating VOC content is 30%, coating highest single HAP is 5%, coating total HAP is 7%
- VOC emissions (tons/month) = 5 gal*5 lbs/gallon*0.30 VOC*1 ton/2000 lbs = 0.00375 tons/month
- Single HAP emissions (tons/month) = 5 gal*5 lbs/gallon*0.05 HAP*1 ton/2000 lbs = 0.000625 tons/month
- Total HAP emissions (tons/month) = 5 gal*5 lbs/gallon*0.07 HAP*1 ton/2000 lbs = 0.000875 tons/month

Note: The permittee is not required to determine HAP emissions from boilers, heaters, or emergency engines. Potential emissions from these units were included in determining the limit applicable for kilns and coating operations. The limit in the permit and the potential emissions from boilers, heaters, and emergency engines ensure the permittee is not a major source of HAP emissions.