

The 1970 Clean Air Act (CAA) set national ambient air quality standards (NAAQS) for six “criteria” pollutants – sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), lead (Pb), and ozone (regulated as volatile organic compounds or VOC). The CAA was amended in 1977 to authorize EPA standards for “prevention of significant deterioration” (PSD) to maintain good air quality where it already existed. Further amendments to the CAA in 1990 added, among other things, a program to regulate a list of 187 hazardous air pollutants (HAPs) called maximum achievable control technology (MACT) standards and Title V permits. The list of HAPs can be found on EPA’s website at <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications>. Because the need for permits is based on a facility’s **potential** emissions of either criteria or hazardous air pollutants, or both, many small businesses were required to obtain some type of operating permit. Although EPA has the regulatory authority for air permitting, it can delegate the authority or approve a state implementation plan giving authority to individual states. EPA has approved Georgia’s air permitting SIP and thus has transferred air permitting authority here to the state. Consequently, the state of Georgia has the authority to issue permits for facilities within its borders.

Air operating permits

Two main types of permits are issued under the Georgia Air Quality Act – **SIP Construction and Operating permits** and **Title V permits**.

The Georgia SIP Construction & Operating Permit Program is used to permit initial air quality permits and for modifications to existing air quality permits. All permits must be obtained before construction or modifications can begin.

SIP Permitting also includes Generic, No Permit Required, Permit-by-Rule, SIP Exemptions and Synthetic Minor Permits.

Additional Information about the Georgia SIP Construction & Operating Permit Program and the application process can be found on Georgia EPD’s website at <https://epd.georgia.gov/synthetic-minor-permits>.

The second type of permit – a **Title V permit** – is required for all major sources of air pollutants. The Title V permit must be obtained within one year of commencing operations at the facility.

Additional Information about Title V Permit Program and application process can be found on Georgia EPD’s website at <https://epd.georgia.gov/air-protection-branch-technical-guidance-0/types-air-quality-permits/title-v-permitting>.

Air regulations can be complex and confusing to many business owners, particularly small business owners who frequently do not have the same resources to devote to environmental compliance as larger businesses do. Consequently, Georgia EPD has developed this fact sheet to describe in **five steps** how to determine whether your facility requires an air construction approval or permit, or an air operating permit.

Step 1: List all air pollution-emitting equipment or operations (emission unit or source) in your facility.

As defined by Georgia Rule 391-3-1-.01(sss), a source or facility “means any property, source, facility, building, structure, location, or installation at, from, or by reason of which emissions or air contaminants are or may reasonably be expected to be emitted into the atmosphere. Such terms included both real and personal property, stationary and mobile sources or facilities, and direct and indirect sources or facilities, without regard to ownership, and both public or private property. An ‘indirect’ source or facility is a source or facility which attracts or tends to attract activity that results in emissions of any air pollutant for which there is an ambient air standard.” So, an emission source can be a

Examples of Emission Units and Emission Sources		
Turbines	Boilers	Abrasive Blasting
Compressors	Plating	Sawmills
Generators	Solid waste incinerators	Material storage/transfer
Paint booths	Wastewater collection and treatment	Haul roads
Burn-off ovens	Transfer operations	Degreasing tanks
Printing lines	Conveyors	Welding
Engines	Tank truck loading/unloading	Crushing/Grinding

device, such as a paint booth or a natural gas space heater, or an activity such as loading/unloading or welding operations. An emission unit is “[a]ny part or activity of a stationary source that emits or would have the potential to emit any regulated pollutant or any pollutant listed under 42 U.S.C. §7412(b) of the federal Clean Air Act.” Note: The terms emission source and emission unit are often used interchangeably.

Emission units do not have to be connected to a stack or vent. You can also combine emission units, or even view the entire facility as an emission unit. Say, for example, your facility has only three paint booths. A paint booth would be considered an emission unit because it has the potential to emit pollutants through coatings or solvents used in conjunction with painting operations. You can consider each of the paint booths as a separate emissions unit, combine the three paint booths into a single emissions unit, or view the entire facility as an emissions unit. The definition of an emission source is very broad and includes almost any industrial or process equipment.

If facility-wide emissions are below the permitting threshold or the facility falls into an exempted category then a permit is not required. These exempted categories can be found under Georgia Rule 391-3-1-.03(6). These exemptions may not be used to avoid any emission limitations or standards of Rule 391-3-1-.02, lower the potential to emit below “major source” thresholds or to avoid any “applicable requirement” (i.e., NSPS, NESHAP, etc.) as defined in 40 CFR Part 70.2.

Step 2: Calculate air pollution emissions for your facility.

As indicated above, whether your facility needs a permit is based on your potential emissions, not your actual emissions. Your facility’s PTE is based on the maximum design capacity of a stationary source to emit a pollutant under its physical and operational design. PTE calculations are based on 24-hour operation, 365 days per year, and operations at maximum capacity. PTE calculations also do not include pollution control devices or practices, unless there is an inherent bottleneck, a physical or operational limitation, that is part of the design of the facility or emission unit. Bottlenecks prevent operation of equipment at 100% capacity and can be considered when calculating PTE. Be sure, though, that the bottleneck isn’t resolved in the future, thus changing your PTE.

Once you’ve identified your emission sources, you need to calculate the PTE for each pollutant associated with the source. Remember, pollutants you need to track are the criteria pollutants [SO₂, NO_x, CO, PM/PM₁₀/PM_{2.5}, lead, and VOCs (for ozone)] and the 187 HAPs.

For fuel burning sources (e.g., ovens and boilers), you calculate emissions for each fuel used. If the source can use different types of fuel, PTE calculations are based on the fuel that generates the highest potential emissions (worst-case scenario). For other equipment, you calculate emissions based on materials used.

Methods of calculation include the following, from the most preferred to the least preferred:

- CEMS
- Stack tests
- Material balance
- Emission factors
- Engineering judgment
- Other approved method

Sample PTE calculation using material balance:

A facility operates a paint booth 2,000 hours a year and uses 3,000 gallons of blue paint with a density of 9.85 pounds per gallon. The paint contains 40% volatile organic compounds (VOCs) by weight. This information was provided on the material's Safety Data Sheet.

Actual emissions

$(3,000 \text{ gal/yr}) \times (9.85 \text{ lbs/gal}) \times (0.40 \text{ lbs VOC/lb of paint})$
 $= (11,820 \text{ lbs of VOC/year}) \times (1 \text{ ton}/2,000 \text{ lbs})$
 $= 5.9 \text{ tons of VOC/year}$

Potential emissions

$(5.9 \text{ tons of VOC}) \times (8,760 \text{ potential hours}/2,000 \text{ actual hours})$
 $= 25.8 \text{ potential tons VOC/year}$

The blue paint also contains xylene (a HAP) at 30% by weight, so you follow the same calculation for each HAP.

Actual emissions

$(3,000 \text{ gal/yr}) \times (9.85 \text{ lbs/gal}) \times (0.3 \text{ lbs xylene/lb of paint})$
 $= (8,865 \text{ lbs of xylene/year}) \times (1 \text{ ton}/2,000 \text{ lbs})$
 $= 4.4 \text{ tons of xylene/year}$

Potential emissions

$(4.4 \text{ tons of xylene}) \times (8,760 \text{ potential hours}/2,000 \text{ actual hours})$
 $= 19.3 \text{ potential tons xylene/year}$

Sample PTE calculation using emission factors

Consider a facility with a No. 6 oil-fired boiler, firing normally, with low NO_x, that can burn a maximum of 76 gallons/hour. Weight percentage of sulfur in the oil is 2%. PTE for SO₂ and would be calculated as shown.

The first step is going to the "Emissions Factor/AP42" link at the EPA website at www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors and looking under Chapter 1 External Combustion Sources, Section 1.3 Fuel Oil Combustion. You would find that Table 1.3-1 contains emission factors for sulfur dioxide (SO₂), NO_x, CO and PM/PM₁₀.

The second step would be determining if the boiler has a capacity > 100 million Btu/hr or < 100 million BTU/hour, which is how the table is divided. Many times, a boiler's input capacity can be found on its nameplate.

Finding that No. 6 oil has 150,000 BTUs/gallon, and knowing you can burn a maximum of 76 gallons per hour, the boiler's capacity is determined to be $(150,000 \text{ BTU/gallon}) \times (76 \text{ gallons/hour}) = 11,400,000 \text{ BTU/hour}$ or 11.4 million BTU/hr.

Looking in the table for boilers < 100 million BTU/hr, the emission factor for SO₂ is found to be 157S, where S is weight percentage of sulfur in the oil;

Now, calculate your PTE.

Emission factor for SO₂ = $(157 \times 2 \text{ lbs}/1,000 \text{ gallons of oil}) = 0.314 \text{ lbs/gallon}$
PTE SO₂ = $(0.314 \text{ lbs/gallon}) \times (76 \text{ gallons/hr}) \times (8,760 \text{ hours per year})$
PTE SO₂ = 209,000 pounds per year
PTE SO₂ = 104 tons SO₂ per year

You would continue using the emission factors for NO_x, CO, and PM/PM₁₀ to find your total emissions for this emission unit.

Although these calculations are not difficult, they can be tedious, particularly if you have a number of different sources that generate many different criteria pollutants and HAPs.

Step 3: Compare results of your calculations with regulatory thresholds for construction permits or air operating permits, and determine if the facility is required to obtain a construction approval or permit, or air operating permit based on the type of project.

Now that you have the PTE for each criteria pollutant and HAP generated at your facility, all you have to do is compare those numbers to emission thresholds for air permitting.

<u>Pollutant</u>	<u>PTE threshold</u>
Lead	300 pounds per year/3 pounds per day
SO ₂	20 tons per year
PM ₁₀ /PM	20 tons per year
CO	50 tons per year
Individual HAP	2 tons per year/15 pounds per day
Total HAP (Attainment area)	5 tons per year
VOCs	20 tons per year
NO _x	20 tons per year
(Non-Attainment area)	
VOCs	5 tons per year
NO _x	5 tons per year

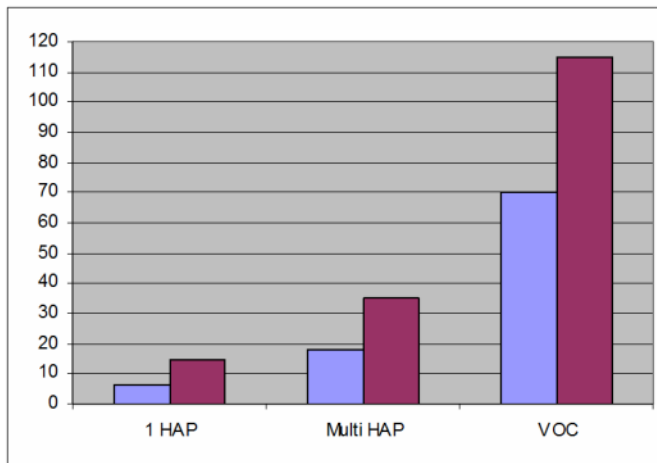
<u>Pollutant</u>	<u>PTE threshold</u>
Lead	100 tons per year
SO ₂	100 tons per year
PM ₁₀ /PM	100 tons per year
CO	100 tons per year
Individual HAP	10 tons per year
Total HAP	25 tons per year
VOCs	100 tons per year
NO _x	100 tons per year

True Minor (B) air operating permit threshold

If your potential emissions exceed the permitting threshold and are below the Title V operating permit threshold, you can apply for a true minor (B) air operating permit. Minor permits are the least costly of the 3 categories of operating permits and do not have enforceable limits on criteria pollutants or HAPs as the PTE is below the major source threshold.

Synthetic Minor (SM) air operating permit threshold

As shown in the graph below, if your potential emissions (red) are above the major source threshold, but your actual emissions (blue) are below the major source threshold, you can apply for a synthetic minor (SM) air operating permit, which is more streamlined and less costly than a Title V air operating permit. The synthetic minor (SM) air operating permit will have federally enforceable permit conditions that will limit potential emissions to below Title V major source thresholds. In the case of HAP limits, these synthetic minor limits also allow facilities to avoid some additional regulatory requirements in addition to Title V permitting.



As shown in the PTE example above, the painting operations had a PTE for xylene of 19.3 tons/year, which exceeds the 10 tons per individual HAP per year threshold for a Title V air operating permit, but has actual emissions of only 4.4 tons/year of xylene. Therefore, this facility could apply for a synthetic minor (SM) air operating permit and accept federally enforceable permit conditions to maintain its emissions below the major source threshold.

Some facilities are required to obtain a Title V operating permit even if potential emissions from the facility do not exceed the major source threshold. These facilities include incinerators, some landfills, and certain sources whose processes involve HAP metals or particularly toxic HAPs. A list of these exceptions is maintained at the following EPA website: <https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit>.

Step 4: Apply for the appropriate approval or permit if you exceed the thresholds, or are otherwise required to obtain an approval or permit.

After you've used your PTE calculations to determine whether your facility requires a construction permit and/or an air operating permit, simply go to the EPD website at <https://epd.georgia.gov/forms-permits/air-protection-branch-forms-permits/air-permits> and download the appropriate forms. Each permit form has its own set of instructions, which simplifies the application process.

In addition to a general operating permit application, EPD has developed a streamlined synthetic minor (SM) air operating permit application for specific facility types. These "permits by rule" include the following:

- Fuel Burning equipment burning natural gas/LPG and/or distillate/residual oil
- On-Site Power Generation
- Concrete and concrete products
- New and existing asphalt plants permitted to burn natural gas/LPG and/or distillate/residual oil
- Cotton ginning operations
- Coating and gluing operations
- Printing Operations
- Non-reactive mixing operations
- Fiberglass molding and forming operations
- Peanut/nut shelling operations

Note: Your Title V permit will include all federally enforceable requirements for your facility, and your permit will include all federally enforceable requirements for your project at the time of permit issuance. Be sure to review your permit frequently and note all compliance dates for reporting and performance tests.

Step 5: If the equipment or entire facility is exempt because potential emissions do not exceed the thresholds and the facility is not otherwise required to obtain an approval or permit, maintain records of your initial assessment, continue to track emissions, and be prepared to provide these records to inspectors.

Also, please note that if your facility does not require an air operating permit, the facility is still subject to certain general provisions of the Georgia Rules for Air Quality Control. This includes, in part, provisions prohibiting sources from causing air pollution which is injurious or which unreasonably interferes with the enjoyment of life or use of property nearby. In addition it still may fall under various federal air quality area source rules, which have specific notification and compliance requirements. A list of these area source rules can be found on the EPA web- site at <http://www.epa.gov/ttn/atw/area/compilation.html>.