

AIR MANAGEMENT PROGRAM FACT SHEET



VOC Emissions Sources and Air Pollution Construction Permits for Painting and Coating Operations

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What is a VOC emissions source?

A volatile organic compound (VOC) emissions source is any process or production unit that uses materials that contain VOCs or creates emissions of VOCs. These include paints, inks, lacquers, adhesives, other coatings or cleanup and other solvents.

This fact sheet focuses on VOC emissions sources within painting and coating operations. Examples include wood coating, metal part painting, plastic part coating, fabric coating, cabinet/countertop lamination, furniture coating, printing presses, screen printing units and motor vehicle repair shops.

Why should a business be concerned about VOC emissions sources?

Emissions of VOCs are known to contribute to increased ground level ozone (“bad” ozone, a.k.a. smog) levels. The Wisconsin Department of Natural Resources (DNR) has regulations that apply to specific industries that emit VOCs through production or manufacturing processes. Industry-specific VOC regulations may also be referred to as RACT rules (Reasonably Available Control Technology). Some VOC RACT rules cover processes or operations like:

- motor vehicle refinishing
- industrial adhesive users
- solvent cleaning activities
- wood furniture manufacturing
- lithographic printing

Other VOC rules affect specific types of businesses or activities and can be found in chapters NR 419-425 of the Wisconsin Administrative Code (Wis. Adm. Code). The DNR also has a general rule regulating VOC emissions found in NR 424. For more information, view the Small Business Environmental Assistance Program (SBEAP) fact sheets on [VOC RACT Rules for Specific Industries](#) and the [General Organic Compound Rule](#) in Section NR 424.03.

Another concern is that many VOCs are considered hazardous air pollutants (HAPs) which are regulated under separate requirements by both the DNR and the U.S. Environmental Protection Agency (EPA).

VOC emissions sources and construction permits

An air pollution construction permit may be required from DNR if:

- A facility is considering adding a new printing unit or spray booth
- Has a plan to change coating application equipment
- Is increased product throughput capacity of a solvent-based parts wash line needed
- If operations are moving to a new location
- If production has increased over time to the point where the facility no longer meets the permit exemptions listed below

Some VOC emissions sources may be exempt from the requirement to apply for a construction permit. For each type of process being installed, replaced or changed in some fashion, a facility needs to check out which exemption might apply to the planned action.

Construction permit exemptions

The construction permit exemptions are found in chapter NR 406, Wis. Adm. Code. There are three options that may allow a facility to be exempt from a construction permit:

- 1) specific exemptions
- 2) actual emissions-based exemptions
- 3) general exemptions

Specific exemptions

If the unit(s) to be installed or modified is either painting/coating or printing lines that will emit less than **1,666 pounds of VOC per month**, the project may be exempt. This can be based on either the capacity of the line or the expected capacity in the near future. If there is a potential to go over that level within a year or so, the facility should consider whether it meets one of the other exemptions, or it may be best to apply for a construction permit.

Actual emissions-based exemptions

If a new process line or whole operation will have emissions less than 10 tons per year for each pollutant, it may be possible to use one of the actual emissions-based exemptions.

To qualify for this exemption, a facility must meet all of these levels:

- Criteria pollutants — do not exceed 10 tons per calendar year (TPY) for each of the following: Volatile Organic Compounds (VOCs), Particulate Matter (PM), Sulfur Dioxide (SO₂), Carbon Monoxide (CO) and Nitrogen Oxides (NO_x)
- Lead — do not exceed 0.5 TPY
- State HAPs — actual emissions less than thresholds in ch. NR 445, Wis. Admin. Code
- Not affected by any New Source Performance Standards and National Emissions Standards for Hazardous Air Pollutants, unless subject solely to recordkeeping or notification requirements
- If using a control device to achieve these exemption levels, the device must be monitored using appropriate methods

For more information on using these exemptions, review the following fact sheets:

- For a **project** that may meet the actual emissions exemption, review the [construction permit exemptions fact sheet](#).
- For a **facility** where the whole operation may meet the actual emissions exemption, review the [operation permit exemptions fact sheet](#).

If a facility meets one of these exemptions, it should follow the procedure described on SBEAP's [Air permit exemptions](#) page under the *Actual Emissions OP* or *Actual Emissions NS* tabs.

If the facility cannot use one of the actual emissions-based exemptions, it may still be able to meet the general exemption.

General exemption

If a facility wants to increase the capacity of a unit, like a solvent-based parts wash line, the increase in VOCs must be less than a **maximum theoretical emission rate of 5.7 pounds per hour**.

The exemptions mentioned above use two different terms for emissions: “will emit” and “maximum theoretical emissions.” “Will emit” means the actual emissions the unit will generate under normal operations. “Maximum theoretical emissions” means the emissions from the operations at the absolute highest production level physically allowed by the designed capacity. It does not consider any control device that might be used to reduce emissions. Maximum theoretical emissions are not just the maximum level at which the facility expects to operate a process line; they could be much higher. The process design capacity may be the maximum conveyor line speed, if the facility paints parts attached to an overhead conveyor line, or maximum press speed, etc. These are important distinctions to consider when deciding if a facility is exempt.

How are VOC emissions calculated?

To find out if a facility is exempt, some calculations are needed. An example coating operation will be used here. The exemption for a coating operation is 1,666 pounds VOC per month of actual emissions. A little information is needed for these calculations:

- 1) If the exemption that applies to a new or changed process is based on what it “will emit,” project from the expected operations what the facility will need to run the process at and, from there, how much VOC emissions it will generate. In other words, if a facility expects to have enough customers to produce “X” number of coated parts each month, how much coating will be used to meet that production level?

If the exemption that applies to a process is based on “maximum theoretical emissions,” the equipment supplier or manufacturer may know the design capacity to help determine the emissions.

- 2) Get copies of the Safety Data Sheets (SDS) from the coating supplier for each coating to be used. Look under the Physical Characteristics section of the SDS, and be sure it shows either:
 - VOC content in pounds per gallon (lb/gal), **or**
 - VOC content in percent (%) by weight (wt), and density of coating in lb/gal.

The SDS may list VOC content in pounds per gallon **excluding water**; do not use that value for these calculations. This value is often needed for showing compliance with VOC RACT rules mentioned previously.

- 3) If a facility does not have the necessary information to calculate VOC content in lb/gal, that information should be available from the coating supplier. There may be sufficient information to calculate VOC content in lb/gal from the VOC content in percent by weight (% by wt) and the coating density, as follows:

Equation:

Coating density (pounds per gallon, lb/gal) x VOC content (percent by weight) / 100 = VOC content (lb VOC/gal)

For Example:

Coating density = 14 lb/gal

VOC Content = 40 percent by weight

Calculate:

14 lb/gal x 40 / 100 = **5.6 lb VOC/gal**

- 4) Once the VOC content in lb/gal is calculated, the VOC emissions can be calculated. Multiply the VOC content by the amount of coating used that month, in gallons, to get pounds VOC per month for that coating. For example, if a facility used 100 gallons of a coating with 5.6 lb VOC/gal for one month:

100 gal/mo x 5.6 lb VOC/gal = **560 lb VOC/mo**

- 5) This calculation should be done for each coating used during the month. Also include VOCs from clean up solvents directly related to the process, such as gun or applicator cleaning for coating operations. Then add up the VOC emissions from all the coatings and solvents used to calculate total VOC emissions in pounds per month. If this total is less than 1,666 pounds per month, the facility is exempt from needing a construction permit.

What does a business need to do if exempt?

Requirements depend on the exemption that applies. For example, if a facility meets one of the specific exemptions on VOC emissions, records need to be kept for each month to demonstrate that emissions stay below the exemption level of 1,666 pounds VOC. If production grows closer to that level, a facility will want to start looking at the permit application process, since a construction permit must be issued **before** monthly emissions go over the 1,666 pound per month level. The [Monthly Emissions Calculation Examples](#), available from SBEAP, can be used to help keep records of VOC emissions on a monthly basis.

How does a business apply for a construction permit?

If a facility is not exempt from the construction permit requirements, permit options need to be reviewed. There are a number of permit types available to sources undergoing construction or expansion:

- Registration Operation Permits (ROP) — These permits allow a facility to construct without obtaining a construction permit as long as it stays within the eligibility thresholds.
- General Operation Permits — These permits are only available for certain industries but also allow construction if the permit criteria are met.
- Source-specific construction permits — These permits are written for a facility's specific operations.

To get permit application materials and instructions, visit DNR's [Air Permit forms](#) webpage. For questions about how to complete the forms, a pre-application meeting can be arranged. Once the application has been completed, follow the [instructions](#) on how to submit the application materials.

What will the application cost?

For Registration and General permits, there is no application fee. However, permit holders pay an annual fee based on which permit is issued:

- Registration Operation Permits: \$400
- General Construction Permits:
 - \$400 if emissions capped at less than 80 TPY
 - \$4,100 if at least 80 TPY but less than 100 TPY

When applying for a source-specific construction permit, enclose a check for \$7,500, payable to the Department of Natural Resources, when the application is submitted. Costs associated with the construction permit review process will vary depending on which requirements apply to the proposed project. Some costs are outlined below.

- \$3,000 minor source review
- \$12,000 major source review
- \$4,500 for minor modifications
- \$12,000 for major modifications
- \$2,500 for a stack test of a single pollutant, and \$1,250 for each additional pollutant up to 3; maximum of \$6,000 (may not be required in all permits)
- \$1,000 air quality analysis for minor source
- \$5,000 expedited review of a minor source

The initial application fee will be applied to the final fee. If the final fee is less than the initial fee, the difference will be refunded.

If a permit is not required, construction can begin immediately. If a permit is required, the facility must wait until the permit is issued by DNR to begin construction. There is always a possibility that DNR will deny a permit if not all the requirements that apply can be met, so a facility could be in trouble if construction started before the permit was received.

What are the permit review steps?

For Registration and General Permits, the application process is very simple. Registration Permits have a simplified process and can be applied for by answering fewer than 15 questions.

Application forms and information on other materials to submit along with the forms can be found on the [Registration Permit webpage](#).

General Permits also have simple application forms, but they are only available for crushing operations or asphalt plants. For more information, visit the [Air Permit Options](#) webpage and select the *General* tab.

Applying for a source-specific construction permit is a more extensive process. After a complete application has been submitted, DNR staff complete the review process, which can take from 20 to 60 days or more depending on the size of the project and the current queue of applications. When the review is completed, DNR then prepares a preliminary decision to approve or deny the application and publishes a notice in the Wisconsin State Journal and online on the [Air Permit Public Notice](#) webpage. The notice gives the public 30 days from the date

the notice was posted online to comment on the proposed project. **This is also the facility's chance to review the permit and provide DNR with comments on elements in the permit.**

If the public shows significant interest in the proposed project or specifically requests one, DNR will schedule a public hearing within 60 days after the end of the public comment period. Then DNR will issue or deny the construction permit within 60 days after the close of the public hearing. Note that this means a public hearing could add up to 120 days to the application process. If there is minimal interest during public comment, DNR can issue the permit soon after the 30 days are up.

What should be done once a final permit is issued?

When a final permit is received, construction can begin. Read the permit carefully for any specific testing or monitoring requirements or other deadlines. The [Air Permit Compliance Calendar](#), available from SBEAP's compliance webpage can be used to manage reminders.

It is very important to keep track of the deadlines in a construction permit because it has a limited life of 18 months. If a facility cannot meet certain deadlines, it should talk with a DNR compliance inspector about extensions. If construction and/or required emission testing in the construction permit cannot be completed, the facility can request one 18-month extension. This must be done well in advance of the expiration date of the permit.

For more information:

Exemption from the requirements to get a permit does not exempt a facility from other air pollution regulations. The SBEAP has resources to help facilities determine what rules apply and how to show compliance with them on the [Compliance Resources](#) page, under the *Air* tab.

For more information, contact:

- SBEAP, 855-889-3021 or DNRSmallBusiness@wisconsin.gov or visit their [webpage](#)
- Air Management Program staff can be found on [DNR's website](#).

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