

## VOC Emissions Sources and Air Pollution Construction Permits

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### **What is a VOC Emissions Source?**

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

This fact sheet focuses on VOC emissions sources with painting or coating operations. Some examples are: 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 I be Concerned about VOC Emissions Sources?**

Emissions of VOCs are known to contribute to increased 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 affecting specific types of businesses or activities 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, the Small Business Clean Air Assistance Program (SBCAAP) has fact sheets on **VOC RACT Rules for Specific Industries** and the **General Organic Compound Rule in Section NR 424.03**.

Many VOCs are also considered hazardous air pollutants (HAPs). These are regulated under separate requirements by both the DNR and the U.S. Environmental Protection Agency (EPA).

### **VOC Emissions Sources and Construction Permits**

Are you considering adding a new printing unit or spray booth? Do you have plans to change your coating application equipment? Do you need to increase the product throughput capacity of your solvent based parts wash line? Will you be moving your operations to a new location? To make these and other changes, you may be required to file an application for an air pollution construction permit with DNR.

If your production has increased over time to the point where you no longer meet the permit exemptions listed below, this also would trigger the need for a construction permit.

### **Construction Permit Exemptions**

Some VOC emissions sources may be exempt from the construction permit requirement. If the unit(s) you want to install or modify is either a painting/coating or printing line and **will emit less than 1666 pounds of VOC per month**, your project may be exempt. If you want 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 (MTE) rate of 5.7 pounds per hour**. For each type of process you install, replace, or change in some fashion, you must determine which exemption applies. The construction permit exemptions are found in chapter NR 406, Wis. Adm. Code.

Note that the exemptions mentioned above use two terms for emissions: "will emit" and "maximum theoretical emissions." **Will emit** refers to the actual emissions the unit will generate under normal operations. **Maximum theoretical emissions** refers to the emissions

from operations at the absolute highest production level possible for the design capacity. MTE does not consider any control device that might be used to reduce emissions.

Maximum theoretical emissions are not just determined by the maximum level at which you expect to operate; MTE represents the highest level technically and physically possible. The process **design capacity** could be the maximum conveyor line speed if you paint parts attached to an overhead conveyor line, or maximum press speed, etc. Be aware of these important distinctions when determining if you are exempt.

### **How to Calculate VOC Emissions?**

To determine if your operation is exempt, some calculations are necessary. *As an example, a coating operation will be used. The exemption for a coating operation is **1666 pounds VOC per month of actual emissions**.* The necessary calculations would require:

❶ If the exemption that applies to your new or changed process is based on what it “will emit,” you must project what quantity of VOC containing materials will be used and the VOC emissions that will generate. If you expect to produce X number of coated parts each month, how much coating will you use to meet that production level?

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

❷ Get copies of the Material Safety Data Sheet (MSDS) for each coating you will use. These would come from your coating supplier. Look in the Physical Characteristics section of the MSDS, and be sure it provides either:

- VOC content in pounds per gallon (lb/gal), or
- VOC content in percent (%) by weight (wt) and density of coating in lb/gal.

If the MSDS has VOC content in pounds per gallon, *excluding water*, **do not use** that value for these calculations.

❸ If you do not have the necessary information to calculate VOC content in lb/gal, you should be able to get this information from your coating supplier. They should know the VOC content of the materials they supply.

You may have sufficient information for calculating 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 (% by weight) / 100 = VOC Content (lb VOC/gal)

### **For Example:**

Coating Density = 14 lb/gal  
VOC Content = 40% by weight

### **Calculate:**

14 lb/gal X 40 / 100 = **5.6 lbs VOC/gal**

❹ Once you know the VOC content in lb/gal, you can calculate VOC emissions. Multiply the VOC content by the amount of coating used that month, measured in gallons, and you will determine pounds VOC per month for that coating. If you used 100 gallons of the coating with 5.6 lbs VOC for one month:

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

❺ Do this calculation for each coating used in the month. Also include VOCs from clean up solvents directly related to the process, like 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 1666 pounds per month**, you are exempt from the construction permit requirement.

### **What If I'm Exempt?**

Requirements depend on the type of exemption. For the example above, you must keep records for each month showing that emissions remain below the exemption level of 1666 pounds VOC. If production approaches the threshold exemption level, you should begin the permit application process. You must have a construction permit issued to you **before** monthly emissions exceed the 1666 pound per month level. Use the **Air Permit Compliance Calendar**, available from SBCAAP, to help you maintain records of VOC emissions on a monthly basis.

### **How Do I Apply for a Construction Permit?**

If you are not exempt from the construction permit requirements, contact the DNR or SBCAAP to get the permit application materials and instructions. If you

have questions about completing the forms, contact DNR or the SBCAAP to arrange a pre-application meeting. Once you have completed the application, submit two copies to the nearest DNR office with Air Program staff. The DNR's web site, at <http://dnr.wi.gov/org/aw/air/staff/AMstaffdir.pdf>, lists offices throughout the state as well as permit contacts in your area.

### **What Will the Application Cost?**

You must enclose a check for \$1350.00, payable to the Department of Natural Resources, when submitting the application. Other costs associated with the construction permit review process will vary depending on the requirements for your proposed project. Some additional costs may include:

- ◆ \$2300 minor source review
- ◆ \$12,000 major source review
- ◆ \$4000 or \$8000 for minor or major modifications (respectively)
- ◆ \$1350 for a stack test of a single pollutant, and \$950 for each additional pollutant up to 3 (may not be required)
- ◆ \$700 air quality analysis for minor source
- ◆ \$2650 fee for expedited review of a minor source (to speed application review)

The application fee will be returned by DNR if the project does not need a construction permit or applied to your final fee if the project does need a permit. If a permit **is not** required, you may begin

construction immediately. If a permit **is** required, you **must wait** until a permit is issued by DNR before beginning construction. There is always a possibility that DNR will deny your permit, if you cannot meet applicable requirements. Penalties and fines can result if construction starts without a permit.

### **What are the Permit Review Steps?**

First, the DNR reviews the complete construction permit application, which can take from 20 to 60 days **or more** depending on the size of the project and other permit reviews at DNR. When the review is completed, the DNR prepares a preliminary decision approving or denying the application and publishes a notice in your local paper. The notice tells the public they have 30 days from the date that paper was published to comment on your proposed project.

If the public shows significant interest in the proposed project or specifically requests a public hearing, DNR will schedule one 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. Therefore, a public hearing could add up to 120 days to the process.

If there is minimal interest during public comment, DNR can issue the permit after the 30-day comment period. Once issued, the construction permit is effective for 18 months, with a possibility for one 18-month extension.



### **Contacts for More Information or Assistance**

The Small Business Clean Air Assistance Program helps smaller businesses understand and comply with the Clean Air Act regulations. Contact the program's Clean Air Specialists for more assistance: Renée Lesjak Bashel at 608-264-6153, Tom Coogan at 608-267-9214, or Jean Beckwith at 608-261-2517.



For further information on the construction permit process, contact the DNR's Central office at 608-266-6876 (permit contact), or locate the appropriate contact at DNR by location or name at <http://dnr.wi.gov/org/aw/air/staff/AMstaffdir.pdf> or by topic at <http://dnr.wi.gov/org/aw/air/staff/AMsubjects.pdf>. You will need Adobe Reader to view these documents.