



Minnesota
Pollution
Control
Agency

Facts About Woodworking Potential To Emit

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Background

When applying for air quality permits from the Minnesota Pollution Control Agency (MPCA), owners or operators of woodworking facilities are required to calculate their “potential to emit” (PTE). The PTE of an air pollutant is based on a facility’s maximum production capacity, that is, what the facility would emit if it were operated 24 hours each day, 365 days per year.

This fact sheet describes ways to calculate PTE for woodworking operations, and offers advice to keep in mind when doing the calculations.

Bottlenecks and stockpiling

The first step in calculating PTE is defining the maximum production capacity of the facility. The maximum capacity, however, may not be the sum of all the individual machines’ capacities. Some machines in your facility may not be able to operate at full capacity because of “bottlenecks”, points in a production line where the overall rate of production is slowed.

For example, you may have a cabinet-door production line containing a routing machine followed by a sanding machine. Though the router operates at full capacity, that may not be enough to keep the sander operating at full capacity, thus creating a bottleneck. The only way to operate the sander at full capacity would be to stockpile the routed doors in front of it.

Thus, the sander’s air emissions are limited by the operation of the routing machine.

Note: This fact sheet focuses primarily on the emission of particulate matter (sawdust) from woodworking operations. Emissions from painting and other coating operations are dealt with in the fact sheet titled “Alternatives for Calculating PTE for Coating and Spraying”.

Since stockpiling would be unusual in a wood-working facility, and since bottlenecks limit the amount of emissions coming from certain machines, you do not have to assume that all of your machines operate at 100 percent capacity when calculating your PTE. You should examine your facility for any bottlenecks that limit the production rate of an operation and take those bottlenecks into consideration when calculating PTE.

Emission factors

One way to calculate PTE is to use emission test data, but few facilities have such test data. An alternative is to use “emission factors”, which are standardized emission data you can apply to your operations. Emission factors are expressed as amounts of pollutant emitted over a certain amount of time or as a result of using a certain amount of raw materials.

For example, a machine for sawing logs might have an emission factor of 0.35 pounds of particulate matter per ton of logs sawed. So to calculate PTE for log sawing, for example, you would only need to know your equipment’s maximum log-sawing capacity in tons per hour. Suppose the

maximum capacity is 3 tons per hour. Multiplying the capacity by the emission factor yields 1.05 pounds of particulate matter per hour, the PTE for that operation.

A list of emission factors can be found in the Compilation of Air Pollutant Emission Factors (AP-42). AP-42 is also available on the Internet at www.epa.gov/ttn/chief/ap42/index.html. If no emission factors exist for your specific operation, then you may use emission factors for a similar operation.

Other methods

You can calculate a “mass balance” on some or all of your processes to determine the weight of your air emissions for PTE. This may be most useful for operations that tend to generate chips or shavings rather than dust.

The following approach can be used to conduct a mass balance:

Weight of air emissions equals the weight of wood going into the machine minus the weight of wood going out minus the weight of what is swept up off the floor. Do not subtract the weight of material captured by pollution control equipment when calculating PTE unless it is *required* for fire safety reasons.

If there is no other way to calculate PTE, facilities can use Minnesota’s particulate standard (Minn. R. 7011.0710-0735) to determine allowable emissions. Allowable emissions are then defined as PTE. To determine PTE using this method, you need your process throughput weight or the exhaust gas airflow rate for each emission point.

Pollution control equipment

If your facility uses air pollution control equipment, you may consider its effect on PTE if it is required for fire safety reasons.

In some cases, you may be able to consider the control equipment when calculating emissions to determine the kind of permit you need, as long as the control equipment is operated as required in Minnesota’s Control Equipment Performance Standard (Minn. R. 7011.0060- 0080). The rule specifies the control efficiency you can use in your calculations.

Alternately, the vendor for your control equipment may have data on the concentration of particulate matter that is emitted from that equipment. The vendor information you use should be for the same model of control equipment you are using and, ideally, should be from a similar process.

Need More Information

For more information about calculating PTE for woodworking operations, contact the MPCA at 651-296-6300 or 800-657-3864.
