

Air Program Fact Sheet Solvent Metal Cleaning RACT

February 2017

Wisconsin's Solvent Metal Cleaning RACT

In 1980, Wisconsin created a regulation to control air pollution from solvent metal cleaning operations. The Clean Air Act Amendments of 1990 revised this regulation, requiring states with ozone problems to reduce volatile organic compound (VOC) pollution—a primary precursor to ozone. Solvent metal cleaning is one of the largest industrial sources of VOCs in Wisconsin. This fact sheet summarizes Wisconsin's solvent metal cleaning standard, which can be found in section NR 423.03 of the Wisconsin Administrative Code (Wis. Adm. Code).

When does this regulation affect a business?

The purpose of this summary is to provide an understanding of how a Reasonably Available Control Technology (RACT) rule may affect businesses involved in solvent metal cleaning. The location and size of a business determine whether this rule applies.

If metal parts are cleaned at a facility, it is probably affected by s. NR 423.03, Wis. Adm. Code. It could be exempt, or the rule may not apply, if the facility uses one of the following:

- a photochemically unreactive solvent (such as methylene chloride or 1,1,1-trichloroethane)
- a solvent with 2% VOC content (by volume) or less. If exempt, keeping records of the solvents used may be required to support the exemption.

If methylene chloride, 1,1,1-trichloroethane, or other halogenated solvents are used, the facility may be affected by a national regulation. Contact a local DNR air inspector or the Small Business Environmental Assistance Program (SBEAP) for more information.

This regulation affects businesses throughout the state; however, recent amendments to the law apply only to operations in the ozone nonattainment and former nonattainment areas. These areas are around the southeast shoreline of Lake Michigan. Affected counties include:

Kenosha	Milwaukee	Sheboygan
Kewaunee	Ozaukee	Washington
Manitowoc	Racine	Waukesha

The tables attached to this summary outline requirements for businesses both inside and outside the ozone nonattainment and former nonattainment areas.

Throughout the state, the following types of degreasers are affected:

- cold cleaners
- conveyORIZED vapor cleaners
- open top (batch) vapor cleaners
- conveyORIZED non-vapor cleaners

Which parts of the rule apply?

The location of a business, type of degreaser used and the amount of air pollution emitted determine which requirements affect a business. The tables attached to this fact sheet organize the requirements as follows:

- equipment standards
- pollution control device requirements
- operating requirements
- record keeping

Some businesses are subject to all of these requirements, some are subject to all but the pollution control device requirements and still others are exempt from the entire standard except for record keeping.

Outside the nonattainment area

A business may be exempt from this regulation (except for record keeping) if its degreaser meets one of these emission exemptions:

- **Cold Cleaners** with a throughput less than 1.5 gallons of solvent per day
- **Open Top (Batch) Vapor Cleaners** emitting less than 15 pounds of VOC per day
- **Conveyorized Vapor or Non-Vapor Cleaners** emitting less than 15 pounds of VOC per day

If a degreaser does not meet one of these exemptions, a facility may still be exempt from the pollution control device requirements if the degreaser meets one of the following size cutoffs for the surface area of the opening:

- **Cold Cleaners**—1.1 sq. ft.
- **Open Top (Batch) Vapor Cleaners**—10.8 sq. ft.
- **Conveyorized Vapor/Non-Vapor Cleaners**—21.6 sq. ft.

If the degreaser does not meet either of these exemptions, than all requirements of this standard apply.

Inside the nonattainment area

A business may be exempt from the pollution control device requirements if its degreaser meets one of these exemptions:

- **Cold Cleaners**—throughput less than 1.5 gallons of solvent per day, and has an open area smaller than 1.1 sq. ft.
- **Open Top Vapor Cleaners**—emits less than 15 pounds of VOC per day, and has an open area smaller than 10.8 sq. ft.
- **Conveyorized Cleaners**—emits less than 15 pounds of VOC per day, and has an open area smaller than 21.6 sq. ft.
- **Wipe Cleaning**—emits less than 15 pounds of VOC per day.

How does a business comply?

Refer to the tables attached to this fact sheet to identify what must be done to comply with equipment standards, pollution control device requirements and operating requirements.

Record keeping

If a business is subject to all requirements of this standard, or to everything except the pollution control device requirements, appropriate records must be kept to show compliance. If a business is exempt from this standard, appropriate records must still be kept to support the exemption. Applicable record keeping requirements can be found in chs. NR 423 and NR 439. If a degreaser is located in the ozone nonattainment or former nonattainment areas, records to support the exemption should include:

- unique name or identification number for each degreaser or wipe cleaning operation
- volume of solvent used or added per day in each individual degreaser or wipe cleaning operation, in gallons
- VOC emissions per day from each individual degreaser or wipe cleaning operation, in pounds or kilograms
- density of the solvent used, in pounds per gallon
- VOC content of the solvent, expressed as percent of VOC by volume of solvent

Compliance deadlines

Businesses both inside and outside of the ozone nonattainment and former nonattainment counties should be in compliance with this regulation at this time. If a facility is not in compliance, a local DNR air inspector should be contacted to arrange a compliance schedule.

Additional information

SBEAP has additional resources to help facilities determine what rules apply and how to show compliance with them on the *Compliance Resources* page (<http://dnr.wi.gov/topic/SmallBusiness/Compliance.html>).

For more information, contact SBEAP staff at 855-889-3021 or DNRSMB@wisconsin.gov or visit their web page (<http://dnr.wi.gov/topic/SmallBusiness/>). Contact information for Air Management Program staff can be found at <http://dnr.wi.gov/topic/AirQuality/Contacts.html>.

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Solvent Metal Cleaning Requirements

Cold Cleaners (Parts Cleaners)		
	Outside the Ozone Nonattainment Area	Inside the Ozone Nonattainment Area
Equipment Standards	<p>Equip the degreaser with a cover. Design the cover so that it can be easily operated with one hand if the solvent volatility is greater than 2 kPa, if the solvent is agitated, or if the solvent is heated.</p> <p>Equip the degreaser with a facility for draining cleaned parts. Construct it internally so parts are enclosed while draining if the solvent volatility is greater than 4.3 kPa, except if an internal type cannot fit into the cleaner.</p>	<p>Requirements are the same as outside the ozone nonattainment area with the following modifications:</p> <p>Equipment standards are the same as outside the ozone nonattainment area, with the following modification:</p> <p>Design the cover to be a type that slides off horizontally without disturbing the vapor layer if the solvent volatility is greater than 2 kPa, if the solvent is agitated, or if the solvent is heated.</p>
Pollution Control Device Requirements	<p>If solvent volatility is greater than 4.3 kPa, or if the solvent is heated above 120 degrees, install either:</p> <ol style="list-style-type: none"> 1. A freeboard with freeboard ratio greater than or equal to 0.70; 2. A water cover; or 3. Other equivalent system approved by DNR. 	<p>If solvent volatility is greater than 4.3 kPa, or if the solvent is heated above 120 degrees, install either:</p> <ol style="list-style-type: none"> 1. A freeboard with freeboard ratio greater than or equal to 1.0; 2-3. Same as outside the ozone nonattainment area.
Operating Requirements	<p>If a solvent spray is used, spray with a solid fluid stream (not atomized) and prevent splashing.</p> <p>Provide a label stating the following operating requirements and provide supervision or instruction to ensure that the operation is conducted as follows:</p> <ol style="list-style-type: none"> 1. Close the cover when parts are not being handled in the degreaser; 2. Drain parts for at least 15 seconds or until dripping ceases; 3. Store waste solvent only in covered containers and do not dispose of it or transfer it to another person in such a way as to cause greater than 15% of the waste solvent (by weight) to evaporate into the ambient air during the ozone season. Disposal of more than 1.5 gallons of any liquid VOC waste, or of any waste material containing more than 1.5 gallons of VOC, from a facility in any one day during the ozone season must be done in a manner that does not permit evaporation into the ambient air; and 4. Repair solvent leaks immediately, or shut down the degreaser until the leaks are repaired. 	<p>All operating requirements are the same as outside the ozone nonattainment area.</p>

Open Top (Batch) Vapor Degreasers

	Outside the Ozone Nonattainment Area	Inside the Ozone Nonattainment Area
Equipment Standards	Equip the degreaser with a cover that doesn't disturb the vapor zone.	<p>Requirements are the same as outside the ozone nonattainment area with the following modifications:</p> <p>Equip the degreaser with a cover that doesn't disturb the vapor zone.</p> <p>The cover must slide off horizontally without disturbing the vapor layer, and must open only when the dry part is actually entering or exiting. If the degreaser opening is larger than 21.6 sq. ft., then design the cover to be mechanically assisted.</p>
Pollution Control Device Requirements	<p>Install either:</p> <ol style="list-style-type: none"> 1. A freeboard with freeboard ratio greater than or equal to 0.75 (with a mechanically assisted cover if the degreaser opening is greater than 10.8 sq. ft.); 2. A refrigerated freeboard chiller; 3. An enclosed design (cover or door opens only when the dry part is actually entering or exiting the degreaser); 4. Ventilation greater than or equal to 50 ft³/min/ft² of air-vapor area (when cover is open), all passing through a carbon adsorption system which exhausts less than 25 parts per million of solvent averaged over one complete adsorption cycle; or 5. Other equivalent system approved by DNR. <p>Provide the following safety switches:</p> <ol style="list-style-type: none"> 1. A condenser flow switch for coolant temperature; 2. A thermostatic control switch for vapor level; and 3. A spray safety switch for vapor level. 	<p>Install either:</p> <ol style="list-style-type: none"> 1. A freeboard with freeboard ratio greater than or equal to 1.0 (with a mechanically assisted cover if the degreaser opening is greater than 10.8 sq. ft.); 2-5. Same as outside the ozone nonattainment area. <p>Requirement for safety switches is also the same as outside the ozone nonattainment area.</p>

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Open Top (Batch) Vapor Degreasers (continued)

	Outside the Ozone Nonattainment Area	Inside the Ozone Nonattainment Area Requirements are the same as outside the ozone nonattainment area with the following modifications:
<p>Operating Requirements</p>	<p>Do not position ventilation fans so as to disturb the degreaser's vapor zone.</p> <p>Provide a label stating the following operating requirements and provide supervision or instruction to ensure that all the following operating requirements are conducted:</p> <ol style="list-style-type: none"> 1. Keep the cover closed except when processing workloads through the degreaser; 2. Always spray below the vapor level; 3. Minimize solvent carryout by: <ul style="list-style-type: none"> ◆ Racking parts to allow complete drainage, ◆ Moving parts in and out at less than 11 ft/min, ◆ Holding parts in the vapor zone at least 30 seconds, ◆ Tipping out any pools of solvent on parts before removing them from the vapor zone, and ◆ Allowing parts to dry within the degreaser for at least 15 seconds or until visually dry; 4. Do not degrease porous or absorbent materials; 5. Move parts in and out at less than 4.9 ft/min if the workload occupies 50% or more of the open area; 6. Except where a load cannot be divided, avoid loading the degreaser to the point where the vapor level would drop more than 4 inches when the workload is placed in the vapor zone; 7. Do not operate the degreaser as to allow water to be visually detectable in solvent exiting the water separator; 8. Store waste solvent only in covered containers and do not dispose of it or transfer it to another person in such a way as to cause greater than 15% of the waste solvent (by weight) to evaporate into the ambient air during the ozone season. Disposal of more than 1.5 gallons of any liquid VOC waste, or of any waste material containing more than 1.5 gallons of VOC, from a facility in any one day during the ozone season must be done in a manner that does not permit evaporation into the ambient air; and 9. Repair solvent leaks immediately, or shut down the degreaser until the leaks are repaired. 	<p>All operating requirements are the same as outside the ozone nonattainment area, with the following addition:</p> <p>At startup, turn on the refrigerated condenser and the refrigerated freeboard chiller either simultaneously with or before turning on the sump heater. At shutdown, turn off the sump heater either simultaneously with or before turning off the refrigerated condenser and refrigerated freeboard chiller.</p>

Conveyorized Vapor Degreasers

	Outside the Ozone Nonattainment Area	Inside the Ozone Nonattainment Area Requirements are the same as outside the ozone nonattainment area with the following modifications:
Equipment Standards	<p>Minimize entrance and exit openings of degreaser so no opening exceeds the smallest possible opening by more than 8 inches or 20% of size, whichever is smaller.</p> <p>Provide downtime covers for closing off the entrance and exit during shutdown hours. Use them immediately after the conveyors and exhausts are shut down; do not remove them until just before startup.</p>	<p>Equipment standards are the same as outside the ozone nonattainment area, with the following modification:</p> <p>Minimize entrance and exit openings of degreaser so no opening exceeds the smallest possible opening by more than 4 inches or 10% of size, whichever is smaller.</p>
Pollution Control Device Requirements	<p>Install either:</p> <ol style="list-style-type: none"> 1. A refrigerated freeboard chiller; 2. Ventilation greater than or equal to 50 ft³/min/ft² of air-vapor area (when cover is open), passing through a carbon adsorption system which exhausts less than 25 parts per million of solvent averaged over one complete adsorption cycle; or 3. Other equivalent system approved by DNR. <p>Provide the following safety switches:</p> <ol style="list-style-type: none"> 1. A condenser flow switch for coolant temperature; 2. A thermostatic control switch for vapor level; and 3. A spray safety switch for vapor level. 	<p>All pollution control device requirements are the same as outside the ozone nonattainment area.</p>
Operating Requirements	<p>Minimize carryout emissions by:</p> <ol style="list-style-type: none"> 1. Using a drying tunnel, tumbling basket, or the equivalent; 2. Racking parts for best drainage; and 3. Maintaining the vertical conveyor speed at less than 11 ft/min. <p>Store waste solvent only in covered containers and do not dispose of it or transfer it to another person in such a way as to cause greater than 15% of the waste solvent (by weight) to evaporate into the ambient air during the ozone season. Disposal of more than 1.5 gallons of any liquid VOC waste, or of any waste material containing more than 1.5 gallons of VOC, from a facility in any one day during the ozone season must be done in a manner that does not permit evaporation into the ambient air.</p> <p>Repair solvent leaks immediately, or shut down the degreaser until the leaks are repaired.</p> <p>Do not position ventilation fans so as to disturb the degreaser's vapor zone.</p> <p>Do not operate the degreaser as to allow water to be visually detectable in solvent exiting the water separator.</p>	<p>All operating requirements are the same as outside the ozone nonattainment area, with the following additions:</p> <p>Provide a label stating operating requirements and provide supervision or instruction to ensure that the operation is conducted appropriately.</p> <p>At startup, turn on the refrigerated condenser and the refrigerated freeboard chiller either simultaneously with or before turning on the sump heater. At shutdown, turn off the sump heater either simultaneously with or before turning off the refrigerated condenser and refrigerated freeboard chiller.</p>

Conveyorized Non-Vapor Degreasers

	Outside the Ozone Nonattainment Area	Inside the Ozone Nonattainment Area
<p>Equipment Standards</p>	<p>Minimize entrance and exit openings of degreaser so no opening exceeds the smallest possible opening by more than 8 inches or 20% of size, whichever is smaller.</p> <p>Provide downtime covers for closing off the entrance and exit during shutdown hours. Use them immediately after the conveyors and exhausts are shut down; do not remove them until just before startup.</p>	<p>Requirements are the same as outside the ozone nonattainment area with the following modifications:</p> <p>Equipment standards are the same as outside the ozone nonattainment area, with the following modification:</p> <p>Minimize entrance and exit openings of degreaser so no opening exceeds the smallest possible opening by more than 4 inches or 10% of size, whichever is smaller.</p>
<p>Pollution Control Device Requirements</p>	<p>Install either:</p> <ol style="list-style-type: none"> 1. A carbon adsorption system demonstrated to have at least a 95% control efficiency, measured across the carbon adsorption equipment and averaged over a complete adsorption cycle; or 2. Other equivalent system approved by DNR. 	<p>All pollution control device requirements are the same as outside the ozone nonattainment area.</p>
<p>Operating Requirements</p>	<p>Minimize carryout emissions by:</p> <ol style="list-style-type: none"> 1. Using rollers to remove excess solvent in strip cleaning operations; or 2. Arranging parts for best drainage in mesh belt cleaning operations and other conveyorized non-vapor degreasing operations. <p>Store waste solvent only in covered containers and do not dispose of it or transfer it to another person in such a way as to cause greater than 15% of the waste solvent (by weight) to evaporate into the ambient air during the ozone season. Disposal of more than 1.5 gallons of any liquid VOC waste, or of any waste material containing more than 1.5 gallons of VOC, from a facility in any one day during the ozone season must be done in a manner that does not permit evaporation into the ambient air.</p> <p>Repair solvent leaks immediately, or shut down the degreaser until the leaks are repaired.</p>	<p>All operating requirements are the same as outside the ozone nonattainment area, with the following addition:</p> <p>Provide a label stating operating requirements and provide supervision or instruction to ensure that the operation is conducted appropriately.</p>

Wipe Cleaning Operations

	<p style="text-align: center;">Outside the Ozone Nonattainment Area</p> <p style="text-align: center;">Wipe cleaning operations are not regulated outside the ozone nonattainment area.</p>	<p style="text-align: center;">Inside the Ozone Nonattainment Area</p>
<p>Equipment Standards</p>		<p>Immediately after use, place and store all rags or other porous materials used to apply solvent in a covered container that is labeled as waste solvent.</p>
<p>Pollution Control Device Requirements</p>		<p>Use either:</p> <ol style="list-style-type: none"> 1. A carbon adsorption system demonstrated to have at least a 90% capture efficiency and a 90% control efficiency, measured across the carbon adsorption equipment and averaged over a complete adsorption cycle; 2. A solvent with a volatility less than 2 kPa (0.3 psia); or 3. Other equivalent system approved by DNR.
<p>Operating Requirements</p>		<p>Do not allow solvent to drip from the applicator during application.</p> <p>Provide a label stating operating requirements and provide supervision or instruction to ensure that the operation is conducted appropriately.</p>

For more information on wipe cleaning regulations, see the publication *Clean Air Facts: Solvent Metal Wipe Cleaning RACT*, available from the Small Business Environmental Assistance Program.