AIR POLLUTION CONTROL GENERAL OPERATION PERMIT (GOP) FOR SCREEN PRINTING UNITS

In accordance with the provisions of Chapter 285, Wis. Stats., and Chapters NR 400 to 499, Wis. Adm. Code, the owner/operator identified below is hereby granted coverage under this permit and is authorized to operate screen printing units within a direct stationary source in conformity with the conditions herein.

FACILITY IDENTIFICATION NUMBER (FID) [XXXXXXXXX]

PERMIT NUMBER. This is a General Operation Permit. This General Operation Permit is not issued to an individual facility. This General Operation Permit will be issued once for use by sources that demonstrate that the source qualifies for coverage under this General Operation Permit. Therefore there is no source specific FID or Permit Number for this General Operation Permit. Instead, this permit will be released for coverage to an individual applicant as Permit Number XXXXXXXXX-G08b, where the nine letters of X represent the Facility Identification Number (FID) for the applicant and G08b represents the Screen Printing Minor Source General Operation Permit issued in the State of Wisconsin.

STACK NUMBER(S): <As provided by the permit application>

EMISSIONS UNIT NUMBER(S): <As provided by the permit application>

Facility Name: <As provided by permit application>

Street Address:

Responsible Official, & Title:

This authorization requires compliance by the permit holder with the emission limitations, monitoring requirements and other terms and conditions set forth in this permit. This General Operation Permit has no expiration date and continues in perpetuity, unless revoked or revised. [s. NR 407.10(1)(e), Wis. Adm. Code]

Dated at Madison, Wisconsin, June 15, 2007

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
For the Secretary

By _____
Jeffrey C. Hanson
Permits and Stationary Source Modeling Section Chief

Applicability

This permit applies to screen printing units and associated operations identified on the cover page to this permit and located at a facility that meets the following criteria:

- The facility does not have the potential to emit greater than 100 tons of carbon monoxide, nitrogen oxides, sulfur dioxide, PM-10 or volatile organic compounds.
- The facility does not have the potential-to-emit Federal Hazardous Air Pollutants (HAPs) greater than 10 TPY for each individual and individual category of Federal HAP or greater than 25 TPY for all Federal HAPs combined.
- The facility does not claim any exemptions under s. NR 422.03(4m), Wis. Adm. Code, for which it might be qualified.

A "Federal Hazardous Air Pollutant (HAP)" means any pollutant that is listed as a hazardous air pollutant under section 112 (b) of the Clean Air Act (42 USC 7412 (b)).

"Associated operations" means operations that, in addition to operation of a printing unit to print on a substrate during production, are necessary in order to create final printed products or to maintain the ability of a printing unit to operate.

Previously Established Emission Limitations

Previously Issued Construction Permits

This operation permit may be used to provide coverage of groups of sources (e.g. screen printing units) that are in the same source category (e.g. screen printing) and that have been permitted under a construction permit which contained restrictions on potential-to-emit VOCs based on a five-year window netting analysis under ch. NR 408, Wis. Adm. Code. In these cases, a separate general operation permit must be used for each group of sources, and the original construction permit restrictions on PTE from each group of sources shall still apply, in addition to any restrictions on PTE contained in this operation permit.

Previously Issued Operation Permits

To qualify for coverage under this general operation permit, the permittee shall submit an application to the Department for each existing operation permit that contains conditions that apply to one or more sources covered under this general operation permit. These applications shall request the Department to revise the variant conditions in those operation permits to be consistent with the conditions in this general operation permit.

Source Elections

The screen printing units and associated operations covered by this permit are subject to s. NR 424.03, Wis. Adm. Code, and the Department considers each press (including its associated operations) to be part of a separate process line. Under s. NR 424.03(2)(b) and (c), Wis. Adm. Code, 85% emissions control of organic compound emissions is required, or, where 85% control is demonstrated to be technologically infeasible, the permittee must use the latest available control techniques (LACT) and operation practices demonstrating best current technology, as approved by the Department [s. NR 424.03(2)(c), Wis. Adm. Code]. As an alternative to the 85% control requirement, the owner or operator can elect under s. NR 424.03(3), Wis. Adm. Code, to meet the RACT requirements in s. NR 422.145, Wis. Adm. Code. By submitting an application for this permit, the owner or operator is informing the Department of this election, and the Department is approving the request by granting coverage under this permit. This permit requires that each screen printing process line (including screen printing and reclamation) comply with the RACT requirements in s. NR 422.145, Wis. Adm. Code.

Facilities and associated industrial cleaning operations for which coverage under this GOP is granted are potentially subject to the requirements of s. NR 423.035, Wis. Adm. Code, the Industrial Cleaning Operations Rule. If applicable, requirements of this regulation will be stated in the operation permit that covers industrial solvent cleaning equipment and equipment not granted coverage under this permit that may exist at the facility.

Permit Shield

Unless precluded by the Administrator of the USEPA, compliance with all emission limitations in this operation permit is considered to be compliance with all emission limitations established under ss. 285.01 to 285.87, Wis. Stats., and emission limitations under the federal clean air act, that are applicable to the source if the permit includes

the applicable limitation or if the Department determines that the emission limitations do not apply. The following emission limitations were reviewed in the analysis and preliminary determination and were determined not to apply to this stationary source:

NONE

PART I

A. OPERATIONAL REQUIREMENTS

(1) For each screen printing unit covered by this permit and its associated screen reclamation operations the permittee shall meet all of the following requirements:

(a) for all inks and coatings, except "special purpose inks and coatings"[1] and inks and coatings used for "roll coating", the permittee may not cause, allow or permit the emission of any VOCs in excess of 3.3 pounds per gallon of as-applied ink or coating, excluding water,

(b) the permittee may not cause, allow, or permit the emission of any VOCs in excess of 6.7 pounds per gallon of as-applied special purpose ink or coating, excluding water,

(c) the permittee may not cause, allow, or permit the emission of any VOCs in excess of 6.7 pounds per gallon of ink or coating, excluding water, that is delivered to a roll coating[2] applicator associated with screen printing, and

(d) the permittee may not cause, allow, or permit the emission of any VOCs in excess of .050 pounds per square foot of screen reclaimed, calculated on a daily average basis for each day of operation.
[ss. NR 424.03(3), NR 422.145(2)(a) – (d), NR 419.03(1), Wis. Adm. Code.]

(2) In order to receive credit for retention of VOC-containing materials in shop towels, wipes, pads and other media used for manual cleaning operations, the permittee shall handle the soiled media in a manner that minimizes solvent evaporation and spills and shall meet one or more of the following requirements to receive corresponding credit:

(a) 50% VOC retention (50% emitted as VOCs) may be applied for a cleaning solution if it contains less than 30% VOC by weight or a has a VOC composite vapor pressure of no more than 10 mm Hg at 68°F, or

(b) 40% VOC retention (60% emitted as VOCs) may be applied for a cleaning solution if its VOC composite vapor pressure is greater than 10 mm Hg but less than 25 mm Hg at 68°F, or contains more than 30% VOC by weight.
[s. 285.65(7), Wis. Stats.]

(3) No person may cause, allow or permit organic compounds to be used or handled without using good operating practices and taking reasonable precautions to prevent the spillage, escape or emission of organic compounds (including VOCs), solvents or mixtures. Such precautions shall include, but are not limited to,

(a) use of caution to prevent spillage or leakage when filling tanks

(b) use of caution when performing the disposal of any VOC containing materials. The permittee shall perform the disposal by a method approved by the Department, such as incineration, recovery for reuse, or transfer in closed containers to an acceptable disposal facility

(c) keep each VOC-containing material in a closed container, except when in use at the facility, when handled during solvent recovery or during transfer to another container, or when filling, draining, or performing cleanup operations. VOC-containing materials include but are not limited to as-received materials, as-applied materials, shop towels, wipes, pads and other media used for manual cleaning operations

(d) use measures such as written plans, work instructions, training documents, signage, or verbal instructions to establish operating practices that prevent the spillage, escape or emission of organic compounds from the handling, transfer, storage and disposal of VOC-containing materials.
[ss. NR 419.03(2), NR 419.04(2), NR 407.09(1)(c)1., (4)(a)1.&(4)(a)3.b, and NR 439.04(1)(d), Wis. Adm. Code, and s. 285.65(7), Wis. Stats.]

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[1] Defined under s. NR 422.02(88), Wis. Adm. Code, as "inks and coatings used in screen printing which are conductive inks, are used to print ink transfers, or are designed to resist or withstand any of the following: (a) more than 2 years of outdoor exposure, (b) exposure to chemicals, solvents, acids, detergents, oil products or cosmetics, (c) temperatures in excess of 170°F, (d) vacuum forming, (e) embossing, (f) molding."

[2] Defined under s. NR 422.02(77), Wis. Adm. Code, as "the application of a coating material to a substrate by means of hard rubber or steel rolls."

B. RECORDKEEPING REQUIREMENTS

(1) If a material received from an off-site supplier is intended for use by one or more screen printing units or by an associated operation and if the material contains greater than 1% VOC by weight, then at or before the time of application or use the permittee shall

(a) identify and record the material or the class of similar materials to which it belongs, using a unique name or identification code, and determine and record whether the material is used as a special purpose ink or coating, a roll coating, or a general ink or coating for its current application.

(b) determine and record by specification or by calculation:

(i) the VOC content, in pounds of VOC per gallon, excluding water, of the material or class, or

(ii) the density, in pounds per gallon, and the percent VOC content by weight, excluding water, of the material or class.

(c) when determining the VOC content or other property for each material in a class of similar materials, use the specifications for the material which has the highest VOC content in that class.

(d) to determine VOC content or density, the permittee may use one or more of the following specification documents: testing results, the Material Safety Data Sheet from the supplier or manufacturer, general chemical literature, or a compositional analysis (formulation) of the material. When a document states a range of values for a specification, the permittee shall use the value that results in the worst-case VOC content. The permittee may elect to use a VOC content of 100% for materials lacking documentation.

(e) record the calculations, supplier formulation, and other data used to determine the VOC content of each material and class of similar materials.

[ss. NR 407.09(1)(c)1., (4)(a)1.&(4)(a)3.b., NR 439.04(5)(a), and NR 422.145(4), Wis. Adm. Code]

(2) For inks and coatings that are prepared from a formulation of two or more materials the permittee shall use the following methods to determine and record the quantity of VOC emissions per volume of as-applied ink or coating, excluding water, delivered to the applicator, and the permittee shall record the calculations and data used for that determination:

(a) If the original batch is used as prepared (i.e., no supplemental material is added), then use the following formula:

$$\hat{E} = V_{OriginalBatch} = \left[\frac{\sum_{1}^{n} (V_i Q_i)}{\sum_{1}^{n} Q_i} \right]$$

(b) Whenever a quantity of material (e.g. thinner) is subsequently added to the original batch after the initial mixture (e.g. "original batch") was prepared[3], then use the following formula to recalculate the VOC emissions per volume of the as-applied material:

$$\hat{E} = V_{OriginalBatch} + \left(\frac{\sum_{1}^{x} (V_t Q_t)}{Q_{applied}} \right)$$

where:

[3] If no supplemental material is added to a batch mixture, then $Q_t = 0$ and $E = V_{OriginalBatch}$. It is only necessary to calculate the first term ($= V_{OriginalBatch}$) once when the original batch is first mixed. Once a quantity from the batch is delivered to the printing unit, all subsequent re-calculations of E use the $V_{OriginalBatch}$ that was first calculated in addition to the second term, which accounts for the quantity and VOC content of supplemental material that was added. However, to calculate the second term, it is necessary to monitor the amounts (Q_k) from the original batch that were added to the coating applicator supply well, including the first quantity from the batch that was added.

in general, $Q_{applied} = \sum_{1}^{m} Q_k$;

and in cases where all of a batch is delivered to the press, $Q_{applied} = \sum_{1}^{n} Q_i$

and where:

$\hat{E}$ =the VOC emissions per volume of as-applied ink or coating, excluding water, delivered to the applicator, in units of pounds VOC per gallon;
n =the number of materials, including but not limited to coatings, inks, and thinners, that were mixed together to make the original batch of an as-applied ink or coating;
m =the number of separate deliveries of quantities from the ink or coating's batch mixture to the applicator;
x =the number of separate additions of thinners or other supplemental materials added to the batch mixture at some time after the original batch was prepared;
V_i =the VOC content of the *ith* material from the *n* materials, in units of pounds VOC per gallon, excluding water, that was added to form the original batch of an as-applied ink or coating;
Q_i =the amount of the *ith* material from the *n* materials that was added to form the original batch of an as-applied ink or coating, in units of gallons excluding water;
Q_k =an amount of ink or coating transferred from a given batch of as-applied ink or coating and delivered to a coating applicator, in units of gallons, excluding water. Note that each time an amount is taken from the batch mixture and delivered to the applicator this constitutes another Q_k quantity where k =k +1 ;
V_t =the VOC content of the *tth* supplemental material (e.g. thinner), in pounds VOC per gallon, excluding water, that was added batch mixture;
Q_t =the *tth* amount of a supplemental material (e.g. thinner) added to the batch mixture, in units of gallons excluding water.

(c) The permittee may elect to test a batch of material for VOC content at any time using U.S. EPA Test Method 24 in accordance with I.C.(1) and keep a record of the test results, in order to consider the batch from that time forward to be the "original batch" of as-applied material under this condition.

[s. NR 407.09(4)(a)3.b., Wis. Adm. Code]

(3) For each day of operation the permittee shall determine and record, for each screen reclamation chemical identified under I.B.(1)(a), the total volume, in gallons, of that chemical used by all screen reclamation at the facility during that day and shall determine and record for each as-received screen reclamation chemical the total volume, in gallons, that was directed, after use for screen reclamation, into a container that prevents evaporation of VOCs. [ss. NR 422.145(4), and NR 407.09(4)(a)3.b., Wis. Adm. Code]

(4) For each day of operation the permittee shall determine and record the total surface area, in square feet, of all screens reclaimed at the facility during that day. [ss. NR 422.145(4)(c), and NR 407.09(4)(a)3.b., Wis. Adm. Code]

(5) To comply with the limitation in I.A.(1)(d), at the end of each day of operation the permittee shall calculate and record that day's average VOC emission rate from screen reclamation, using the following equation:

$$C = \frac{\sum_{1}^{x} [V_w (Q_w - r_w)]}{B}$$

where,
C =the daily average VOC emission rate, in pounds VOC per square foot, from all screen reclamation at the facility,
x =the total number of uniquely-identified screen reclamation chemicals used that day at the facility
V_w =the VOC content of the *wth* screen reclamation chemical, in pounds VOC per gallon
Q_w =the amount of the *wth* screen reclamation chemical used that day at the facility, in gallons
r_w =the amount of the *wth* screen reclamation chemical that was directed, after use for screen reclamation that day, into a container that prevents evaporation of VOCs, and
B =the surface area of all screens reclaimed during a day, in square feet.
[ss. NR 407.09(4)(a)3.b., NR 422.145(2)(d), Wis. Adm. Code]

(6) If the permittee claims credit for retention under I.A.(2)(a) or (b), then the permittee shall determine and record the VOC composite vapor pressure, as applied, of each material (e.g. solvent) used for manual cleaning operations. To determine this quantity, the permittee may use the VOC composite vapor pressure reported on the material's MSDS or

other supplier specification document. The permittee may derive VOC composite vapor pressure mathematically by using the following formula with data for the vapor pressure of each component in the material, as reported on an MSDS or in another supplier specification document that reports vapor pressure test results:

$$P_c = \sum_{i=1}^{n} \left[\frac{\frac{W_i P_i}{M_i}}{\frac{W_w}{M_w} + \frac{W_e}{M_e} + \sum_{i=1}^{n} \left(\frac{W_i}{M_i} \right)} \right]$$

Where:

W_i =Weight of the "i"th VOC compound, in grams

W_w =Weight of water, in grams

W_e =Weight of exempt compound (includes all non-VOC compounds), in grams

M_i =Molecular weight of the "i"th VOC compound, in g/g-mole

M_w =Molecular weight of water, in g/g-mole

M_e =Molecular weight of exempt compound (includes all non-VOC compounds), in g/g-mole

P_c =VOC composite partial pressure at 20°C, in mm Hg

P_i =Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg

[ss. NR 407.09(1)(c)1., (4)(a)1.&(4)(a)3.b., Wis. Adm. Code]

C. METHODS FOR DETERMINING VOC CONTENTS

(1) Whenever the Department requires compliance testing of an ink or coating that is not thin-film-radiation-cured, in order to determine the VOC content or density of the material, the permittee shall use U.S. EPA Method 24 in 40 CFR part 60, Appendix A, to determine organic solvent content, unless the Department has approved the permittee to use an alternative method. For thin-film-radiation-cured coatings and inks the permittee may determine VOC content by specification or calculation, using a document allowed under I.B.(1)(c).

[ss. NR 407.09(1)(c)1. & (4)(a)1. and NR 439.06(3)(b), Wis. Adm. Code]

(2) Whenever compliance testing of a clean-up solvent, thinner, or other material (except an ink or coating) is required in order to determine the VOC content or density of the material, the permittee shall use a method to determine organic solvent content and density that has been approved by the Department. The permittee may use U.S. EPA Method 24 in 40 CFR part 60, Appendix A, to determine VOC content and density of these materials. [ss. NR 407.09(1)(c)1. & (4)(a)1. and NR 439.06(3)(b), Wis. Adm. Code]

(3) Whenever compliance testing is required in order to determine the composite vapor pressure of a material or to determine the vapor pressure of each component in a material, the permittee shall use method ASTM D2879-97 in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.10(39m), unless the Department has approved the permittee to use an alternative method. [s. NR 439.06(3)(a), Wis. Adm. Code]

D. CHANGES MADE UNDER THIS GENERAL OPERATION PERMIT[4]

(1) Notwithstanding the requirements of s. NR 406.04(1) and (2), Wis. Adm. Code, no construction permit is required prior to commencing construction, reconstruction, replacement, relocation or modification of a stationary source at this facility, if the project meets all of the following criteria:

(a) the construction, reconstruction, replacement, relocation or modification will not result in the source's violating any term or condition of this permit or render the facility ineligible for this permit.

(b) the construction, reconstruction, replacement, relocation or modification does not require a permit under ch. NR 405 or 408.

[s. NR 407.10(4)(a), Wis. Adm. Code]

(2) If a construction permit is required, the permittee shall obtain a construction permit under ch. NR 405, 406 or 408, as applicable. The permittee may not commence construction, reconstruction, replacement, relocation or modification prior to receiving the construction permit, which may be an individual, general, or registration construction permit. The permittee shall also apply for an individual operation permit, a revision of its operation permit or a registration operation permit under ch. NR 407, Wis. Adm. Code. [s. NR 407.10(4)(c), Wis. Adm. Code]

(3) The permittee shall keep records adequate to demonstrate that the criteria in I.D.(1) were met. [s. NR 439.04(1)(d), Wis. Adm. Code]

(4) No later than 30 calendar days from commencing construction, reconstruction, replacement, relocation or modification, the permittee shall notify the Department of the action and provide information explaining how the source is meeting the criteria for an exemption under I.D.(1). [s. NR 407.10(4)(b), Wis. Adm. Code]

(5) The owner or operator shall keep records of any physical change[5] to a stack or process at the facility that could result in an increase in emissions or an increase in the ambient impact of the emissions from the facility. These records shall include a description of the change, the date the change was made (i.e., start date of construction or modification) and a statement indicating that, after the change, the facility will continue to qualify for this permit. [s. NR 439.04(1)(d), Wis. Adm. Code]

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[4] Note that additional exemptions from a construction permit, as provided in ss. NR 406.04(2), (2m), (4), (5), and (6), Wis. Adm. Code, are available for certain types of changes that meet the exemption criteria, including exempt relocations, exempt replacements, the general category of exempt sources, and exclusions from modification, including the use of an alternate fuel or raw material, VOC RACT compliance, resumption of operation, increase in production rate, increase in hours of operation, change of ownership, routine maintenance or repair, and "other changes".

[5] Examples of changes that may result in an increase in the ambient impact of a facility's emissions include, but are not limited to, addition or modifications of processes, or changes to pollution control devices, stacks parameters, stack locations, and building heights.

E. HAZARDOUS AIR POLLUTANT REQUIREMENTS

(1) The permittee may emit to ambient air a hazardous air contaminant that is listed under Table A of chapter NR 445, Wis. Adm. Code, and that does not have a control requirement listed under column (i) of Table A, only if the facility emissions of the contaminant meet at least one of the following conditions (a), (b), (c), or (d):

(a) the contaminant is released to ambient air by general building ventilation sources and all applicable thresholds in column (h) of Table A for the contaminant are stated either in 1-hour or 24-hour average time periods

(b) the contaminant is released to ambient air by general building ventilation sources and all of the following requirements are met for the contaminant:
(i) at least one applicable threshold in column (h) of Table A for the contaminant is stated in terms of an annual time period
(ii) the contaminant has a threshold limit value established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2000
(iii) the permittee demonstrates to the department that it is in compliance with applicable occupational safety and health administration requirements

(c) the contaminant is released in quantities that do not exceed the appropriate threshold level in columns (c) to (f) of Table A, provided that the stack that vents the emissions meets the following criteria:
(i) the emissions are from an unobstructed discharge point and
(ii) the stack is oriented in an upward direction within 10 degrees of vertical

(d) the owner or operator limits emissions so as not to cause an ambient air quality concentration off property that exceeds column (g) of Table A, where applicable

[ss. NR 445.07(1), NR 445.07(5)(d)1, Wis. Adm. Code]

(2) The permittee may emit to ambient air a hazardous air contaminant that is listed under Table A of chapter NR 445, Wis. Adm. Code, that does have a control requirement listed under column (i) of Table A, only if the contaminant has a unit risk factor established by either the USEPA or the California Air Resources Board and if the facility emissions of the contaminant meet at least one of the following conditions (a) or (b), where inhalation impact is defined under s. NR 445.08(2)(c), Wis. Adm. Code:

(a) the inhalation impact off property from each individual contaminant with a control requirement in column (i) does not exceed 1 in 10^{-6} (1 in a million), or

(b) the inhalation impact from all contaminants with a control requirement in column (i) does not exceed 1 in 10^{-5} (1 in 100,000), where applicable.

[ss. NR 445.07(1), NR 445.08(2)(c), Wis. Adm. Code]

(3) The permittee may not cause, allow, or permit from the facility at which the printing unit(s) covered by this general permit are located the emission of Federal Hazardous Air Pollutants (HAPs) greater than 10 tons per year for each individual and individual category of Federal HAP or greater than 25 tons per year for all Federal HAPs combined. Federal HAP emissions shall be calculated no less frequently than monthly as the cumulative total over the most recent period of twelve consecutive calendar months. [s. 285.65(7), Wis. Stats.]

F. REPORTING REQUIREMENTS

(1) Unless otherwise specified in an operation permit covering the facility, the permittee shall submit an annual certification of compliance with the terms and conditions of this permit, along with an annual monitoring summary report containing the monitoring results required in this permit, to the Wisconsin Department of Natural Resources, Bureau of Air Management (AM/7), Compliance Team Leader, P.O. Box 7921, Madison, WI 53707-7921, or to the attention of Air Program Compliance at the address of the Department's Service Center that is located nearest to the facility. Compliance certifications and monitoring summary reports made to the Department shall cover all equipment covered by air pollution control operation permits, including those granted coverage under this general operation permit.

(a) The time period to be addressed by the report is the January 1 to December 31 period which precedes the report, or the time period for the report required by an existing permit, if any. However, the report does not need to address any calendar month during which the permittee was not subject to this permit for at least part of the month.
(b) The reports shall be submitted to the Service Center Office (or Central Office) within 60 days after the end of each reporting period.
(c) The information included in the reports shall comply with the requirements of Part II Section N of this permit, including but not limited to the information required under s. NR 439.03(8), Wis. Adm. Code.
(d) Each report shall be certified by the responsible official as to the truth, accuracy and completeness of the report.
(e) The methods used to determine the permittee's compliance status shall be the same methods which are required under s. NR 407.09(1)(c)1.

[ss. NR 439.03(1)(c), NR 439.03(8), and NR 439.03(10), Wis. Adm. Code]

(2) All records required under this operation permit shall be retained and maintained for at least five (5) years and shall be made available to Department personnel upon request during normal business hours. [s. NR 439.04, s. NR 439.05, & s. NR 407.09(4)(a)3.b Wis. Adm. Code]