Air Permits for Small Surface Coating Operations

Michigan Department of Environmental Quality • (800) 662-9278 • www.michigan.gov/deq

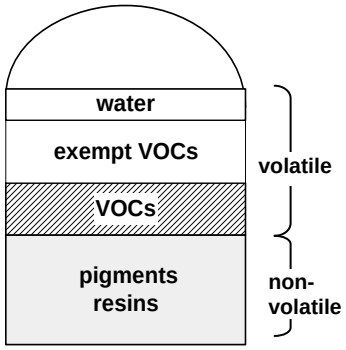
IN THIS GUIDE

Surface coating operations are subject to a variety of state and federal air requirements, one of them being obtaining an air permit from the Michigan Department of Environmental Quality's (DEQ) Air Quality Division (AQD). This document provides operators of small surface coating operations (approximately 30 tons/year or less of volatile organic compounds) a logical approach to determining what activities trigger the need for a Permit to Install, as identified in Rule 201 of the Michigan Administrative Rules (Michigan Rules) for Air Pollution Control. Additional information about permit exemptions and the "general permit" will help guide you through the air permit process.

OVERVIEW

Surface coaters release volatile organic compounds (VOCs), hazardous air pollutants (HAPs), and particulate matter (PM) to the air while preparing surfaces, applying coatings, cleaning equipment, and mixing and storing coatings and solvents. Coatings are made up of four components:

- resins/binders
- pigments
- additives
- solvents/diluents/thinners



The resins/binders, pigments, and additives are generally considered the solids, or non-volatile portion of the coating. The solvents/diluents/thinners, which could consist of water, VOCs and exempt organic solvents, are considered the volatile portion of the coating.

Definitions

Michigan Rule 119(y) defines **surface coating** as any paint, lacquer, varnish, ink, adhesive, or other coating material applied to a surface. Coatings can be any substance applied to the surface of a substrate in an effort to either protect the surface from the environment, enhance or allow other materials to adhere to it, and/or put a decorative or aesthetic covering onto the surface of a substrate. Any substances added to the coating prior to application (i.e., thinners, hardeners, catalysts, reducers, etc.) are considered components of the coating; and VOCs attributed to the addition of these substances must be included in the determination of compliance.

Michigan Rule 103(j) defines **coating line** as a single series in a coating process that contains one or more coating applications and any flash-off areas, drying areas, and ovens wherein one or more coatings are applied and subsequently dried or cured. A coating line can be as simple as an enclosed

or partially enclosed booth with a method of applying a coating material, such as a conventional air spray gun, or can also include a curing oven, flash-off zone, and prep area.

Volatile organic compounds (VOCs) contribute to the formation of ground level ozone, an air contaminant that triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. Rule 122(f) of the Michigan Rules defines a VOC as any compound of carbon or mixture of compounds of carbon excluding 29 compounds that the U.S. Environmental Protection Agency (EPA) identified to have negligible photochemical reactivity. Some of the 29 compounds are referred to as **exempt organic solvents** such as acetone and methyl chloroform.

Hazardous air pollutants (HAPs) are known or suspected to cause cancer and/or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. The U.S. EPA has identified 187 compounds as HAPs. Examples of HAPs include benzene, which is found in gasoline; perchlorethylene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. To view the complete list of HAPs, go to the U.S. EPA's Technology Transfer Network Air Toxics website at **www.epa.gov/ttn/atw/188polls.html**.

MICHIGAN AIR PERMITS – RULE 201

Rule 201 of the Michigan Rules requires a person to obtain a Permit to Install (PTI) prior to the installation, construction, reconstruction, relocation, or modification of equipment or activity that emits air contaminants. Depending on the amount of coatings a line will use per month and per year, there are three options for complying with the Michigan Rules: (1) determine if the coating line is exempt from permitting, (2) apply for "general" PTI, or (3) apply for "standard" PTI.

OPTION 1 – PERMIT EXEMPTIONS

There are a number of exemptions from Rule 201 that are based on the assumption that certain processes will have little or no potential to adversely impact air resources. The rules must be read carefully to determine if a process really falls under an exemption category. It is better to assume you may need a permit until you can prove otherwise. If you determine that a process is exempt, keep a written record of how you arrived at that decision. If you believe an exemption will fit your proposed coating line, we recommend you discuss this with the AQD district office that covers the county where your equipment will be located. That way you can determine whether our field inspectors agree the exemption applies and will provide better assurance you will not be cited a violation for installation without a permit.

<u>Rule 278 – Exclusion from Exemption</u>

The purpose of Michigan Rule 278 is to prevent a company from installing equipment with the potential to generate significant air emissions without a PTI. Rule 278 includes definitions of a major Prevention of Significant Deterioration (PSD) source, major PSD modification, major Offset source, major Offset modification, and major HAP source. Typically, for the small coating operations covered by this fact sheet, the Rule 278 exclusion from exemption is not triggered. For a copy of Rule 278, go to **www.michigan.gov/deqair,** select "Laws and Rules", then "Air Pollution Control Rules". Select "Part 2 Air Use Approval" and scroll down to R 336.1278 Exclusion from Exemption.

If the process does not meet the criteria listed in Rule 278, the company may evaluate the permit exemptions found in Rules 280 through 290 to determine if they exempt any of the equipment that makes up the project. The two most commonly used exemptions for the coatings industry are Rule 287 and Rule 290.

Rule 287 – PTI Exemption: Surface Coating Equipment

Rule 287 covers exemptions specifically for the surface coatings industry, including 287(c) which exempts surface coating lines that use less than 200 gallons of coating per month.

Applicability:

The requirement of Rule 201 to obtain a PTI does not apply to any of the following:

(a) An adhesive coating line which has an application rate of less than 2 gallons per day and which has emissions that are released only into the general in-plant environment.
(b) A surface coating process that uses only hand-held aerosol spray cans, including the puncturing and disposing of spray cans.
(c) A surface coating line if all of the following conditions are met:
  (i) The coating use rate (including thinners) is not more that 200 gallons, as applied, minus water, per month.
  (ii) Any exhaust system that serves only coating spray equipment is supplied with a properly installed and operating particulate control system.
  (iii) Monthly coating use records are maintained on file for the most recent two-year period and are made available to the AQD upon request.
(d) A powder coating booth that has an appropriately designed and operated particulate control system and associated ovens.
(e) A silkscreen process.
(f) Replacement of waterwash control in a paint spray booth with dry filter control.
(g) Adding dry filters to paint spray booths.
(h) Replacement of a coating applicator that has an equivalent or higher design transfer efficiency, unless the applicator type is specified in a permit condition.
(i) Equipment that is used for the application of a hot melt adhesive.
(j) Portable equipment that is used for on-site nonproduction painting.
(k) Mixing, blending, or metering operations associated with a surface coating line.

How to Comply:

If your process equipment activity (i.e., installation/construction, relocation, reconstruction, or modification) is covered under an exemption, you do not have to provide any notification to the AQD. However, in cases where there may be an interpretation issue, it is always a good idea to contact either the Environmental Assistance Program (EAP) at (800) 662-9278 or the AQD district office for verification.

Rule 287(c) is the most common exemption used in the coatings industry and requires compliance with specific recordkeeping requirements in order to use the exemption. The EAP has developed a recordkeeping form to track monthly emissions and verify compliance with Rule 287(c). To obtain an electronic version of this form, go to **www.michigan.gov/deqair** and click on “Clean Air Assistance” then “Air Permits (Permits to Install)”.

Rule 290 – PTI Exemption: Sources with Limited Emissions Record

Michigan Rule 290 exempts equipment with limited emissions from having to apply for a PTI.

Applicability:

To be covered under the exemption, all three of the following conditions must be met:

1. The uncontrolled or controlled emissions of non-carcinogenic and certain carcinogenic air contaminants do not exceed 1,000 or 500 pounds per month, respectively.
2. A description of the process and equipment is maintained throughout the life of the process or process equipment.
3. Records of emissions are maintained on file for the most recent two years.

How to Comply:
The EAP has developed a recordkeeping form to track monthly emissions and verify compliance with Rule 290. To obtain an electronic version of this form, go to **www.michigan.gov/deqair** and click on "Clean Air Assistance" and then "Air Permits (Permits to Install)".

For more information regarding Rule 278 and the permit exemption Rules 280-290, contact the EAP at (800) 662-9278.

OPTION 2 – GENERAL PERMIT TO INSTALL

If you have determined that your coating line(s) does not meet the permit exemption criteria found in Rules 287 or 290, you will need to apply for a PTI. It is highly recommended you apply for a general PTI, if certain conditions are met. Rule 201(a) allows the DEQ to issue a "general permit" covering numerous processes after public notice and opportunity for public participation. The use of general permits provides a streamlined permitting alternative for processes that meet the eligibility requirements.

The general permit may be used for one or more coating lines, each emitting up to 10 tons per year (TPY) of VOCs. Use of this general permit includes recordkeeping requirements to demonstrate that annual VOC emissions from each coating line are less than 10 TPY and combined VOC emissions from all coating lines at the facility do not exceed 30 TPY.

In addition to the requirements listed above, a facility must calculate its potential to emit (PTE) to determine eligibility for the general permit. PTE refers to the maximum amounts of certain pollutants your facility could release into the air (even if you have never actually emitted the maximum amounts). A PTE calculation sheet is provided at the end of this document.

A coating line with a PTE less than 10 TPY of any one HAP and less than 25 TPY of all HAPs combined is eligible to apply for a general permit. If your coating line's PTE exceeds those numbers, it is recommended you apply for a standard PTI which will contain enforceable emission limits that will lower your PTE and keep your facility from being subject to other requirements such as the Renewable Operating Permit program.

A coating line subject to any New Source Performance Standard (NSPS) for surface coating (see list of surface coating operations subject to NSPS on next page) is not eligible to use this general permit. NSPS are state and federal rules that define limits, testing, and monitoring for certain specific sources. These standards are proposed and promulgated in the Federal Register and published in the Code of Federal Regulations, Title 40 Part 60 (40 CFR 60) and adopted by the state. To obtain a copy of 40 CFR Part 60, go to **www.epa.gov**, select "Laws, Regulations & Dockets," "Code of Federal Regulations," and then "The Electronic Code of Federal Regulations (e-CFR)." From this page, use the browse option (drop-down box) to select "Title 40 – Protection of Environment" and click on "Go." Click on "60.1-End," then click the table of contents.

Surface Coating Operations Subject to NSPS

SURFACE COATING OPERATION	SUBPART
Surface Coating for Metal Furniture	EE
Automotive and Light-Duty Surface Coating	MM
Pressure Sensitive Tape and Label Surface Coating	RR
Surface Coating for Large Appliances	SS
Surface Coating for Metal Coils	TT
Surface Coating for Beverage Cans	WW
Flexible Vinyl and Urethane Coating and Printing	FFF
Magnetic Tape Coating	SSS
Industrial Surface Coating of Plastic Parts for Business Machines	TTT
Polymeric Coating of Supporting Substrates Facilities	VVV

For more information regarding PTE calculations and federal standards, contact the EAP at (800) 662-9278.

Applicability:
To qualify for the general permit, each coating line must meet the following criteria:

- One general PTI may be used for multiple coating lines at a given facility. A separate Process Information Form (EQP 5759) must be completed for each coating line.
- A properly operated thermal oxidizer or catalytic oxidizer may be used to meet the requirements of this general permit. Proper operation of a thermal or catalytic oxidizer requires an overall minimum of 76 percent reduction of VOC emissions to the atmosphere.
- All coating applicators shall be high volume-low pressure (HVLP) spray or equivalent technology with equal or better transfer efficiency (e.g., electrostatic spray, dip, flowcoat, roller, dip-spin).
- For a coating line using spray applicators, the coating line must include dry filters or a water curtain to control particulates.
- The exhaust gases from the coating line shall be discharged unobstructed vertically upwards to the ambient air at exit points not less than one and one half times the building height (from ground level to point of discharge).
- The emissions of VOCs from each coating line **and** purge and clean-up operations associated with the line covered by this general permit shall not exceed 2,000 pounds per month or 10 TPY. The 10 TPY limit is based on a 12-month rolling time period as determined at the end of each calendar month. The EAP developed a tool, the *VOC/HAP Emissions Calculation Spreadsheet*, which can be used to track monthly coating usage and VOC/HAP emissions and, consequently, verify compliance with the general permit. Contact the EAP at (800) 662-9278 for a copy of this spreadsheet.
- For any facility using the general permit, the combined actual emissions of VOCs from all coating lines **and** all associated purge and clean-up operations at the facility shall not exceed 30 TPY based on a 12-month rolling time period as determined at the end of each calendar month. This includes the combined emissions from any coating line covered by this or any other general permit, any PTI issued pursuant to Rule 201, and any coating line exempt from the requirement to obtain a permit pursuant to Rule 287 and/or Rule 290.

How to Apply:
Owners/operators who apply to the AQD for coverage under the general permit must certify the process equipment they will be installing meets the necessary criteria for applicability and they will comply with the special conditions of the permit. These conditions may include site restrictions,

emission limits, material usage limits, and/or annual production limits, which are necessary to ensure the equipment will operate in compliance with all applicable air pollution control rules.

Application forms, which include all information necessary to determine qualification for and to ensure compliance with the general permit, are available on the Michigan Air Permits System website at **www.deq.state.mi.us/aps.**

Upon receipt by the AQD, permit staff will review the application for completeness. The general permit will be granted by the AQD to qualifying processes within 30 days of receipt of a complete application. Public comment will not be necessary for each application, since the public participation requirements will have been met by the public comment period on the general permit. Upon approval, the AQD will mail to the facility a copy of the general permit and a letter acknowledging the facility owner/operator intends to install and operate the coating line(s) in accordance with the terms and conditions of the general permit.

OPTION 3 – STANDARD PERMIT TO INSTALL

Applicability:

If you have determined that your coating line(s) does not meet the permit exemption criteria for Rules 287 or 290, AND your coating line does not meet the eligibility requirements for a general permit, then you should apply for a standard PTI.

Each year, more than 1,500 applications for PTIs are received by the AQD. After an application is submitted, AQD staff review the application, including a technical review by the Permit Section engineers and a site evaluation by the district staff. After internal processing is completed, the AQD develops the PTI. This permit contains stipulations and conditions necessary to insure the proposed process will comply with all applicable state, federal, or other regulations in effect at the time the permit is issued and will operate in an environmentally safe and acceptable manner.

One PTI application package may be submitted for a number of similar individual types of processes or operations scheduled for simultaneous installation or alteration. For example, a PTI application may cover several paint booths or a complete painting line. However, a PTI application for a painting line should not, for example, also include a boiler and a chemical reactor. Permit applications for large or complex projects or substantial modifications to existing facilities should be discussed with the Permit Section in Lansing well in advance of submitting an application. If you have questions or would like to arrange a pre-application meeting, please contact the Permit Section at (517) 373-7074.

How to Apply:

The PTI application form and associated instructions are available at the Michigan Air Permits System website **www.deq.state.mi.us/aps**. If you do not have access to the Internet, you can obtain a hard copy of the PTI application by calling the EAP at (800) 662-9278 or the AQD Permit Section at (517) 373-7074.

The instructions for assembling the package should be followed carefully. Failure to do so may result in return of the application. A permit application package should be assembled in the following order:

- A PTI application form
- Authorization letter (if needed)
- Supporting information

The AQD has developed lists of supporting information necessary for a complete application for 25 specific processes at the Michigan Air Permits System website **www.deq.state.mi.us/aps,** click on "Application Form, Instructions, and Guidance Documents", then click on "Specific Processes/Equipment." Information will vary for the coating of specific substrates such as wood

furniture, metal furniture, metal coils, and plastic parts. For example, a PTI application for a miscellaneous metal coating process must include the following information for it to be considered administratively complete.

- **Process Description:** Describe each coating (including thinners), parts to be coated, coating process, mixing ratio by volume, and the normal and maximum amounts of coating and reducer mixture to be applied in one hour and one year.
- **Regulatory Discussion:** Describe all federal, state, or local air pollution control regulations you believe are applicable to the proposed process.
- **Control Technology Analysis:** Describe how the air contaminant emissions from the proposed process equipment will be controlled or otherwise minimized. Provide sufficient control method detail to show the extent and efficiency of any air pollution control devices.
- **Emissions Summary and Calculations:** Explain clearly and in appropriate detail the nature, quantity (both controlled and uncontrolled), concentration, particle size, pressure, temperature, etc. of all air contaminants, including all toxic air contaminants, reasonably anticipated to be discharged to the atmosphere due to process equipment operation. Summarize these emissions calculations in tabular form for all equipment covered by the application and for each stack/vent. For information on how to calculate emissions, see the *Emission Calculation Fact Sheet for Coating Operations*, and contact the EAP for a copy of the *VOC/HAP Emissions Calculation Spreadsheet.*
- **Stack/Vent Parameters:** For each stack or vent related to the proposed process provide the following information (including ranges if appropriate): the minimum height above the ground, maximum internal diameter or dimensions, discharge orientation (e.g., vertical, horizontal), maximum exhaust volume flow rate in cubic feet per minute (indicate actual or standard), maximum exhaust gas temperature, a description of any rain protection device, and location of any stack testing port
- **Site Description and Process Equipment Location Drawings:** Submit legible scale drawings which show a plan view of the owner's property to the boundary lines. Locate and identify the proposed equipment. Locate and identify all adjacent properties, include outline and height of all structures within 150 feet of proposed equipment and show any fence lines. Locate and identify all stacks/vents or other emission points related to the proposed process equipment, and indicate the distance to the nearest property line. Indicate the scale of the plan and north direction on the drawing.

All sections of the application package should be clearly identified and complete. Review of the application will be slowed by an incomplete submittal. Two copies of all materials, including all additional or supporting information, need to be submitted in the application package and sent to Lansing.

Additional Information:
The PTI application can generally be reviewed in less than 60 days of receipt of a complete application unless the proposed equipment is of such magnitude as to trigger public comment requirements in the state or federal regulations or public comment requirements are triggered due to a local public controversy (e.g., adding more production capacity at a facility with an existing odor nuisance problem). The restrictions and emission control requirements placed on the final permit will depend on the regulations applicable to the equipment and the amount of emissions expected.

A PTI does not expire or have to be renewed. The permit is good for as long as the equipment is in operation. However, it may require notification of completion of the installation, construction, reconstruction, relocation, or modification and notification of the status of compliance.

A facility's obligations to the DEQ do not end after a PTI is obtained. Once a facility receives a PTI, it must continuously comply with the conditions of the permit. Additionally, a facility may have to obtain new permits in the future. The first step to complying with a permit is reading and understanding the conditions and incorporating the permit requirements into the business operations of the plant. The next step is to perform compliance monitoring to ensure the facility is complying with its permit. Make sure to place your permit in a visible place, wherever possible. The AQD monitors compliance by inspecting facilities, responding to complaints, reviewing facility tests and records, and following up on violations.

A PTI can be revoked if the process is not in compliance. Other reasons for revoking a permit would be when a PTI has been obtained by misrepresentation or there is a failure to disclose all relevant facts. There is, however, a requirement for a notice and opportunity for a hearing prior to revocation. Revocation of a permit makes operating a process illegal.

POLLUTION PREVENTION

Pollution prevention is the elimination or prevention of wastes (air emissions, water discharges, or solid/hazardous waste) at the source. It allows businesses to:

- Save money, reduce operating costs, and generate income from wastes.
- Reduce liability and improve public image.
- Improve product finish.
- Protect their employees, the public, and the environment.
- Increase efficiency and productivity.
- Solve disposal problems created by land bans.
- Possibly change permit status – use exemptions or general permit.

Wastes from paint application include leftover paints, dirty thinner from the cleaning of spray guns, air emissions of VOCs and HAPs, dirty spray booth filters, dirty rags, debris from area wash downs, and outdated supplies. Simple and cost-effective ways to reduce these wastes include the following:

- **Use low VOC coatings** – waterborne, powder, UV curable, or high-solids coatings. For example, using water-based coatings can help reduce VOC emissions, minimize or eliminate hazardous waste disposal, reduce worker exposure to organic solvents, and ease cleanup.

- **Increase transfer efficiency** – high-volume/low pressure system, electrostatic spraying, flow coating, roller coating, or eletrodeposition. For example, using HVLP spray results in a reduction of overspray and improves transfer efficiency to 45-70 percent.

- **Reduce equipment cleaning waste** – gun washer, solvent distillation unit, paint pot liners. For example, installing a gun washer results in rapid cleaning and extended solvent cleaning life while reducing solvent waste and emissions from evaporation.

- **Adopt better housekeeping practices** – segregate waste streams, implement rigid inventory control, improve material handling and storage, mix paint according to need and document use, schedule jobs to maximize color runs. For example, implementing rigid inventory control can force employees to stretch the use of raw materials, thereby reducing solvent use by as much as 50 percent.

WHERE TO GO FOR HELP

ENVIRONMENTAL ASSISTANCE PROGRAM:

The EAP can help companies understand and comply with federal and state regulations which protect our air, water, and land. If you have questions, please contact the EAP at: (800) 662-9278 or go to **www.michigan.gov/deqenvassistance.**

RETIRED ENGINEER TECHNICAL ASSISTANCE PROGRAM (RETAP):

RETAP provides *confidential* and *nonregulatory* on-site pollution prevention assessments for Michigan businesses and institutions, free of charge. There is no obligation to implement the recommendations; however, significant cost savings can be achieved from employing pollution prevention techniques. Follow up with companies assisted through RETAP has shown thousands of dollars of annual cost savings. For more information, contact ***David Herb*** at herbdw@michigan.gov or (517) 241-8176.

SMALL BUSINESS POLLUTION PREVENTION (P2) LOAN:

The Small Business P2 Loan Program (P2 Loan Program) provides loans of up to $400,000 at an interest rate of 5 percent or less to existing independently owned businesses with 500 or fewer full-time employees. Projects that qualify for P2 loan funding include those either eliminating or reducing waste at the business location (source reduction), resulting in environmentally sound reuse and recycling for the loan applicant's generated wastes, or conserving energy or water on-site. For more information, contact ***Karen Edlin*** at edlink@michigan.gov or (517) 373-0604.

Potential to Emit

SPRAY PAINTING OPERATIONS CALCULATION WORKSHEET

Company Name:	Name of Person completing form:

Coating Line Information

A. Number of Spray Guns (list the number of guns that can operate at the same time):	B. Maximum Application Rate Each Gun (gal/hr) **gal/hr**

C. Transfer Efficiency (select from the list below, if you have data different from what is below select other and enter efficiency):

- ☐ Air atomization spray: 0.30
- ☐ Airless spray: 0.45
- ☐ Electrostatic/Air atomization: 0.70
- ☐ Electorstatic/airless: 0.75
- ☐ HVLP: 0.75
- ☐ Electrodeposition: .95
- ☐ Powder: 0.95
- ☐ Other: _____

D. Control Efficiency for VOCs (if applicable):	**%**	E. Control Efficiency for Particulate Matter:	**%**

Coating Information

From all coatings used at the line, select coating with the highest VOC content, highest HAP content, and highest solids content. Enter the information below.

Volatile Organic Compounds (VOCs)

F. VOC % by weight:[1]	G. Density of Coating:	H. VOC content (lbs/gal):
%	**lbs/gal**	(F)/100 x (G) = **lbs VOC/gal**

Solids

I. Solids % by weight:	J. Density of Coating:	K. Solids content (lbs/gal):
%	**lbs/gal**	(I)/100 x (J) = **lbs Solids/gal**

Hazardous Air Pollutants (HAP): enter for each HAP

L. Density of Coating: **lbs/gal**

HAP Name	VOC?	% by Weight[1]	HAP content
HAP 1:	☐	**%**	M. (L) x (HAP1 % by wt)/100 **lbs HAP1/gal**
HAP 2:	☐	**%**	N. (L) x (HAP2 % by wt)/100 **lbs HAP2/gal**
HAP 3:	☐	**%**	O. (L) x (HAP3 % by wt)/100 **lbs HAP3/gal**
HAP 4:	☐	**%**	P. (L) x (HAP4 % by wt)/100 **lbs HAP4/gal**
HAP 5:	☐	**%**	Q. (L) x (HAP5 % by wt)/100 **lbs HAP5/gal**

[1]If the coating is a multi-part coating (i.e., includes reducer and/or catalyst) enter a weighted VOC, HAP, and Solids Content. Page 5 discusses how to calculated the VOC, HAP, and Solids content in a multi-part coating.

Use the tables below to calculate the potential to emit for VOCs, Solids, and HAPs. You can only calculate a controlled PTE if there is a requirement in a rule or permit that requires you have the control device (e.g., fabric filter, thermal oxidizer) installed and operating. Otherwise, calculate emissions as "uncontrolled."

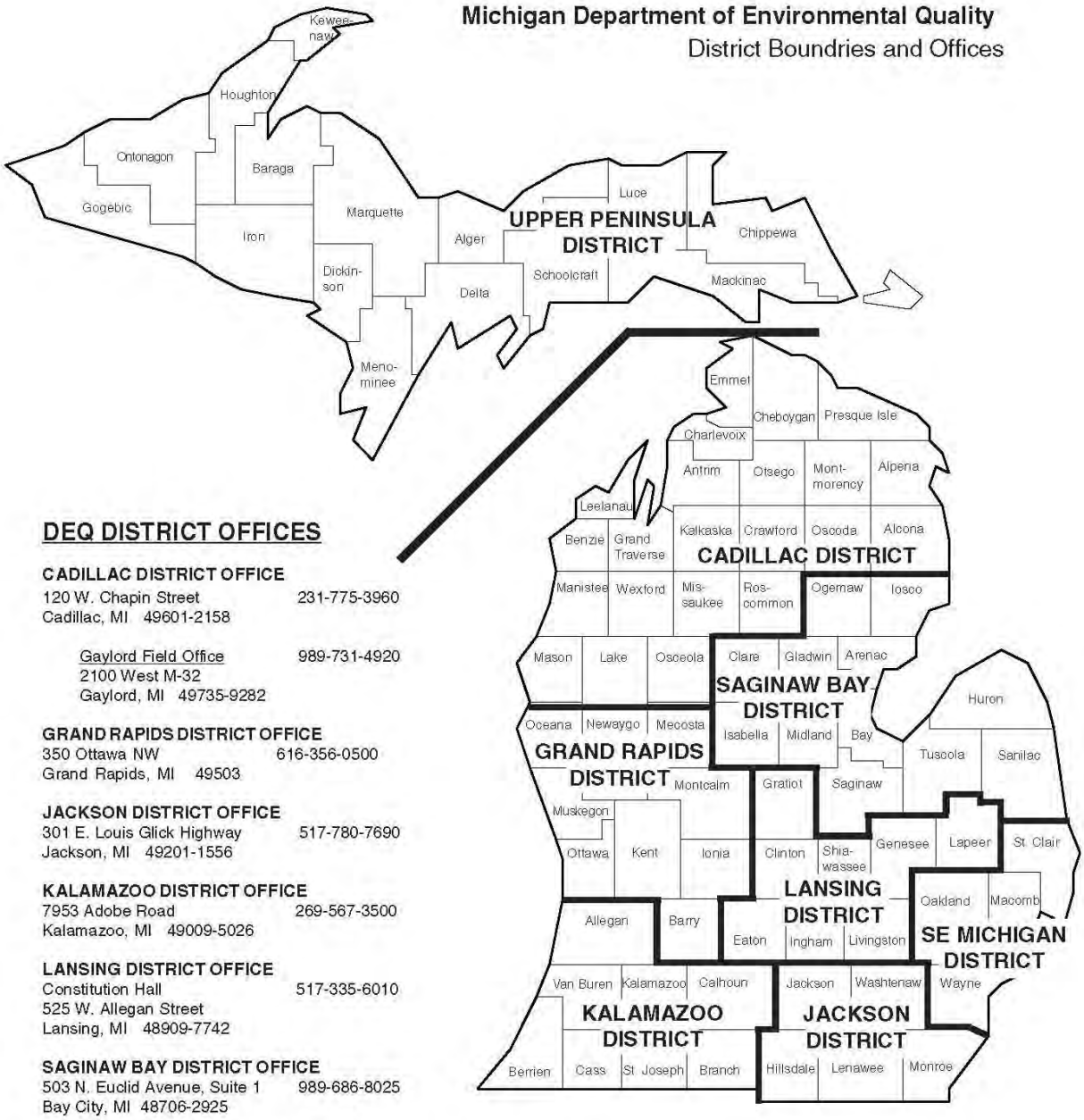
Table 1: Potential to Emit VOCs	
1A. Potential to Emit VOCs (UNCONTROLLED): (A) x (B) x (H) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons VOC/yr (uncontrolled)**
1B. Potential to Emit VOC (CONTROLLED, if applicable): (1A) x (100 – [D])/100 =	**Tons VOC/yr (controlled)**

Table 2: Potential to Emit Solids	
2A. Potential to Emit Solids (UNCONTROLLED): (A) x (B) x (K) x (1 – [C]) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons Soids/yr (uncontrolled)**
2B. Potential to Emit Solids (CONTROLLED, if applicable): (2A) x (100 – [E])/100 =	**Tons Solids/yr (controlled)**

Table 3: Potential to Emit HAPs (Uncontrolled)	
3A. Potential to Emit HAP1 (UNCONTROLLED): (A) x (B) x (M) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons HAP1/yr (uncontrolled)**
3B. Potential to Emit HAP2 (UNCONTROLLED): (A) x (B) x (N) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons HAP2/yr (uncontrolled)**
3C. Potential to Emit HAP3 (UNCONTROLLED): (A) x (B) x (O) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons HAP3/yr (uncontrolled)**
3D. Potential to Emit HAP4 (UNCONTROLLED): (A) x (B) x (P) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons HAP4/yr (uncontrolled)**
3E. Potential to Emit HAP5 (UNCONTROLLED): (A) x (B) x (Q) x (8,760 hrs/yr) x (1 ton/2,000 lbs) =	**Tons HAP5/yr (uncontrolled)**
3F. Total HAPs (UNCONTROLLED) (3A) + (3B) + (3C) + (3D) + (3E)	**Tons Total HAPs/yr (uncontrolled)**

Table 4: Potential to Emit HAPs (Controlled) – You may calculate a controlled PTE for HAPs only if you are allowed to calculate PTE of VOC as controlled (see instructions at the bottom of page 1). If the HAP is not a VOC, use the uncontrolled calculation above.	
4A. Potential to Emit HAP1 (CONTROLLED): (3A) x (100 – [D])/100 =	**Tons HAP1/yr (controlled)**
4B. Potential to Emit HAP2 (CONTROLLED): (3B) x (100 – [D])/100) =	**Tons HAP2/yr (controlled)**
4C. Potential to Emit HAP3 (CONTROLLED): (3C) x (100 – [D])/100) =	**Tons HAP3/yr (controlled)**
4D. Potential to Emit HAP4 (CONTROLLED): (3D) x (100 – [D])/100) =	**Tons HAP4/yr (controlled)**
4E. Potential to Emit HAP5 (CONTROLLED): (3E) x (100 – [D])/100) =	**Tons HAP5/yr (controlled)**
4F. Total HAPs (CONTROLLED) (4A) + (4B) + (4C) + (4D) + (4E)	**Tons Total HAPs/yr (controlled)**

DEQ DISTRICT MAP



DEQ DISTRICT OFFICES

CADILLAC DISTRICT OFFICE
120 W. Chapin Street 231-775-3960
Cadillac, MI 49601-2158

Gaylord Field Office 989-731-4920
2100 West M-32
Gaylord, MI 49735-9282

GRAND RAPIDS DISTRICT OFFICE
350 Ottawa NW 616-356-0500
Grand Rapids, MI 49503

JACKSON DISTRICT OFFICE
301 E. Louis Glick Highway 517-780-7690
Jackson, MI 49201-1556

KALAMAZOO DISTRICT OFFICE
7953 Adobe Road 269-567-3500
Kalamazoo, MI 49009-5026

LANSING DISTRICT OFFICE
Constitution Hall 517-335-6010
525 W. Allegan Street
Lansing, MI 48909-7742

SAGINAW BAY DISTRICT OFFICE
503 N. Euclid Avenue, Suite 1 989-686-8025
Bay City, MI 48706-2925

SOUTHEAST MICHIGAN DISTRICT OFFICE
27700 Donald Court 586-753-3700
Warren, MI 48092-2793

Detroit Field Office 313-456-4700
Cadillac Place
3058 West Grand Boulevard, Suite 2-300
Detroit, MI 48202-6058

UPPER PENINSULA DISTRICT OFFICE
420 5th Street 906-346-8300
Gwinn, MI 49841

ENVIRONMENTAL ASSISTANCE CENTER
(for general information):
Telephone: 800-662-9278
Fax: 517-241-0673

POLLUTION EMERGENCIES
Telephone: 800-292-4706

DEQ WEB PAGE
www.michigan.gov/deq

AUTHORITY: PA 451 of 1994, as amended
TOTAL COPIES:
TOTAL COST:
COST PER COPY:
Michigan Department of Environmental Quality

Printed by a MICHIGAN GREAT PRINTER

PRINTED ON RECYCLED PAPER