



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
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AIR QUALITY DIVISION

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**GENERAL PERMIT TO INSTALL FOR REMEDIATION PROCESSES:
GASOLINE AND PETROLEUM BASED CONTAMINANTS**

September 21, 1999
Revised September 29, 2000

SUMMARY

On September 21, 1999, the Air Quality Division (AQD) of the Michigan Department of Environmental Quality (Department) issued the attached general permit to install for selected remediation processes for soil or groundwater contaminated with gasoline and petroleum based products. This general permit covers air stripping (pumping groundwater to the surface and transferring contaminants to the air), soil vapor extraction (volatilizing contaminants out of soil with vacuum pressure), and air sparging processes (injecting air into soil/groundwater to remove contaminants). Contaminants covered under this general permit include crude oil; crude oil fractions; refined petroleum fractions including gasoline, jet fuels, kerosene, heating oils, and diesel fuels and any oxygenates that have been blended with any refined petroleum fraction; and natural gas based-products such as liquid petroleum gas. The contaminants shall not include any halogenated compound or waste oils. The general permit will provide terms and conditions necessary to ensure that the source, process or process equipment will comply with all applicable state and federal requirements.

Several exemptions from the requirement to obtain a permit to install apply to remediation processes. A permit to install (including a general permit) is not required for:

- a) A vapor vacuum extraction soil remediation process where the vapor is treated in a control device and all of the vapor is injected into the soil such that there are no emissions to the atmosphere during normal operation. (R 336.1285(v))
- b) An air stripper controlled by an appropriately designed and operated carbon adsorption or incineration system that is used exclusively for the cleanup of gasoline, fuel oil, natural gas condensate, and crude oil spills. (R 336.1285(w))
- c) An air sparging system where sparged air is emitted back to the atmosphere only by natural diffusion through the contaminated medium and covering soil and other covering medium. (Interoffice memorandum dated June 29, 1994)
- d) Any remediation process, if the emissions of non-carcinogenic volatile organic compounds are less than 1,000 pounds per month uncontrolled or 500 pounds per month controlled, and the emissions of carcinogenic volatile organic compounds with an initial risk screening level greater than 0.04 micrograms per cubic meter are less than 20 pounds per month uncontrolled or 10 pounds per month controlled. (R336.1290) NOTE: Pursuant to federal guidance, the Department considers gasoline vapors to be carcinogenic. Therefore, most remediations of soil/groundwater contaminated with gasoline do not qualify for this exemption.

This general permit was issued pursuant to R 336.1201a of the Administrative Rules for Air Pollution Control (Rule 201a), and provides a streamlined permitting alternative for the affected facilities. Prior to finalizing the attached general permit, the Department held a 30-day public comment period. No comments were received. The general permit was revised on March 20, 2000 to address the issue of applicability for a source, process or process equipment that may be identified in a consent order or

consent judgement. The general permit is being revised once again to include a new version of the General Information form EQP5727 and to revise the language in General Condition 18.

BACKGROUND

Rule 201a allows the Department to issue a general permit to install covering numerous similar stationary sources, processes or process equipment, after public notice and opportunity for public participation. The use of general permits provides a streamlined permitting alternative for processes that meet the following general criteria:

- a) The processes must produce the same or reasonably similar products.
- b) The processes must emit the same or similar air contaminants.
- c) The method for capturing and controlling the air contaminants must be the same or limited to a small number of specific alternatives.
- d) The processes must be subject to the same emission limitations, monitoring requirements, federal standards, or state rules.

A person who owns or operates a stationary source, process or process equipment, which qualifies for a general permit to install approved by the Department, may apply for coverage under the terms and conditions of the general permit. Owners/operators who apply to the Department for coverage under the general permit to install must certify that the equipment they will be installing meets the necessary criteria for applicability and that 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 that the equipment will operate in compliance with all applicable rules for air pollution control. A person also has the option of applying for a case-by-case permit to install pursuant to Rule 201 if they are unable to comply with the conditions of the general permit to install.

On August 12, 1999, the Department proposed a general permit to streamline the review of permit applications for remediation processes. The Department held a comment period from August 12, 1999 to September 13, 1999 to receive comments on the proposed general permit. A public hearing was not requested and the Department received no written comments during the comment period.

APPLICABLE REQUIREMENTS

The following state and federal requirements are considered to be applicable to all sources, processes, or process equipment and are addressed in the General Conditions of the permit.

<u>Citation</u>	<u>Description</u>
R 336.1201a	State rule that gives the Department authority to issue general permits.
R 336.1219	State rule that requires written notification of change of ownership.
R 336.1285	State rule that allows the use of raw materials not listed in an approved permit.
R 336.1301	State rule that sets the standards for density of particulate emissions.
R 336.1370	State rule that requires the proper disposal of collected air contaminants.
R 336.1901	State rule that prohibits the emission of air contaminants, which interfere with the enjoyment of life and property and/or has injurious effects to health or safety.
R 336.1912	State rule that requires notice of abnormal conditions or malfunctions, which result in emissions in excess of the standards.
R 336.2001, 2003, 2004	State rules that allow the Department to request performance testing, and specify how the test should be conducted.

The following state and federal requirements are applicable to remediation processes with petroleum based contaminants and were considered in the development of the general permit to install. These requirements are addressed in the Special Conditions of the permit.

<u>Citation</u>	<u>Description</u>
R 336.1205	State rule that requires a permit to limit the amount of potential emissions.
R 336.1702(a)	State rule that outlines general provisions for new sources of volatile organic compounds (VOCs). This rule requires that Best Available Control Technology (BACT) be applied to control VOC emissions from new sources. For remediation processes proposed to be covered by this general permit, which have uncontrolled VOC emissions exceeding 10 tons per year, vapor phase carbon adsorption (single or dual units), thermal oxidation (incinerator or afterburner), catalytic oxidation (incinerator), an internal combustion engine, or a biofilter (in combination with one of the other controls listed in this paragraph) are considered BACT for VOCs. For remediation processes proposed to be covered by this general permit, which have uncontrolled VOC emissions of 10 tons per year or less, add-on control is not economically feasible and BACT is considered to be no control.
R 336.1225	State rule that applies to sources of air toxics. This rule requires Best Available Control Technology for toxics (T-BACT) to be applied to sources emitting air toxics and requires the emissions from the process meet the allowed impact levels. Dispersion modeling shows toxic air contaminant (TAC) emissions from remediation processes covered by this general permit will meet the allowed impact levels if the VOC or gasoline emissions do not exceed 10 tons per year and the total combined benzene, toluene, ethylbenzene and xylene (BTEX) emissions do not exceed 1 ton per year.
R 336.1910	State rule that requires a pollution control device be operated properly.

APPLICABILITY CRITERIA

To qualify for the general permit to install based on the listed applicable requirements, all remediation processes must meet the following criteria:

- The general permit to install shall apply only to air stripping, soil vapor extraction, and air sparging processes remediating soil or groundwater contaminated with petroleum based products including crude oil; crude oil fractions; refined petroleum fractions including gasoline, jet fuels, kerosene, heating oils, and diesel fuels and any oxygenates that have been blended with any refined petroleum fraction; and natural gas based-products such as liquid petroleum gas. The contaminants shall not include any halogenated compound or waste oils.
- There may be more than one remediation process at a given site. Each remediation process must meet all of the criteria set forth in this general permit and must comply with all terms and conditions of this general permit.
- The total VOC or gasoline emissions from all remediation processes combined at a given site shall not exceed 10 tons per year based on a 12-month rolling time period as determined at the end of each calendar month.
- The total BTEX emissions from all remediation processes combined at a given site shall not exceed 1 ton per year based on a 12-month rolling time period as determined at the end of each calendar month.
- There shall be no benzene, toluene, ethylbenzene, xylene or gasoline emissions at the stationary source other than those covered by this general permit.
- All remediation processes combined at a given site, with total potential VOC or gasoline emissions of 10 tons per year or less and/or total potential BTEX emissions of 1 ton per year or less are not required to install emission controls under this general permit.
- All remediation processes combined at a given site, with total potential VOC or gasoline emissions greater than 10 tons per year and/or total potential BTEX emissions greater than 1 ton per year must install one or more of the following emission controls: a single or dual stage granular activated carbon unit, a thermal oxidizer (incinerator or afterburner), a catalytic oxidizer

(incinerator), an internal combustion engine, or a biofilter in combination with one of the other listed controls.

- Emission controls shall be guaranteed by the manufacturer to reduce hydrocarbon emissions to the atmosphere by at least 95% for vapor phase carbon and 98% for thermal oxidation, catalytic oxidation or an internal combustion engine.
- The exhaust gases from the process must be discharged unobstructed vertically upwards to the ambient air at an exit point of 1.5 times the height of the building, but not less than 30 feet above ground level, with a minimum exit velocity of 37 feet per second. The discharge point shall be a minimum of 100 feet from any structure or terrain feature, which exceeds 20 feet in height.
- The general permit shall not apply to a source, process or process equipment that is included in an existing permit to install pursuant to Rule 201 and is further referenced in an outstanding consent order or consent judgement.

PERMIT CONDITIONS

The general permit to install must be consistent with the permit content requirements of Rule 205(1)(a). This rule requires that if a permit to install includes limitations, which restrict the potential to emit of a stationary source, process, or process equipment to a quantity below that which would constitute a major source, the permit shall contain emission limits which are enforceable as a practical matter.

Attachment A lists the terms and special conditions for the general permit to install. These terms and conditions prescribe the applicable site restrictions, performance standards, emission limits, monitoring, record keeping and reporting requirements which are necessary to ensure that a will comply with all state and federal applicable requirements.

EMISSIONS

The table below shows the emissions that are allowed pursuant to the terms and special conditions. The annual limits are based on a 12-month rolling time period as determined at the end of each calendar month.

Pollutant	Total Hourly Emissions (pounds per hour)	Total Annual Emissions (tons per year)
VOCs*	2.28	10.0
Gasoline	2.28	10.0
BTEX	0.228	1.0

* VOCs include volatile emissions from crude oil; crude oil fractions; refined petroleum fractions including gasoline, jet fuels, kerosene, heating oils, and diesel fuels and any oxygenates that have been blended with any refined petroleum fraction; and natural gas based-products such as liquid petroleum gas. Emissions shall not include any halogenated compounds or waste oils.

AMBIENT AIR IMPACTS

Operation of a remediation process, in compliance with the general permit to install terms and conditions, will impact the ambient air at levels not more that those summarized in the following table. These impacts were calculated using an annual emission rate of 10 tons per year of gasoline vapors and a dilution factor based on dispersion modeling. The parameters used in the dispersion model include a building height of 20 feet, a stack height of 30 feet, a stack internal diameter of 4 inches, and a volumetric flow rate of 194 cubic feet per minute, resulting in an exit velocity of 37 feet per second. The emissions were assumed to occur continuously for 24 hours per day and 365 days per year. The acceptability of the predicted ambient air impacts is based on compliance with the Secondary Risk Screening Level (SRSL) because no other emission sources of gasoline or BTEX will be allowed at a remediation site covered under this general permit.

Pollutant	Averaging Time	Acceptable Impact	Basis	Predicted Maximum Impact
Gasoline @ 10 TPY	Annual	13 µg/m ³	Rule 225 SRSL*	12.9 µg/m ³
Total VOCs @ 10 TPY (assumed to be gasoline)	Annual	13 µg/m ³	Rule 225 SRSL	12.9 µg/m ³
BTEX @ 1.0 TPY (assumed to be 10% of gasoline)	Annual	1.3 µg/m ³	Rule 225 SRSL	1.29 µg/m ³

* Secondary Risk Screening Level as defined in R 336.119(c) for gasoline.

APPLICATION FOR A GENERAL PERMIT

If the owner/operator of a remediation process decides to install and operate the process under the terms of the general permit to install then it is the responsibility of the owner/operator to apply to the Department for coverage under the general permit. Installation of equipment prior to granting of a permit to install, including coverage under a general permit to install, is a violation of Rule 201. Application forms, which include all information necessary to determine qualification for and to ensure compliance with the general permit to install, are available on the Internet as part of this document or may be obtained by contacting Pam Knudsen at 517-373-7074. The Air Quality Home Page is located at <http://www.michigan.gov/deq>.

The owner/operator shall submit the application forms to the AQD Permit Section. Upon receipt by the AQD, Permit staff will review the application for completeness. The general permit to install for remediation processes will be granted by the Department to sources, processes or process equipment that qualify, within 30 days of receipt of a complete application. The AQD will mail to the facility, a copy of the general permit to install and a letter acknowledging that the AQD is aware that the facility owner/operator intends to install and operate a remediation process in accordance with the terms and conditions of the general permit. The Department will maintain and make available to the public, upon request, a list of the persons that have been authorized to install and operate a stationary source, process or process equipment pursuant to each general permit to install issued by the Department.

**ATTACHMENT A
GENERAL CONDITIONS**

1. The process or process equipment covered by this general permit to install shall not be reconstructed, relocated, or modified unless a Permit to Install pursuant to Rule 201 authorizing such action is issued by the Department, or an application for coverage under a General Permit to Install pursuant to Rule 201a, is submitted to and approved by the Department. For the purpose of a general permit to install, the permittee is defined as any person who owns or operates a process or process equipment at the source for which coverage under the general permit has been granted.
2. Operation of any process or process equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **[R336.1901]**
3. Operation of this equipment shall not interfere with the attainment or maintenance of the air quality standard for any air contaminant. **[R336.1207(1)(b)]**
4. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5).
5. Coverage under this general permit to install does not exempt the permittee from complying with any future regulation, which may be promulgated under Part 55 of 1994 PA 451.
6. Coverage under this general permit to install does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
7. The permittee shall notify any public utility of any excavation, tunneling and discharging of explosives or demolition of buildings which may affect said utility's facilities in accordance with Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled laws and comply with each of the requirements of that Act.
8. The restrictions and conditions of this general permit to install shall apply to any person or legal entity which now or shall hereafter own or operate the equipment for which coverage under this general permit to install is issued. A written request to the Department for a change in ownership or operational control of the process or process equipment shall be made pursuant to Rule 219.
9. If the installation of the equipment for which coverage under this general permit to install has been issued, has not commenced within, or has been interrupted for, 18 months, then the general permit to install shall become void unless otherwise authorized by the Department as a condition of the permit. Furthermore, the permittee shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation or construction of the equipment allowed by this general permit to install. **[R336.1201(4)]**

**ATTACHMENT A
GENERAL CONDITIONS**

10. Except as provided in subrules (2) and (3) or unless the special conditions of the general permit to install include an alternate opacity limit established pursuant to subrule (4) of R336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R336.1303. **[R336.1301(1)]**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this general permit to install.
11. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R336.1370(2). **[R336.1370]**
12. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R336.2001 and R336.2003, under any of the conditions listed in R336.2001. **[R336.2001]**
13. Any required testing protocol shall conform to a format acceptable to the AQD. **[R336.2003(1)]**
14. Any required test results, which must be submitted to the AQD, shall conform to a format acceptable to the AQD. **[R336.2001(4)]**
15. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **[R336.1910]**
16. Except as allowed by Rule 285(a), (b), and (c) the permittee shall not substitute any fuels, coatings, nor raw materials for those described in the application and allowed by this general permit, nor make changes to the process or process equipment described in the application, without prior notification to and approval by the Air Quality Division.
17. For a stationary source that becomes a major source, as defined by R336.1211(1)(a), upon receipt of approval for coverage under this general permit to install, an administratively complete application for a renewable operating permit shall be submitted not more than 12 months after the stationary source commences operation as a major source. Commencing operation as a major source occurs upon commencement of trial operation of the new or modified process or process equipment that increased the potential to emit of the stationary source to more than or equal to the applicable major source definition specified in R336.1211(1)(a).
18. For a stationary source that is already a major source with an existing renewable operating permit, the source shall notify the Department of the installation of the process or process equipment covered by this general permit, pursuant to R336.1215(3) or apply for a modification pursuant to R336.1216(2) prior to commencing operation. The notification or application to modify the renewable operating permit shall be made using a form approved by the Department.

**ATTACHMENT A CONTINUED
SPECIAL CONDITIONS**

I. DESIGN PARAMETERS	
A. Process Equipment Covered by General Permit	Air strippers, soil vapor extraction systems, and air sparging systems; associated equipment and pollution control devices. (R 336.1201a(1))
B. Pollution Control Equipment	For sources with total potential VOC or gasoline emissions greater than 10 tons per year and/or total potential BTEX emissions greater than 1 ton per year, a single or dual granular activated carbon unit, thermal oxidizer, catalytic oxidizer, internal combustion engine with dual catalytic converters, or a biofilter in combination with one of the other controls listed in this paragraph. (R 336.1702(a))
C. Stack/Vent Parameters	The exhaust gases from the process must be discharge unobstructed vertically upwards to the ambient air at an exit point at least 1.5 times the height of the building, but not less than 30 feet above ground level, with a minimum exit velocity of 37 feet per second. The discharge point shall be a minimum of 100 feet from any structure or terrain feature, which exceeds 20 feet in height. (R 336.1225)
II. MATERIAL USAGE/EMISSION LIMITS	
A. Pollutant	Maximum Emission Rate/Applicable Requirement
1. Total VOC	10.0 tons per year based on a 12-month rolling time period as determined at the end of each calendar month or 2.28 pounds per hour. (R 336.1205, R 336.1702(a), R 336.1225)
2. Total Gasoline	10.0 tons per year based on a 12-month rolling time period as determined at the end of each calendar month or 2.28 pounds per hour. (R 336.1205, R 336.1702(a), R 336.1225)
3. Total Benzene, Toluene, Ethylbenzene and Xylene (BTEX)	1.0 ton per year based on a 12-month rolling time period as determined at the end of each calendar month or 0.228 pound per hour. (R 336.1205, R 336.1702(a), R 336.1225)
III. COMPLIANCE EVALUATION	
Records of all of the following shall be maintained on file for a period of 5 years (R 336.1201a(1))	
A. MONITORING/RECORDKEEPING - In Addition to General Conditions	
1. Parameter to be Recorded and Frequency	1. Total VOC, gasoline or BTEX emissions using Appendix R-1 or R-2. (R 336.1205, R 336.1702(a), R 336.1225) 2. Date, duration, and description of any malfunction of the control equipment, any maintenance performed, any replacement of catalyst or control equipment media, and any testing results. (R 336.1702(a), R 336.1910) 3. Date and description of replacement or modification of a control device or installation of an additional remediation process at the site. (R 336.1201a(1))
(a) Ground water remediation - monitoring and recordkeeping	The permittee shall monitor and record the water flow rate and the VOC, gasoline or BTEX concentrations in the influent and effluent water streams of the process using Appendix R-1. The monitoring frequency shall be once a week until four valid samples are obtained. Thereafter, the monitoring frequency shall be once a month for five months. Thereafter, the monitoring frequency shall be quarterly. The influent and effluent ground water samples shall be analyzed using the analytical method, SW-846 - Method 8260 (analysis for methyl(tert)butyl ether must be specifically requested). (R 336.1702(a), R 336.1225)
(b) Soil remediation - monitoring and recordkeeping	The permittee shall monitor and record the gas flow rate and the VOC, gasoline or BTEX concentrations at the inlet to the control unit using Appendix R-2. The monitoring frequency shall be once a week until four valid samples are obtained. Thereafter, the monitoring frequency shall be once a month for five months. Thereafter, the monitoring frequency shall be quarterly. The vapor stream(s) shall be analyzed using 40 CFR Part 60 - Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography. (R 336.1702(a), R 336.1225)
2. Reports and Schedules	Submitted only upon request by the DEQ-AQD. (R 336.1201a(1))

**ATTACHMENT A CONTINUED
SPECIAL CONDITIONS**

B. TESTING - In Addition to General Conditions	
1. Parameter to be Tested	Total VOC, gasoline, or BTEX emissions. (R 336.2001(1))
2. Method/Analysis	Method in accordance with Department requirements with prior approval of the District Supervisor, Air Quality Division. (R 336.2003)
3. Frequency/Schedule	Within 60 days if requested by the DEQ-AQD. (R 336.2001(2))
4. Submittal of Test Results	To District Supervisor within 60 days following completion of the test. (R336.2001(4))
IV. OPERATIONAL PARAMETERS	
<p>1. There shall be no benzene, toluene, ethylbenzene, and xylene (BTEX) or gasoline emissions at the stationary source other than those covered by this general permit. (R 336.1225)</p> <p>2. For sources with total potential VOC or gasoline emissions greater than 10 tons per year and/or total potential BTEX emissions greater than 1 ton per year, the permittee shall not operate the remediation process(es) unless the associated control device(s) are installed, maintained, and operated properly according to the manufacturer's specifications. A copy of the manufacturer's specification for the control device shall be maintained on file. Specific operating parameters for the various control devices are as follows: (R 336.1702(a), R 336.1225)</p> <p>a) Single or dual-stage granulated activated carbon system. Proper operation requires a minimum of 95% reduction of hydrocarbon emissions to the atmosphere. The carbon canister (or first canister of a dual-stage granulated activated carbon system) shall be monitored for breakthrough at least once every two weeks. If breakthrough is detected, the spent carbon canister shall be immediately replaced or the remediation process shall be shut down until the spent carbon canister can be replaced. Breakthrough shall be determined by use of an appropriate hand-held hydrocarbon detector of the permittee's choice. The detector shall have a sensitivity of no more than 1 part per million by volume. The detector shall be calibrated according to manufacturer's specifications and the permittee shall zero the detector to the ambient air prior to making any readings. An initial monitoring test shall be conducted after start-up as soon as the process has reached a steady state condition, but not longer than 12 hours after start-up of the process, and the initial reading shall be recorded. Breakthrough shall be considered to have occurred when any reading higher than the initial reading is measured on the detector. The initial monitoring test shall be repeated, and the initial reading recorded, each time a canister is replaced.</p> <p>b) Thermal oxidizer (incinerator). Proper operation requires a minimum of 98% reduction of hydrocarbon emissions to the atmosphere. The oxidizer shall be operated at a minimum temperature of 1400°F and a minimum residence time of 0.5 seconds in the combustion chamber. A temperature indication device, which continuously displays the operating temperature of the combustion chamber of the thermal oxidizer shall be installed and maintained in accordance with manufacturer's specifications.</p> <p>c) Catalytic oxidizer (incinerator). Proper operation requires a minimum of 98% reduction of hydrocarbon emissions to the atmosphere. The oxidizer shall be operated at a minimum temperature of 600°F at the inlet of the catalyst bed and a maximum space velocity of 40,000 hr⁻¹. A temperature indication device, which continually displays the operating temperature of the inlet to the catalyst bed of the catalytic oxidizer shall be installed and maintained in accordance with manufacturer's specifications.</p> <p>d) Internal combustion engine. Proper operation requires a minimum of 98% reduction of hydrocarbon emissions to the atmosphere. The engine shall be equipped with two catalytic converters in series operated at a minimum temperature of 650°F at the inlet of the first catalytic converter. A temperature indication device, which continually displays the operating temperature of the inlet to the first catalytic converter of the internal combustion engine shall be installed and maintained in accordance with manufacturer's specifications.</p> <p>e) Biologically based filtration system (biofilter). If a biofilter is used, it shall be used in combination with one of the controls described above.</p>	
V. ALLOWED MODIFICATIONS	
<p>1. The permittee may replace or interchange control devices during remediations at a given site, or may install additional remediation processes at the site without applying for a new general permit to install, provided all of the general permit to install applicability criteria will continue to be met after the replacement, modification or addition.</p> <p>2. The permittee shall update the general permit by submitting a new Process Information form EQP5758 to the Permit Section and the District Supervisor, listing all existing and new/additional equipment a minimum of 10 days before the equipment is installed.</p>	

APPENDIX R-1 - GROUNDWATER REMEDIATION EMISSION CALCULATION AND RECORD KEEPING

PERMITTEE (SOURCE NAME)	CONTACT PERSON
SITE LOCATION	COUNTY
RECORDKEEPING PERIOD Start Date: _____ End Date: _____	GENERAL PERMIT TO INSTALL NUMBER

DATE	WATER FLOW (gallons/minute) (G)	CONCENTRATIONS IN WATER (parts per million)*			CONTROL EFFICIENCY (Percent) (E _c)	EMISSIONS** (pounds/hour) (P _c)
		Inlet (I)	Outlet (O)	Inlet - Outlet (D)		
<i>EXAMPLE</i>	<i>100</i>	<i>210</i>	<i>10</i>	<i>200</i>	<i>95</i>	<i>0.5</i>

* parts per million by weight, which is equivalent to milligrams per liter **in water**
 **Emissions of VOC, gasoline or BTEX. Identify which pollutant the emissions are being calculated for.

BASIC EQUATIONS TO CALCULATE EMISSIONS: $D = I - O$ $P_c = G * D * (100 - E_c) * 5 * 10^{-6}$

Signature: _____	Date: _____ Telephone No. _____
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APPENDIX R-2 - SOIL REMEDIATION EMISSION CALCULATION AND RECORD KEEPING

PERMITTEE (SOURCE NAME)	CONTACT PERSON
LOCATION	COUNTY
RECORDKEEPING PERIOD: Start Date: End Date:	GENERAL PERMIT TO INSTALL NUMBER

DATE	AIR VOLUME FLOW RATE (cubic feet/minute) (V)	INLET CONCENTRATION (milligrams/cubic meter)* (C)	CONTROL EFFICIENCY (Percent) (E _s)	EMISSIONS** (pounds/hour) (P _s)
<i>EXAMPLE</i>	<i>1,000</i>	<i>10,000</i>	<i>95</i>	<i>1.9</i>

*parts per million in air is *by volume* and **does not equal** milligrams per liter
 **Emissions of VOC, gasoline or BTEX. Identify which pollutant the emissions are being calculated for.

BASIC EQUATION TO CALCULATE EMISSIONS: $P_s = V * C * (100 - E_s) * 3.75 * 10^{-8}$

Signature:	Date: Telephone No.
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Michigan Department Of Environmental Quality - Air Quality Division

GENERAL PERMIT TO INSTALL APPLICATION

GENERAL INFORMATION

FOR DEQ USE ONLY

PERMIT NUMBER

Authorized under 1994 PA 451, as amended. Completion of form is required. Applicant may be subject to civil and/or criminal penalties for providing false information.

Instructions: Use this form to request authority to install and operate a source, process or process equipment under the terms and conditions of a general permit to install pursuant to Rule 201a. Prepare this form together with one or more of the forms identified in Item 19, according to type of source, process or process equipment, which will be installed and operated. Please submit all information, including forms, in duplicate. **NOTE:** This general permit does not apply to a source, process, or process equipment that is included in a Permit to Install pursuant to Rule 201 and is further referenced in an outstanding consent order or consent judgement.

1. FACILITY CODES		
STATE REGISTRATION NUMBER (SRN)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
2. APPLICANT NAME <i>(Business license name of the corporation, partnership, individual or government agency that owns the facility)</i>		
3. APPLICANT MAILING ADDRESS <i>(Street Address or P.O. Box Number)</i>		
4. CITY	5. STATE	6. ZIP CODE
7. NAME OF AUTHORIZED COMPANY MEMBER		
8. TITLE <i>(person identified in Item 7)</i>		9. TELEPHONE NO. <i>(person identified in Item 7)</i>
		() -
10. CONTACT PERSON <i>(technical point of contact, if different than name in Item 7)</i>		11. TELEPHONE NO. <i>(contact person)</i>
		() -
12. EQUIPMENT OR PROCESS LOCATION <i>(complete Items 12 - 15 if different than mailing address)</i>		
13. CITY	14. ZIP CODE	15. COUNTY
16. EQUIPMENT IS <i>(check one)</i> <input type="checkbox"/> New <input type="checkbox"/> Existing		17. PRIOR AIR PERMIT NO. <i>(existing equipment only)</i>
18. EQUIPMENT OR PROCESS INSTALLATION TIMETABLE <i>(enter dates in Items 18a - 18d for those which apply)</i>		
FOR NEW EQUIPMENT (PROCESS INSTALLATION OR CONSTRUCTION)	18a. START DATE	18b. COMPLETION DATE
FOR EXISTING EQUIPMENT (PROCESS MODIFICATION OR RELOCATION)	18c. START DATE	18d. COMPLETION DATE
19. THE FOLLOWING COMPLETED FORMS ARE ATTACHED TO AND MADE A PART OF THIS PERMIT APPLICATION <i>(check all that apply)</i>		
TYPE OF FORM		NUMBER ATTACHED
<input type="checkbox"/> EQP <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> _____ PROCESS INFORMATION <i>(complete one form for each process - insert form number and type of process in spaces provided)</i>		
<input type="checkbox"/> EQP5729 - ADDITIONAL INFORMATION		
Applicant Certification: I certify, under penalty of law, that this permit application and the attachments identified in Item 19 were prepared by me, or under my direction or supervision in accordance with a system to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. In addition, the equipment described in this application meets the necessary criteria for applicability for a General Permit to Install. Furthermore, I certify that I can and will comply with all conditions outlined in the General Permit to Install. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.		
20. SIGNATURE <i>(person identified in Item 7)</i>		21. DATE

Submit this completed application and the attachments identified in Item 19 to:
PERMIT SECTION, AIR QUALITY DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
P.O. BOX 30260, LANSING, MI 48909-7760

DEQ USE ONLY - DO NOT WRITE BELOW	
DATE APPLICATION COMPLETE	DATE OF DETERMINATION OF NON-APPLICABILITY
DATE GENERAL PERMIT TO INSTALL GRANTED	SIGNATURE
DATE GENERAL PERMIT TO INSTALL REVOKED	SIGNATURE



Michigan Department Of Environmental Quality - Air Quality Division

GENERAL PERMIT TO INSTALL APPLICATION
ADDITIONAL INFORMATION

FOR DEQ USE ONLY

PERMIT NUMBER

Authorized under 1994 PA 451, as amended. Completion of form is required if additional information is needed to make an application complete. Applicant may be subject to civil and/or criminal penalties for providing false information.

Instructions: Use this form to include additional information or attachments. Prepare and submit this form with General Information form (EQP5727).

1. FACILITY CODE

STATE REGISTRATION NUMBER (SRN)

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2. ID (Provide the identification number of the device, emission unit or stack/vent for which additional information is being submitted.)

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3. WHAT TYPE OF ADDITIONAL INFORMATION ARE YOU SUBMITTING WITH THIS APPLICATION? (check all that apply)

ATTACHMENT (if checked, describe and list what is attached. May include drawings, charts, calculations, assumptions, etc.)

TECHNICAL (Specialized information regarding the installation, construction, or use of a process or stack/vent)

GENERAL (Any supplemental information that is not technical information)

4. ADDITIONAL INFORMATION NARRATIVE (A brief description of the information or attachment. May include calculations, design parameters, small diagrams, etc.)



Michigan Department Of Environmental Quality - Air Quality Division
GENERAL PERMIT TO INSTALL APPLICATION
PROCESS/CONTROL INFORMATION - REMEDIATION PROCESS

FOR DEQ USE ONLY
PERMIT NUMBER

Authorized under 1994 PA 451, as amended. Completion of form is required. Applicant may be subject to civil and/or criminal penalties for providing false information.

Instructions: Use this form to request authority to install and operate a remediation process under the terms and conditions of a general permit to install pursuant to Rule 201a. Complete a separate form for each remediation process at this facility. Prepare this form together with form EQP5727 and any other forms identified in Item 19 of form EQP5727.

1. FACILITY CODE	
STATE REGISTRATION NUMBER (SRN)	<input type="text"/>
2. MANUFACTURER (Name):	3. REMEDIATION PROCESS MODEL NO.:
4. DESCRIPTION OF REMEDIATION PROCESS (Brief description of this remediation process and associated air emissions control system. Include estimated time frame to complete project.):	

Instructions for completing Items 5 and 6: The remediation process and its associated stack/vent should be linked with each other by assigning a Device Identification (ID) to each. The ID may be any combination of up to 10 letters, numbers or keyboard characters with no spaces between characters. If you choose to leave Items 5 and 6 blank, we will assign a Device ID for you. Check or complete all items that apply to your process and control device.

5. DEVICE ID (Assign an identification number for this device):	6. ASSOCIATED STACK/VENT DEVICE ID (Assign an identification number for the associated stack/vent):
<input type="text"/>	<input type="text"/>

7. CONTAMINANT(S) TO BE REMOVED (Provide concentration, units and annual emissions in tons/year.)	Concentration	Units (ppm or mg/m ³)	Annual Emission (TPY)
<input type="checkbox"/> Volatile Organic Compounds (VOCs)			
<input type="checkbox"/> Gasoline			
<input type="checkbox"/> Total Benzene, Toluene, Ethylbenzene and Xylene (BTEX)			

8. SOIL REMEDIATION Soil vapor extraction - Air Flow Rate (acfm): Sparging - Air Flow Rate (acfm):

9. GROUNDWATER REMEDIATION Air stripping - Water flow rate (gal/min): Sparging - Air Flow Rate (acfm):

10. CONTROL DEVICE: (Operation of a control device is required if total potential VOC or gasoline emissions, from all remediation processes combined are greater than 10 tons per year, and/or total potential BTEX emissions from all remediation processes combined are greater than 1 ton per year.)

Carbon adsorption, single stage Carbon adsorption, dual stage Thermal oxidizer Catalytic oxidizer

Internal combustion engine Biofilter in combination with: _____ (complete appropriate Items 11 - 14)

CONTROL INFORMATION (complete only those Items 11 - 14 which apply):

11. CARBON ADSORPTION	Canister(s) size (pounds of Carbon)	Canister replacement frequency
12. THERMAL OXIDATION	Operating Temperature (°F)	Residence time (seconds)
13. CATALYTIC OXIDATION	Influent temperature to catalyst (°F)	Space velocity (hr ⁻¹)
14. INTERNAL COMBUSTION	Influent temperature to first catalytic converter (°F)	

15. CONTROL DEVICE EFFICIENCY (%):

16. CONTROL DEVICE EFFICIENCY RATING BASED ON:
 MANUFACTURER'S GUARANTEE PERFORMANCE TESTING

17. ARE THE EXHAUST GASES DISCHARGED UNOBSTRUCTED VERTICALLY UPWARDS AT AN EXIT POINT AT LEAST 1.5 TIMES THE HEIGHT OF THE BUILDING, BUT NOT LESS THAN 30 FEET ABOVE GROUND? YES NO

18. IS THE CONTROL DEVICE EXHAUST FLOW VELOCITY AT LEAST 37 FEET PER SECOND? YES NO

19. IS THE EXHAUST POINT LOCATED AT LEAST 100 FEET FROM ANY STRUCTURE OR TERRAIN FEATURE THAT EXCEEDS 20 FEET IN HEIGHT? YES NO

Attach this completed form to and submit it with form EQP5727, following the instructions given on EQP5727.