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

Revised March 22, 2005

SUMMARY

On March 22, 2005, the Michigan Department of Environmental Quality (Department), Air Quality Division (AQD) issued the attached revised general permit to install for select remediation processes for soil or groundwater contaminated with 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 was issued pursuant to R 336.1201a of the Administrative Rules for Air Pollution Control (Rule 201a), and provides a streamlined permitting alternative for affected facilities that meet the specified applicability criteria.

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 is then 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. (R 336.1285(kk))
- 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.

HISTORY

The Department proposed a general permit to streamline the review of permit applications for remediation processes and to allow the affected facilities more operational flexibility. The general permit provides terms and conditions necessary to ensure that the source, process or process equipment will comply with all applicable state and federal requirements. The general permit for

remediation processes with petroleum based contaminants was originally issued on September 21, 1999, following a public comment period. A hearing was not requested and no written comments were received. The general permit has been revised and/or updated as follows:

- March 20, 2000 - revised to address the issue of applicability for a source, process or process equipment that may be identified in a consent order or consent judgment.
- September 29, 2000 - included a new version of the General Information form (EQP5727) and revised General Condition language.
- January 2002 and January 2003 - updated General Conditions and made minor administrative changes (i.e., addresses, formatting, etc.).

On February 14, 2005, the AQD proposed revisions to the general permit to include the following: reduce the stack height limit and exhaust gas velocity requirement; remove the hourly emission limits; remove the setback distance requirement; remove the option to control emissions with a single stage granular activated carbon unit; and modify the breakthrough monitoring of the dual stage granular activated carbon unit.

The revisions to the stack/vent and setback distance requirements are the result of new screening levels established for gasoline, benzene, ethylbenzene, and xylene. The Secondary Risk Screening Level (SRSL) for gasoline increased from 13 to 20 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The original general permit assumed that combined benzene, toluene, ethylbenzene and xylene (BTEX) emissions were 10% of the total VOC emissions and dispersion modeling used 10% of the gasoline SRSL as the acceptable ambient impact. For this revision, new dispersion modeling was done using emissions of each individual component of BTEX and the updated screening levels. The revised modeling demonstrates that the ambient air impacts are acceptable without the 100 foot setback.

Because the toxic air contaminants (TACs) that were modeled all have screening levels with 24-hour or annual averaging times, the hourly emission limit was removed. Monitoring in the original general permit was not demonstrating compliance with an hourly limit. The shortest time period required for monitoring is on a weekly basis until four valid samples are obtained and then reverts to monthly, followed by quarterly. The ton per year limit based on a 12-month rolling time period is adequate.

The single stage granular activated carbon option was removed from the list of acceptable controls because it may not provide adequate control of process emissions. Monitoring for breakthrough is required only every two weeks. Therefore, a single stage carbon system could potentially emit contaminants above the levels evaluated in this general permit for up to two weeks. The monitoring requirement for breakthrough of the dual stage granular activated carbon unit was modified for clarification.

The AQD also proposed minor changes to the Process Information form (EQP5758), changed the format of the special conditions, and incorporated the revised General Information form (EQP5727).

The Department held a comment period from February 14, 2005 to March 16, 2005 to receive comments on the proposed revisions. A public hearing was not requested, however, a typographical error was discovered and the acceptable ambient impact of ethylbenzene was corrected to 30 micrograms per cubic meter cubic.

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, that 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 emission limits; process/operational limits; testing, monitoring, and recordkeeping/reporting requirements; and stack restrictions 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.

The general permit to install may be used for one or more remediation process at a given site. Use of the general permit requires that 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. A remediation process that is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Site Remediation, 40 CFR Part 63, Subpart GGGGG, is not eligible to use this general permit to install and must obtain a Permit to Install pursuant to Rule 201. A remediation process is subject to the NESHAP if it is located at a facility that is a major source of HAP emissions and a MACT activity is also being conducted at the facility. (A major source of HAP emissions is a source that emits or has the potential to emit 10 tons per year of any single HAP or 25 tons per year of all HAPs combined.)

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 a general permit to install.
R 336.1201(4)	State rule that gives the Department authority to void a permit.
R 336.1207(1)	State rule that gives the Department authority to deny a permit.
R 336.1219	State rule that requires written notification of change of ownership.
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 336.1910	State rule that requires a pollution control device be operated properly.
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

- R 336.1702(a) (continued) (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, dual stage granular activated carbon, 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 proposed to be 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.

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 (benzene, toluene, ethylbenzene, and xylene) 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 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 shall be discharged unobstructed vertically upwards to the ambient air at an exit point at least 1.5 times the building height (from ground level to point of discharge), but not less than 20 feet above ground level, with a minimum exit velocity of 30 feet per second.
- The general permit shall not apply to a remediation process that is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Site Remediation, 40 CFR Part 63, Subpart GGGGG.
- The facility shall have no outstanding unresolved violations of any of the Michigan Department of Environmental Quality Air Pollution Control rules, orders, or permits; or federal air quality regulations.
- 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 judgment.

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 emission limits; process/operational limits; testing, monitoring, and recordkeeping requirements; and stack restrictions which are necessary to ensure that remediation processes 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 tons per 12-month rolling time period as determined at the end of each calendar month.

Pollutant	Total Annual Emissions
VOCs*	10.0
Gasoline	10.0
BTEX	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 by applying a dilution factor based on dispersion modeling to an annual gasoline emission rate of 10 tons per year. Since the total combined benzene, toluene, ethylbenzene and xylene (BTEX) emissions are limited to one ton per year, the impact of BTEX was calculated by applying the dilution factor to an annual emission rate of one ton per year for each individual compound. The parameters used in the dispersion model include a building height of 13 feet, a stack height of 20 feet, a stack internal diameter of 3 inches, and a volumetric flow rate of 88 cubic feet per minute, resulting in an exit velocity of 30 feet per second. The emissions were assumed to occur continuously for 24 hours per day, 365 days per year. The acceptability of the predicted ambient air impacts is based on compliance with applicable Initial Threshold Screening

Levels (ITSLs) as defined in R 336.1109(e) and Secondary Risk Screening Levels (SRSLs) as defined in R 336.1119(c). The SRSLs are used 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	Max Predicted Impact
Gasoline @ 10 TPY	Annual	20 µg/m ³	Rule 225 SRSL	8.3 µg/m ³
Total VOCs @ 10 TPY (assumed to be gasoline)	Annual	20 µg/m ³	Rule 225 SRSL	8.3 µg/m ³
Benzene @ 1.0 TPY	Annual	1 µg/m ³	Rule 225 SRSL	0.83 µg/m ³
Benzene @ 1.0 TPY	24 hour	30 µg/m ³	Rule 225 ITSL	8.3 µg/m ³
Toluene @ 1.0 TPY	24 hour	400 µg/m ³	Rule 225 ITSL	8.3 µg/m ³
Ethylbenzene @ 1.0 TPY	Annual	30 µg/m ³	Rule 225 SRSL	0.83 µg/m ³
Ethylbenzene @ 1.0 TPY	24 hour	1000 µg/m ³	Rule 225 ITSL	8.3 µg/m ³
Xylene @ 1.0 TPY	24 hour	100 µg/m ³	Rule 225 ITSL	8.3 µg/m ³

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 attached. The final forms are also available on the Internet or may be obtained by contacting Ms. Karla Lowrie at 517-373-7066. The Air Quality Permit Web Page is located at <http://www.deq.state.mi.us/aps>.

The owner/operator shall submit the completed application forms to the AQD Permit Section. Upon receipt, Permit staff will review the application for completeness. The general permit to install for remediation processes will be granted by the Department to qualifying sources, processes or process equipment, 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 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)]**

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. 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).
17. 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
SPECIAL CONDITIONS**

Flexible Group Identification

Flexible Group ID	Emission Unit(s)Included in Group - Description
FG-REMEDATION	Air strippers, soil vapor extraction systems, and air sparging systems; associated equipment and pollution control devices. 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 pollution control device shall consist of a dual stage granular activated carbon unit, a thermal oxidizer, a catalytic oxidizer, an internal combustion engine with dual catalytic converters, or a biofilter in combination with one of the other controls listed in this paragraph. [R336.1201a(1), R336.1702(a)]
Changes to the equipment described in this table are subject to the requirements of R336.1201, except as allowed by R336.1278 to R336.1290.	

The following conditions apply to: FG-REMEDATION

Emission Limits

	Pollutant	Equipment	Limit	Time Period	Testing/ Monitoring Method	Applicable Requirement
1.1a	Total VOC	FG-REMEDATION	10.0 tpy	12-month rolling time period as determined at the end of each calendar month	SC 1.4, SC 1.5, SC 1.6, SC 1.7	R336.1205, R336.1225, R336.1702(a)
1.1b	Total Gasoline	FG-REMEDATION	10.0 tpy	12-month rolling time period as determined at the end of each calendar month	SC 1.4, SC 1.5, SC 1.6, SC 1.7	R336.1205, R336.1225, R336.1702(a)
1.1c	BTEX*	FG-REMEDATION	1.0 tpy	12-month rolling time period as determined at the end of each calendar month	SC 1.4, SC 1.5, SC 1.6, SC 1.7	R336.1225
* Total combined benzene, toluene, ethylbenzene and xylene emissions.						

1.2 There shall be no benzene, toluene, ethylbenzene, xylene or gasoline emissions at the stationary source other than those covered by this general permit. **[R336.1225]**

Process/Operational Limits

1.3 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 FG-REMEDATION 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: **[R336.1702(a), R336.1225]**

- a) **Dual-stage granulated activated carbon system.** Proper operation requires a minimum of 95% reduction of hydrocarbon emissions to the atmosphere. The first canister of the dual-stage granulated activated carbon system shall be monitored for breakthrough and replaced if breakthrough is detected. See SC 1.6 for detailed monitoring requirements.
- 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.
- 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.
- 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.
- e) **Biologically based filtration system (biofilter).** If a biofilter is used, it shall be used in combination with one of the controls described above.

Monitoring

- 1.4 For ground water remediation: 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 each air stripper, using Appendix R-1. The monitoring frequency shall be once per week until four valid samples are obtained. Thereafter, the monitoring frequency shall be once per 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). **[R336.1702(a), R336.1225]**
- 1.5 For soil remediation: The permittee shall monitor and record the gas flow rate and the VOC, gasoline or BTEX concentrations at the outlet of the soil vapor extraction system using Appendix R-2. The monitoring frequency shall be once per week until four valid samples are obtained. Thereafter, the monitoring frequency shall be once per 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 or equivalent. **[R336.1702(a), R336.1225]**
- 1.6 For a dual-stage granulated activated carbon system: The permittee shall monitor, in a satisfactory manner, the dual-stage activated carbon system for breakthrough of the first canister at least once every two weeks. Breakthrough will be evaluated via Tedlar bag sampling followed by laboratory analysis; by use of a hand-held instrument capable of detecting concentrations at the levels expected; or an equivalent method. An initial monitoring test shall be conducted and the initial reading shall be recorded as soon as the process has reached a steady state condition, but not later than 12 hours after start-up of the process. A reading at the point between the first and second canisters that is 20 percent or more of the influent concentration into the first canister is considered to be breakthrough. If breakthrough is detected, the permittee shall not operate the system until the carbon in the first canister has been replaced and the operating order of the

vessels has been reversed. The initial monitoring test shall be repeated each time a carbon canister is replaced and the resulting influent concentration shall be used to establish breakthrough. **R336.1702(a), R336.1225]**

Recordkeeping/Reporting/Notification

- 1.7 The permittee shall keep, in a satisfactory manner, monthly and annual records of the total VOC, gasoline and/or BTEX emissions from FG-REMEDIATION. Annual records shall be based on a 12-month rolling time period as determined at the end of each calendar month. All records, including Appendix R-1 and/or R-2, shall be kept on file for a period of at least five years and made available to the Department upon request. **[R336.1205, R336.1702(a), R336.1225]**
- 1.8 The permittee shall keep, in a satisfactory manner, records of the 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 for FG-REMEDIATION. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **[R336.1702(a), R336.1910]**

Stack/Vent Restrictions

- 1.9 The exhaust gases from FG-REMEDIATION shall be discharge unobstructed vertically upwards to the ambient air at an exit point at least 1.5 times the building height (from ground level to point of discharge), but not less than 20 feet above ground level, with a minimum exit velocity of 30 feet per second. **[R336.1225]**

Miscellaneous/Allowed Modification

- 1.10 The permittee shall not replace or modify the control devices in FG-REMEDIATION, nor install additional remediation processes to FG-REMEDIATION at the site, unless all of the following conditions are met: **[R336.1201a(1)]**
- a) The permittee shall update the general permit by submitting a new Process Information form (EQP5758) to the Permit Section and District Supervisor, identifying the existing and new equipment a minimum of 10 days before the equipment is replaced or modified.
 - b) The permittee shall continue to meet all general permit to install applicability criteria after the replacement or modification is complete.
 - c) The permittee shall keep records of the date and description of the replacement or modification, or installation of a control device or an additional remediation process at the site.



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, the appropriate Process Information form(s) and the Additional Information form (if needed). Submit all information, including forms, in duplicate. NOTE: A 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 that is further referenced in an outstanding consent order or consent judgment.

1. FACILITY CODES
State Registration Number (SRN): [] [] [] [] []
Standard Industrial Classification (SIC) (4-digit) OR
North American Industry Classification System (NAICS) - (Preferred) [] [] [] [] [] [] [] [] [] [] [] []
2. APPLICANT NAME (Business license name of the corporation, partnership, individual or government agency that owns the facility)
3. APPLICANT MAILING ADDRESS (Street Address or P.O. Box Number)
CITY STATE ZIP CODE
4. AUTHORIZED EMPLOYEE TITLE PHONE NO. (Include Area Code)
5. CONTACT (If different than Authorized Employee, for questions regarding this application) PHONE NO. (Include Area Code)
6. EQUIPMENT OR PROCESS LOCATION (Number and street, if different than mailing address)
CITY ZIP CODE COUNTY
7. THE EQUIPMENT IDENTIFIED IN THE APPLICATION IS [] NEW [] EXISTING - DATE INSTALLED:
8. IS THERE AN EXISTING PERMIT TO INSTALL FOR ANY EQUIPMENT IDENTIFIED IN THIS APPLICATION? [] YES [] NO
PERMIT TO INSTALL NUMBER(S)
9. IS ANY OF THE EQUIPMENT INCLUDED IN AN OUTSTANDING CONSENT ORDER OR CONSENT JUDGMENT? [] YES [] NO
10. THE FOLLOWING FORMS ARE ATTACHED AS PART OF THIS PERMIT APPLICATION (check all that apply)
[] PROCESS INFORMATION (EQP _____)
(Complete the appropriate form for the process or equipment to be installed and insert the form number in the space provided.)
[] ADDITIONAL INFORMATION (EQP5729)

Applicant Certification: I certify, under penalty of law, that this permit application and any attachments 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 known violations.

SIGNATURE OF AUTHORIZED EMPLOYEE (Person identified in item 4) DATE

Submit completed application and all attachments to:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION - PERMIT SECTION
P.O. BOX 30260
LANSING, MI 48909-7760

DEQ USE ONLY - DO NOT WRITE BELOW
DATE APPLICATION COMPLETE
DATE GENERAL PERMIT TO INSTALL GRANTED SIGNATURE
DATE GENERAL PERMIT TO INSTALL VOIDED SIGNATURE



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 copy of this form for each remediation process to be covered by the general permit. Prepare and submit this form with the General Information form (EQP5727). **For a Modification:** Complete and certify this form and submit to the Permit Section and the District Supervisor. Clearly describe and identify all existing and new or additional equipment in Item No. 2.

1. FACILITY CODE	
STATE REGISTRATION NUMBER (SRN)	<input type="text"/>
2. DESCRIPTION (Brief description of this remediation process and associated air emissions control system. Include equipment manufacturer, model numbers and estimated time frame to complete project.)	
3. DOES THIS SOURCE HAVE AN EXISTING RENEWABLE OPERATING PERMIT? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT APPLICABLE	
IF YES, RENEWABLE OPERATING PERMIT (OR APPLICATION) NUMBER:	

Instructions for completing Items 4 and 5: The remediation process and associated stack/vent should be linked, by assigning each a unique identification number (ID). The ID may be any combination of up to 10 letters, numbers or keyboard characters with no spaces between characters. If this equipment has an ID assigned from a previous Permit to Install or Renewable Operating Permit, please use the existing ID. If Items 4 and 5 are left blank, IDs will be assigned by the AQD. Check or complete all items that apply.

4. EMISSION UNIT ID (Assign an identification number for the remediation process)	EU		
5. STACK/VENT ID (Assign an identification number for the stack/vent)	SV		
6. CONTAMINANT(S) TO BE REMOVED	Concentration	Units (ppm or mg/m³)	Annual Emission (TPY)
<input type="checkbox"/> Volatile Organic Compounds (VOCs)			
<input type="checkbox"/> Gasoline			
<input type="checkbox"/> Total Benzene, Toluene, Ethylbenzene and Xylene (BTEX)			
7. SOIL REMEDIATION	<input type="checkbox"/> Soil vapor extraction - Air Flow Rate (acfm):	<input type="checkbox"/> Sparging - Air Flow Rate (acfm):	
8. GROUNDWATER REMEDIATION	<input type="checkbox"/> Air stripping - Water flow rate (gal/min):	<input type="checkbox"/> Sparging - Air Flow Rate (acfm):	
9. CONTROL DEVICE: (Check appropriate box and complete only those items which apply. 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.)			
<input type="checkbox"/> CARBON ADSORPTION	Canister(s) size (pounds of Carbon)	Canister replacement frequency	
<input type="checkbox"/> THERMAL OXIDATION	Operating Temperature (°F)	Residence time (seconds)	
<input type="checkbox"/> CATALYTIC OXIDATION	Influent temperature to catalyst (°F)	Space velocity (hr ⁻¹)	
<input type="checkbox"/> INTERNAL COMBUSTION	Influent temperature to first catalytic converter (°F)		
<input type="checkbox"/> BIOFILTER	Used in combination with:		
10. CONTROL DEVICE EFFICIENCY (%)	BASIS: <input type="checkbox"/> MANUFACTURER'S GUARANTEE <input type="checkbox"/> PERFORMANCE TESTING		
11. IS THE EXHAUST DISCHARGED UNOBSTRUCTED VERTICALLY UPWARDS AT AN EXIT POINT AT LEAST 1.5 TIMES THE BUILDING HEIGHT (from ground level to point of discharge), BUT NOT LESS THAN 20 FEET ABOVE GROUND?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
12. IS THE CONTROL DEVICE EXHAUST FLOW VELOCITY AT LEAST 30 FEET PER SECOND?		<input type="checkbox"/> YES	<input type="checkbox"/> NO

Applicant Certification: I certify, under penalty of law, that this permit application and any attachments 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 known violations.

SIGNATURE OF AUTHORIZED EMPLOYEE	DATE
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