



ADDITIONAL TECHNICAL INFORMATION FOR REMEDATION OPERATIONS - GROUNDWATER

The following information will be used for the technical review of a permit to install application for a **groundwater remediation process**. This information is in addition to the general requirements outlined in the AQD document "Information for an Administratively Complete Permit to Install Application", Part 2 - Additional Supporting Information, Items A through F. All of the information may not be needed for each application. Also, this document may not be all inclusive. Additional information beyond that identified may be necessary to complete the technical review of any individual application. In the event a determination is made that new additional information is needed for a technical review, this document will be updated.

All referenced guidance documents are available at <http://www.deq.state.mi.us/aps> or you may contact the Permit Section at 517-373-7023.

NOTE: Selected remediation processes for groundwater contaminated with gasoline and petroleum based products may be eligible for a general permit. The use of a general permit provides a streamlined permitting alternative to the normal permitting procedure for processes that meet specified applicability criteria. Information for the general permit is available on the Internet at www.deq.state.mi.us/aps/generalpermits.shtml. Select "Air Permits" then "Permit to Install/New Source Review".

A. Process Description

1. Provide the following design information for the groundwater remediation process:
 - a) A water analysis for the influent water stream listing all known contaminants and maximum concentrations, in micrograms per liter ($\mu\text{g/l}$) or parts per billion by volume (ppbv). Include an estimate of total volatile organic compounds (VOCs). NOTE: Estimates of benzene, toluene, ethylbenzene and xylene (BTEX) are not adequate for determining total VOCs.
 - b) Predicted effluent water stream concentrations for all contaminants identified in Item 1(a).
 - c) The maximum expected influent water flow rate, in gallons per minute (gpm).
 - d) The air flow rate and temperature, in actual cubic feet per minute (acfm) and degrees Fahrenheit ($^{\circ}\text{F}$).
2. Provide the following design information for the remediation equipment:
 - a) For air strippers, provide column height, diameter, packing height and type (if used), spray nozzle type and configuration, and a description of the mist eliminator pad (if used).
 - b) For bioreactors or other equipment, provide appropriate specifications, such as reactor or tank volume and water retention time.

B. Regulatory Discussion

The following state and federal air pollution control regulations may be applicable. Please review these regulations carefully to determine if they apply to your process and summarize the results in the application. The Air Pollution Control Rules may be viewed and downloaded from the AQD website at: www.michigan.gov/deqair.

1. State of Michigan, Department of Environmental Quality, Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 55 Air Pollution Control and the following promulgated rules:
 - a) Rules 215 and 216 apply to an existing facility which has a current Renewable Operating Permit (ROP). A Permit to Install issued for the installation of new equipment or modifications to existing equipment is incorporated into an ROP pursuant to Rules 215 and 216.
 - b) If the process or equipment was installed or modified after April 17, 1992, Rules 224 – 230 apply. Rule 224 requires the application of Best Available Control Technology for toxics (T-BACT) for all non VOC toxic air contaminants (TACs). T-BACT does not apply to emissions of VOCs. Rule 225 limits the emission impacts of TACs and requires a demonstration that the proposed emission of each TAC

complies with a health-based screening level. Compliance can be demonstrated using any of three methods described in Rule 227(1) including the use of computerized dispersion modeling. Refer to "Guidelines for Conducting a Rule 224 T-BACT Analysis," "TACs-Demonstrating Compliance with Rule 225," and "Dispersion Modeling Guidance" for additional detailed information.

- c) If the process or equipment was installed or modified after August 1, 1979, Rule 702 applies. This rule requires Best Available Control Technology (BACT) for new sources of volatile organic compounds (VOCs). Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information.
 - d) Rule 901 prohibits emissions of an air contaminant in quantities that cause either a) injurious effects to human health or safety, animal life, plant life of significant economic value, or property; or b) unreasonable interference with the comfortable enjoyment of life and property.
2. The PSD increments (40 CFR 52.21 (c)) and the NAAQS (40 CFR 52.21(d)) apply to all sources throughout the United States, regardless of size. Compliance with these air quality standards can be demonstrated using computerized dispersion modeling. An applicant for a PSD permit is required to submit PSD increment modeling for PM-10, SO₂ and NO_x, and NAAQS modeling for PM-10, SO₂, NO_x, CO, Ozone, and Lead as part of the application. Modeling for sources not subject to PSD may be done by the AQD. Refer to "Dispersion Modeling Guidance" for additional detailed information.
 3. National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart GGGGG, Standards for Site Remediation.
 4. The administrative rules of the Department require that proposed equipment be able to comply with other state laws prior to issuance of a Permit to Install. This includes obtaining other required permits and approvals.
 - a) Describe the status of the proposed remediation work plan, which should have been previously submitted to one or more of the following divisions of the DEQ:
 - i) Remediation and Redevelopment Division.
 - ii) Waste and Hazardous Materials Division.
 - iii) Geological and Land Management Division.
 - b) Provide the name, address and phone number of the person(s) in the appropriate division(s) who are responsible for review of the plan. Submittal of a copy of the work plan to the AQD with the permit application is recommended.
 - c) Describe the method and location of discharge of the treated water. If the discharge requires a NPDES permit or a groundwater discharge permit, indicate the status of this permit.

C. Control Technology Analysis

1. Rule 702 BACT applies to all sources of VOCs proposed to be installed within the State of Michigan. A Rule 702 BACT analysis is very similar to a PSD top-down BACT analysis. Michigan's air pollution control rules also define BACT as an emission limit. Rule 702 BACT should be applied on a flexible grouping of equipment – subdivisions of emission units and/or groupings of emission units – as long as it is logical to do so. Logical means that the principles on which the groupings (or subdivisions) are made are consistent with federal guidance and sound engineering practices. Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information.
2. Best Available Control Technology for Toxics (T-BACT) means the maximum degree of emission reduction which the Department determines is reasonably achievable for each process that emits toxic air contaminants (TACs) taking into account energy, environmental and economic impacts, and other costs. T-BACT does not apply to VOCs. The analysis must be specific to the process and the TACs subject to a T-BACT review. T-BACT limits can be expressed as an emission limit, control equipment requirements, and/or work practice standards. Refer to "Guidelines for Conducting a Rule 224 T-BACT Analysis" for additional detailed information.