

PERMIT TO INSTALL

Table of Contents

COMMON ACRONYMS 2

POLLUTANT / MEASUREMENT ABBREVIATIONS..... 3

GENERAL CONDITIONS 4

EMISSION UNIT SPECIAL CONDITIONS..... 6

 EMISSION UNIT SUMMARY TABLE 6

 EUREMEDIATION 7

APPENDIX A..... 10

COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

Remedial actions performed under the Comprehensive Environmental Compensation and Liability Act (CERCLA) are relieved from administrative permitting requirements as stipulated by CERCLA Law, Chapter 103, Subchapter I, Section 9621(e). Under CERCLA, an air discharge permit is not required for the operation of remediation systems, in this instance the site specific operation of the in-situ thermal treatment system and associated vapor treatment system at the Velsicol Superfund Site to remediate the Burn Pit area in Operable Unit 1. However, as identified in the June 2012 Record of Decision (ROD) Michigan Air Pollution Rules (Michigan Administrative Code R 336.1101-2910) are considered Applicable or Relevant and Appropriate Criteria (ARARs) for this remedial action. As such, the substantive requirements of the statute must be met and this Substantive Requirement Document (SRD) serves as the mechanism for compliance with this ARAR. In this document the term "permittee" refers to the SRD holder and is retained to be consistent with other similar documents. Additionally, the Michigan rule citations contained herein are included for reference, and only those presenting substantive requirements are relevant.

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this 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. **(R 336.1901)**
7. 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 condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.
11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - 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 Permit to Install.
12. 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 Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Flexible Group ID
EUREMEDIATION	Soil and groundwater remediation process using electrically generated heat to volatilize subsurface contaminants by boiling groundwater. Steam and contaminant vapors will be recovered from the subsurface using multiphase extraction wells. The extracted vapor will be cooled, and moisture separators will be used to remove water and condensed contaminants. Remaining vapor will be directed to a thermal oxidizer. Exhaust from the oxidizer will be quenched and directed through a caustic scrubber for acid gas neutralization. Following the scrubber, the exhaust will pass through one of two dual stage activated carbon systems. If the thermal oxidizer is offline, both carbon systems would be used to provide emission control.	NA

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

EUREMEDIATION EMISSION UNIT CONDITIONS

DESCRIPTION

Soil and groundwater remediation process using electrically generated heat to volatilize subsurface contaminants by boiling groundwater. Steam and contaminant vapors will be recovered from the subsurface using multiphase extraction wells. The extracted vapor will be cooled, and moisture separators will be used to remove water and condensed contaminants. Remaining vapor will be directed to a thermal oxidizer. Exhaust from the oxidizer will be quenched and directed through a caustic scrubber for acid gas neutralization. Following the scrubber, the exhaust will pass through one of two dual stage activated carbon systems. If the thermal oxidizer is offline, both carbon systems would be used to provide emission control.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Thermal oxidizer, caustic scrubber, and dual stage activated carbon.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	0.03 tpy	12-month rolling time period as determined at the end of each calendar month.	EUREMEDIATION	SC VI.7	R 336.1225 R 336.1702(a)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EUREMEDIATION unless a malfunction abatement plan (MAP) as described in Rule 911(2) has been submitted to the AQD District Supervisor at least 30 days prior startup of EUREMEDIATION, and is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts, including carbon canisters, that shall be maintained in inventory for quick replacement.
 - b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall

implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. (R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911)

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUREMEDIATION unless the thermal oxidizer, caustic scrubber, and activated carbon system are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the thermal oxidizer includes maintaining a minimum combustion chamber temperature of 1,750°F, a 60-minute average combustion chamber temperature of 1,800°F based on instantaneous or block average readings collected at least every 15 minutes, and a minimum residence time of 2 seconds as calculated based on measured vapor flowrates through the system and the volume of the combustion chamber. Satisfactory operation of the caustic scrubber includes maintaining the pH between 6.0 and 14.0. In the event of a malfunction of the thermal oxidizer and/or scrubber, the permittee shall use both activated carbon systems to control the emissions while the thermal oxidizer and/or scrubber are not operating. (R 336.1225, R 336.1224, R 336.1702(a), R 336.1910)
2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the temperature of the combustion chamber of the thermal oxidizer on a continuous basis. Monitoring and recording of data "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minute or shorter periods calculated from all measured data values during each period. The device shall generate an alarm if the temperature falls below 1,750°F. (R 336.1225, R 336.1702(a), R 336.1910)
3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the pH of the caustic scrubber liquid on a continuous basis. Monitoring and recording of data "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minute or shorter periods calculated from all measured data values during each period. The device shall generate an alarm if the pH falls below 6.0 or goes above 8.0. (R 336.1224, R 336.1225, R 336.1910)

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall test, in a satisfactory manner, the in-use dual-stage activated carbon system for breakthrough of the first canister at least once per week. The permittee shall evaluate breakthrough via Summa canister sampling followed by laboratory analysis; by use of a hand-held instrument capable of detecting concentrations at the levels expected; or an equivalent method. The permittee shall conduct an initial test and shall record the initial reading as soon as the process has reached a steady state condition, but not later than 12 hours after start-up of the process. Breakthrough is considered a reading at the point between the first and second canisters that is 1,000 µg/m³ or more. If breakthrough is detected, the permittee shall switch to the other activated carbon system and replace the carbon in the first canister and reverse the operating order of the vessels. The permittee shall repeat the initial test each time a carbon canister is replaced and shall use the resulting influent concentration to establish breakthrough. The permittee shall submit any request for a change in the testing frequency to the AQD District Supervisor for review and approval. (R 336.1225, R 336.1702(a), R 336.1910)

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. (R 336.1225, R 336.1224, R 336.1702(a))
2. The permittee shall monitor and record, in a satisfactory manner, the flow rate and the total VOC concentration of the effluent stream of the first stage activated carbon canister. This shall be done on a weekly basis. The permittee shall submit any request for a change in the sampling frequency to the AQD District Supervisor for review and approval. (R 336.1225, R 336.1702(a), R 336.1910)

3. The permittee shall keep, in a satisfactory manner, records of each change of carbon and of each measurement of the influent concentration into the first stage contactor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702(a), R 336.1910)**
4. The permittee shall monitor and record the temperature of the combustion chamber of the thermal oxidizer on a continuous basis. Monitoring and recording of data "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minute or shorter periods calculated from all measured data values during each period. **(R 336.1225, R 336.1702(a), R 336.1910)**
5. The permittee shall keep, in a satisfactory manner, records of the 60-minute average combustion chamber temperature of the thermal oxidizer. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
6. The permittee shall keep, in a satisfactory manner, records of the pH of the liquid in the caustic scrubber. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
7. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period calculations of VOC emission rates for EUREMEDIATION. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702(a))**

VII. REPORTING

1. The permittee shall submit the following to the AQD District Supervisor using Appendix A or an approved equivalent method:
 - a) The flow rate and the total VOC concentration of the effluent stream of the first stage activated carbon canister, measured as required by SC VI.2.
 - b) Calculations of VOC emission rate.

The information shall be submitted within 30 days following collection of the initial data, and thereafter within 30 days following the end of the month in which the data were collected. The data may be submitted either in hard-copy format or electronically. The permittee must submit any request for a change in the reporting frequency to the AQD District Supervisor for review and approval. **(R 336.1225, R 336.1702(a), R 336.1910)**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVREMED	28	45	R 336.1225, 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

APPENDIX A

Source Name

Contact Person	
-----------------------	--

Location

County

Gratiot

Recordkeeping Period

Pollutant(s)	Source(s)	Exposure	Health Effects
Carbon monoxide	Gas stoves, car exhaust	Inhalation	Headaches, dizziness, nausea, death
Lead	Lead paint, lead pipes	Ingestion, inhalation	Neurological damage, anemia, developmental delays
Mercury	Fish, coal-fired power plants	Ingestion, inhalation	Neurological damage, kidney failure, birth defects
Organic solvents	Industrial processes, dry cleaning	Inhalation, skin contact	Neurological damage, liver/kidney damage, cancer
Pesticides	Agriculture, home use	Inhalation, ingestion, skin contact	Neurological damage, reproductive issues, cancer
Radon	Natural gas decay	Inhalation	Lung cancer
Volatile organic compounds (VOCs)	Paints, solvents, cleaning products	Inhalation	Respiratory irritation, neurological effects, cancer

TO-15 VOCs, excluding those listed in Air Pollution

Start Date**End Date**

Control Rules Chapter 336d1101 Part 1, Rule 1122, (f)

[illegible]

EQUATION TO CALCULATE EMISSIONS:

$$P_s \frac{\text{lbs}}{\text{hr}} = V \frac{\text{ft}^3}{\text{min}} \times 0.02832 \frac{\text{m}^3}{\text{ft}^3} \times 60 \frac{\text{min}}{\text{hr}} \times C \frac{\text{mg}}{\text{m}^3} \times 0.001 \frac{\text{g}}{\text{mg}} \times 0.002205 \frac{\text{lbs}}{\text{g}} \times \frac{(100 - E_s)}{100}$$

Signature _____