

PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **062009-008** Project Number: 2009-03-074

Parent Company: Tnemec Company, Inc.

Parent Company Address: 123 West 23rd Avenue, North Kansas City, MO 64116

Installation Name: Tnemec Company, Inc.

Installation Address: 123 West 23rd Avenue, North Kansas City, MO 64116

Location Information: Clay County, S14, T59N, R33W

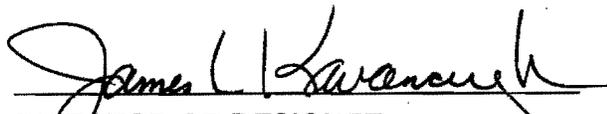
Application for Authority to Construct was made for:

The installation of a Vapor Extraction System in order to remove VOC (Volatile Organic Compounds) and HAPs (Hazardous Air Pollutants) from contaminated soil and groundwater. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUN 18 2009

EFFECTIVE DATE


DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the departments' Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Project No.	2009-03-074

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Tnemec Company, Inc.
Clay County, S14, T59N, R33W

1. Emission Limitation
 - A. Tnemec Company, Inc. shall emit less than 40.0 tons of Volatile Organic Compounds (VOCs) from the Accelerated Remediation Technologies' Dynamic Subsurface Circulation system (EP-VE) in any consecutive 12-month period.
 - B. Tnemec Company, Inc. shall emit less than ten (10.0) tons individually or twenty-five (25.0) tons combined of Hazardous Air Pollutants (HAPs) from the Accelerated Remediation Technologies' Dynamic Subsurface Circulation system (EP-VE) in any consecutive 12-month period.
 - C. Attachment A, Attachment B, and Attachment C or equivalent forms approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1(A) and 1(B), Tnemec Company, Inc. shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - D. Tnemec Company, Inc. shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten (10) days after the end of the month during which the records from Special Condition Number 1(C) indicate that the source exceeds the limitation of Special Conditions Number 1(A) & 1(B)
2. Flow Meter
A flow meter shall be installed on stack (EP-VE) before any testing is done on the Accelerated Remediation Technologies' Dynamic Subsurface Circulation system.
3. Performance Testing
 - A. Tnemec Company, Inc. shall conduct performance tests in order to develop emission factors so the emission rates can be calculated from the stack (EP-VE) of the Accelerated Remediation Technologies' Dynamic

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Subsurface Circulation system. The emission rates will be recorded and made sure they do not exceed the de minimis levels for VOC and HAPs.

- B. The first test shall be performed within fifteen (15) days after achieving the maximum production rate of the equipment, but not later than 30 days after initial start-up of operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition Number 4.
- C. Stack testing shall be performed on the Accelerated Remediation Technologies' Dynamic Subsurface Circulation systems' stack (EP-VE) once per month for the first three months, quarterly for the remainder of the first two years, and semi-annually for any years of operation after the first two years.

4. Test Reporting

- A. Two (2) copies of a written report of the performance test results shall be submitted to the Director within thirty (30) days of completion of the first required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one (1) sample run. All tests ran after the initial testing shall have a summary report prepared of the performance test results. Each summary report of each individual test shall be kept on-site and kept on file for (5) five years after completion of the test. These summary reports should include all information necessary to analyze the emissions from the Accelerated Remediation Technologies' Dynamic Subsurface Circulation system.
- B. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
- C. This plan must demonstrate how total emissions from the Tnemec Company. Inc. remediation system will remain below de minimis levels as outlined in Table 1. Alternatively, Tnemec Company. Inc., LLC may undergo a Section (6) review of this project. Tnemec Company. Inc. shall implement any such plan immediately upon its approval by the Director.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2009-03-074
Installation ID Number: 047-0075
Permit Number:

Tnemec Company, Inc.
123 West 23rd Avenue
North Kansas City, MO 64116

Complete: Complete Data

Parent Company:
Tnemec Company, Inc.
123 West 23rd Avenue
North Kansas City, MO 64116

Clay County, S14, T59N, R33W

REVIEW SUMMARY

- Tnemec Company, Inc. has applied for authority to install a Vapor Extraction System in order to remove VOC and HAPs from contaminated soil and groundwater.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are xylene and ethyl benzene.
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- No air pollution control equipment is being used in association with the new equipment
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC and HAPs are below de minimis levels.
- This installation is located in Clay County, a maintenance area for ozone (O₃) and an attainment area for all other criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.

- Emissions testing is required for the equipment.
- Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Tnemec Company, Inc. owns and operates a paint manufacturing facility in Clay County (S14, T50N, R33W). Much of the equipment at this installation was installed prior to 1982, and therefore, is not subject to the construction permit rule. This installation has the potential to emit VOC and HAPs above major source levels and does not have VOC and HAPs emission limits in previously issued construction permits. However, the installation applied for and received an intermediate operating permit in 2002 which limited the VOC and HAPs emission rate to minor source levels (100 ton per year for VOC, 10.0 tons per year of individual HAPs, and 25.0 tons per year of combined HAPs).

The following permits have been issued to Tnemec Company, Inc. from the Air Pollution Control Program.

Permit Number	Description
0385-001	Section 5 Permit - Adding a sand silo
0390-003	Section 5 Permit - Adding two sand silos
012000-003	Section 5 Permit – Pigment disolver
0899-008	Section 5 Permit – Blending tank
092001-001	Section 5 Permit – Dual-shaft mixer
062002-014	Section 5 Permit – Solvent recovery & mixer conversion
012008-003	Section 5 Permit – New Mixer

PROJECT DESCRIPTION

Tnemec Company, Inc. is installing an Accelerated Remediation Technologies' Dynamic Subsurface Circulation system in order to mitigate solvent contamination in the soil and groundwater at their site. This system combines in situ air stripping, air sparging, soil vapor extraction, and enhanced bioremediation/oxidation in a proprietary wellhead system in order to decontaminate the area. The emissions from this process include volatile organic compounds (VOC) and hazardous air pollutants (HAP). Tnemec Company, Inc. will be performing stack testing using Tedlar bags in order to confirm the estimated emissions from their remediation process.

Below are some general descriptions of the processes involved with the Accelerated Remediation Technologies' Dynamic Subsurface Circulation system. These processes will vary some due the complexity of the equipment.

Air stripping is a technology in which volatile organic compounds (VOCs) are transferred from extracted water to air. Typically, air stripping takes place in a packed tower (known as an air stripper) or an aeration tank. The "air stripper" includes a spray nozzle at the top of the tower. It sprays groundwater that has been pumped to the

surface over the packing in the column. As the water descends, air is forced up through the column, stripping off the volatile compounds. Packing or baffles within the tower increase the surface area of the contaminated water that is exposed to air, thus maximizing the amount of volatilization. A sump at the bottom of the tower collects decontaminated water.

Soil vapor extraction (SVE), also known as "soil venting" or "vacuum extraction", is an in situ remedial technology that reduces concentrations of volatile constituents in petroleum products adsorbed to soils in the unsaturated (vadose) zone. In this technology, a vacuum is applied through wells near the source of contamination in the soil. Volatile constituents of the contaminant mass "evaporate" and the vapors are drawn toward the extraction wells. Extracted vapor is then treated as necessary (commonly with carbon adsorption) before being released to the atmosphere. The increased air flow through the subsurface can also stimulate biodegradation of some of the contaminants, especially those that are less volatile. Wells may be either vertical or horizontal. In areas of high groundwater levels, water table depression pumps may be required to offset the effect of upwelling induced by the vacuum.

Air sparging is the process of injecting air directly into groundwater. Air sparging remediates groundwater by volatilizing contaminants and enhancing biodegradation. It is similar to blowing bubbles from a straw into a bowl of water. As the bubbles rise, the contaminants are removed from the groundwater by physical contact with the air (i.e., **stripping**) and are carried up into the unsaturated zone (i.e., soil). As the contaminants move into the soil, a **soil vapor extraction system** is usually used to remove vapors. The addition of oxygen to contaminated ground water and soils also enhances biodegradation of contaminants in and above the water table, as it acts as a nutrient for bacteria.

EMISSIONS/CONTROLS EVALUATION

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project. The VOC emission calculations were based on the sum of Total Petroleum Hydrocarbons (TPHV) from air sparging/air stripping and soil vapor extraction, plus a steady state recovery of 0.25 inch of Light Non-Aqueous Phase Liquid (LNAPL) within the area of influence of the Accelerated Remediation Technologies system. The HAP emissions are 62% of the dissolved groundwater and soil vapor VOC emissions plus 50% of the LNAPL VOC emissions, equating to 55% of the total VOC emissions. The emissions calculated are well below the de minimis levels but because the VOC and HAP emissions are based on assumptions and could increase due to the fluctuating groundwater contamination and water table, a 40 ton VOC limit and 10/25 ton HAP limit will be implemented for the equipment of this project. Testing and record keeping will be required in order to ensure these limits are not exceeded.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	*Existing Potential Emissions	Existing Actual Emissions (2007 EIQ)	Potential Emissions of the Application	Application Conditioned Potential
PM ₁₀	15.0	N/A	2.83	N/A	N/A
SO _x	40.0	N/A	N/A	N/A	N/A
NO _x	40.0	N/A	N/A	N/A	N/A
VOC	40.0	<100.0	12.80	7.15	<40.0
CO	100.0	N/A	N/A	N/A	N/A
HAPs	10.0/25.0	<10.0/25.0	5.75	3.92	<10.0/25.0

N/A = Not Applicable; N/D = Not Determined.

*Existing Potential Emissions taken from permit # 012008-003.

Table 2: VOC and HAP breakdown

Pollutant	Emission Rate	
	(tons/yr)	(lb/hr)
*VOC	7.15	1.63
Total HAP	3.92	0.89
m – Xylene (CAS# 108-38-3)	2.72	0.62
Ethyl benzene (CAS# 100-41-4)	1.20	0.27

* Includes HAP content

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOCs and HAPs are below de minimis levels.

APPLICABLE REQUIREMENTS

Tnemec Company, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065

- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Gerad Fox
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated 3/18/2009, received 3/20/2009, designating Tnemec Company, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

- (a) The summation of each individual HAPs 12-Month Emissions Total must be a total of less than **25.0** tons in any consecutive 12-month period to indicate compliance

Mr. Sam Yankee
Director Environmental & Regulatory Affairs
Tnemec Company, Inc.
123 West 23rd Avenue
North Kansas City, MO 64116

RE: New Source Review Permit - Project Number: 2009-03-074

Dear Mr. Yankee:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Gerad Fox, at the Departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:gfl

Enclosures

c: Kansas City Regional Office
PAMS File: 2009-03-074
Permit Number: