

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

PERMIT BOOK

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: **032015-005** Project Number: 2014-11-047
Installation Number: 217-0004

Parent Company: 3M Company

Parent Company Address: 3M Center, Building 0224-05-W-03, St. Paul, MN 55144

Installation Name: 3M Nevada

Installation Address: 2120 East Austin Blvd., Nevada, MO 64772

Location Information: Vernon County, S10, T35N, R3W

Application for Authority to Construct was made for:
Modification of an existing drum washer. This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*.

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

MAR 05 2015
EFFECTIVE DATE

Wendy A. for Kyril L. Moore
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. The 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 Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' Southwest Regional Office within 15 days after the actual start up of these air contaminant sources.

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, your application, and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(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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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(12)(A)10. "Conditions required by permitting authority."

3M Nevada
Vernon County, S10, T35N, R3W

1. HAPs Emission Limitations
 - A. 3M Nevada shall emit less than 10.0 tons of Toluene in any consecutive 12-month period from the Drum Washer.
 - B. Attachment A or an equivalent form, such as an electronic form, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A.
2. Recycled Solvent Composition
 - A. 3M Nevada shall conduct testing to determine the HAP composition of the recycled solvent at least once each calendar month of drum washer operation. Testing shall be conducted in accordance with following procedures:
 - 1) Samples of the recycled solvent shall be collected from the container, pipeline, or other device used to contain the recycled solvent in a manner such that volatilization of organics contained in the sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.
 - 2) All samples shall be collected and handled such that a minimum loss of organics occurs throughout the sample collection and handling process and by which sample integrity is maintained.

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SPECIAL CONDITIONS:

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

- 3) Each collected sample shall be prepared and analyzed in accordance with one of the following procedures:
 - a) Method 8015C in SW-846 Update IVB;
 - b) Method 8260B in SW-846 Update IVB;
 - c) Method 8270D in SW-846 Update IVB; or
 - d) Other methods upon written approval by the Air Pollution Control Program.
 - B. 3M Nevada shall not use recycled solvent containing an individual HAP in excess of 0.6 percent by weight, with the exception of Toluene and Xylene.
 - C. 3M Nevada shall not use recycled solvent containing combined HAP in excess of 3.6 percent by weight, excluding Toluene and Xylene.
 - D. 3M Nevada shall not use recycled solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform.
3. Record Keeping and Reporting Requirements
- A. 3M Nevada shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - B. 3M Nevada shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.
4. Control Requirements
- A. 3M Nevada shall use a condenser to control emissions from the drum washer.
 - B. 3M Nevada shall set the condenser to 45°F (7.2°C) or less.
 - C. 3M Nevada shall install monitor the temperature of the drum washer.
 - D. 3M Nevada shall not open the drum washer door if the temperature gauge indicates the temperature exceeds 45°F.

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SPECIAL CONDITIONS:

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

5. Emissions Analysis
 - A. 3M Nevada may conduct an emissions analysis to refine both actual and potential emission calculations.
 - B. 3M Nevada shall provide a proposed plan to the Air Pollution Control Program no later than 30 days prior to conducting the emissions analysis.
 - C. The Air Pollution Control Program shall review the proposed plan within 30 days of receipt and provide written approval and/or comments.
 - D. The proposed plan shall at a minimum consist of one year of data collection to support the emissions analysis.
 - E. 3M Nevada shall submit the results of their emissions analysis as part of a request to amend this permit.

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

Project Number: 2014-11-047
Installation ID Number: 217-0004
Permit Number:

3M Nevada
2120 East Austin Blvd.
Nevada, MO 64772

Complete: November 25, 2014

Parent Company:
3M Company
3M Center, Building 0224-05-W-03
St. Paul, MN 55144

Vernon County, S10, T35N, R3W

REVIEW SUMMARY

- 3M Nevada has applied for authority to modify their existing drum washer.
- HAP emissions are expected from the proposed equipment. The recycled solvent used by the Drum Washer contains Toluene and Xylene. The installation is restricted from using solvent containing other individual HAPs in excess of 0.6 percent by weight and other combined HAPs in excess of 3.6 percent by weight.
- 40 CFR Part 63, Subpart T – *National Emission Standards for Halogenated Solvent Cleaning* is not applicable to the Drum Washer. Special Condition 2.D ensures that the installation will not use any recycled solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform.
- A condenser is being used to reduce HAP emissions from the drum washer.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Unconditioned potential emissions of Toluene are above the major source thresholds; however, the installation has accepted a synthetic minor source limit on the drum washer.
- This installation is located in Vernon County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since conditioned potential emissions of the application are below the SMALs.

- Emissions testing is not required for the equipment.
- A Part 70 Operating Permit application is required for this installation within one year of commencement of operations.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

3M Company owns and operates an existing commercial graphics plant in Nevada, Missouri. The installation is a major source of VOC emissions. A Part 70 operating permit renewal application was submitted by 3M Company on February 5, 2010 and is currently under technical review. Until the Part 70 operating permit renewal is issued, the installation operates under their current Part 70 operating permit OP2005-023 and their Part 70 operating permit renewal application, Project 2010-02-029. The following permits have been issued to 3M Nevada from the Air Pollution Control Program:

Table 1: Previously issued permits

Permit Number	Description
0782-002	DMC Paint Line (Dismantled)
0184-013	Storage/Extruder Fume Exhausts
0884-005	Three Roll Mill
0585-001	Corona Treater
0988-003	Replacement Boiler
0289-005	Roll Grinder
0590-011	Replacement of Line Drives for 42 Maker
0590-012	Five Aboveground Solvent Storage Tanks
0291-003	47 Maker
0395-012	48 Maker
0895-025	533 Gallon Kettle
0395-012A	Amendments to Permit 0395-012
1195-009	250 Gallon Kettle
1095-014	N3 Maker
1195-018	Chromium and Copper Electroplating
0396-019	49 Maker
0396-020	Case Printer
1195-018A	Amendments to Permit 1195-018
0596-010	Temporary Permit for 40 Maker
0596-011	Temporary Permit for Corona Treaters
0796-003	New Lathe
1096-003	Distillation Unit
0297-017	Electrostatic Printer and Two Flexographic Printers
1098-017	Flexible sign face substrate production line
0199-025	New Parts Cleaning Vat
0899-012	Temporary permit for an air compressor
012000-020	Temporary permit for two 175 kW-hr diesel generators
1098-017A	Amendment to Permit Number 1098-017
1098-017B	Amendment to Permit Number 1098-017A
042004-002	Flexible VOC permit
042004-002A	Mixer
042004-002B	Ductwork changes
042004-002C	Line modification

112007-007	Temporary boiler permit - Expired
112008-009	Boilers
042004-002D	Boiler recordkeeping
042004-002E	Printing line
042004-002F	Special condition changes

The installation's PAL (042004-002 and associated amendments) supersedes the special conditions of all previous permits. The only permits with special conditions applicable to the installation at this time are 112008-009 and the PAL permit (042004-001 and associated amendments).

PROJECT DESCRIPTION

3M Nevada has applied to modify an existing drum washer that was originally installed without a permit. The drum washer uses dirty and reclaimed solvent to clean two 55 gallons drums per cycle.

The existing PRI solvent recovery unit receives dirty solvent (D-5199) from different work areas in the plant. The D-5199 is collected in an existing 8,000 gallon storage tank (Tank TRS3) and the solvent recovery operator manually transfers D-5199 from Tank TRS3 to two existing 8,000 gallon storage tanks (Tanks TRS1 and TRS2). The contents of those tanks are fed directly to the PRI solvent recovery unit and excess D-5199 is shipped off site. Reclaimed solvent (D-5100) from the solvent recovery unit is stored in two existing holding tanks. When both holding tanks are filled, it is transferred to an existing 15,000 gallon storage tank (Tank T100). Waste from the solvent recovery bottoms are shipped offsite for incineration. D-5100 is pumped from the holding tanks to the drum washer reservoir, which is separated into a clean solvent (D-5100) compartment and a dirty solvent (D-5199) compartment. D-5199 is used in the wash cycle and D-5100 is used in the rinse cycle. D-5100 used in the rinse cycle becomes D-5199. When the D-5199 in the reservoir tank reaches a certain level, it is pumped out and sent to the solvent recovery unit to be reclaimed.

Emissions of VOC and HAP from the drum washer are caused by volatilization of the recycled solvent in the reservoir and during each wash cycle. The VOC emissions from the drum washer are not being evaluated by this permit as the installation is subject to and complying with a VOC PAL (Permit 042004-002F). Past analysis of the recycled solvent indicates a composition as indicated in Table 2. The composition of the recycled solvent varies due to changes at the installation; therefore, periodic composition testing is required by Special Condition 2 to facilitate more accurate tracking of Toluene emissions. Unconditioned potential emissions of Toluene exceed the major source thresholds; however, the installation has accepted a federally enforceable synthetic minor source limit on the drum washer (see Special Condition 1). The SMAL for Toluene is the same as the major source threshold; therefore, Special Condition 1 also ensures that modeling of Toluene is unnecessary.

Table 2: Recycled Solvent Composition

Chemical	Percentage of Recycled Solvent by Weight	Is the chemical a HAP?
Diisobutyl Ketone	0.4 – 1.1	No
Ethyl Acetate	21 – 55	No
Heptane	0.2 – 3.5	No
Isopropanol	0.3 – 1.7	No
Methyl Ethyl Ketone	6.3 – 33	No
Toluene	0.5 – 2.8	Yes
Xylene	25 – 51	Yes

Special Condition 2.B ensures that as the recycled solvent composition changes over time, new individual HAPs are not introduced in quantities that would trigger screen modeling.

Special Condition 2.C in conjunction with Special Conditions 1 and 2.B ensures that combined HAP emissions from the drum washer will not exceed the major source threshold.

EMISSIONS/CONTROLS EVALUATION

Drum washer emissions occur due to the changing of solvent in the reservoir and the volatilization of material during each cycle.

The solvent reservoir has a capacity of 50 gallons. Periodically the used solvent is removed from the reservoir and replaced with clean solvent. Emissions from the transfer of solvent into and out of the reservoir were calculated using the ideal gas law. The reservoir operates at room temperature (25°C). The vapor pressures of Xylene and Toluene were calculated using the Antoine equation and Antoine constants obtained from AP-42 Table 7.1-5.

The drum washer door is closed during the washing phase of the cycle; therefore, no emissions are expected. A condenser is used to reduce the solvent temperature of the solvent after the washing phase of each cycle. The condenser set point is required to be set at 45°F by Special Condition 4.B. During this phase the air within the drum washer becomes saturated with solvent. The drum washer and drums are allowed to drain-dry before the drum washer door is opened for the removal of the clean drums. When the drum washer door opens the air within the drum washer that is saturated with solvent is expected to enter the atmosphere. Emissions from the saturated air were determined using the ideal gas law and the vapor space volume within the drum washer (175 ft³). As the drum washer and drums were drain-dried, the only solvent remaining is expected to be a small amount clinging to the wetted surfaces. Emissions from the solvent clinging to the wetted surfaces were calculated using Equation 2-20 from AP-42 Section 7.1 and a clingage factor of 0.0015 from AP-42 Table 7.1-10. The wetted area of the drum washer was determined to be 37.5 ft² and the wetted area of each drum was determined to be 2.762 ft². The drum washer can clean two drums in one cycle.

The maximum number of cycles per year cannot be determined at this time, but is believed to be bottlenecked by the number of dirty drums at the installation each year.

The following table provides an emissions summary for this project. Existing potential emissions were unavailable for the installation; however, past actuals indicate the installation is a major source. Existing actual emissions were taken from the installation's 2013 EIQ. Potential emissions of the application represent the potential of the modified equipment, assuming continuous operation (8760 hours per year).

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Application ¹	Conditioned Potential Emissions of the Application
PM	25.0	N/D	N/A	N/A	N/A
PM ₁₀	15.0	N/D	2.06	N/A	N/A
PM _{2.5}	10.0	N/D	2.06	N/A	N/A
SO _x	40.0	N/D	0.16	N/A	N/A
NO _x	40.0	N/D	27.10	N/A	N/A
VOC	40.0	Major	258.18	N/D	N/A
CO	100.0	N/D	22.75	N/A	N/A
HAPs	25.0	Major	76.22	39.60	13.41 ²
Xylene (1330-20-7)	10.0	Major	66.08	9.97	N/A
Toluene (108-88-3)	10.0	Major	6.03	29.62	<10.0

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

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Unconditioned potential emissions of HAP are above the major source thresholds; however, the installation has accepted synthetic minor source limits on the drum washer.

APPLICABLE REQUIREMENTS

3M Nevada 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, please consult the installation's Part 70 operating permit.

¹ Special Condition 5 allows 3M Nevada to conduct an emissions analysis to obtain refined drum washer actual and potential emission calculations. Until 3M Nevada conducts the emissions analysis and requests for an amendment to this permit, 3M Nevada is required to use the conservative emissions factors included in Attachment A to calculate emissions.

² Combined HAP emissions are limited by Special Conditions 1, 2.B, and 2.C.

GENERAL REQUIREMENTS

- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.170 *Restriction of PM to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*

STAFF RECOMMENDATION

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

Alana L. Hess, P.E.
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 28, 2014, received November 25, 2014, designating 3M Company as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Todd Cantrell
Plant Manager
3M Nevada
2120 East Austin Blvd.
Nevada, MO 64772

RE: New Source Review Permit - Project Number: 2014-11-047

Dear Mr. Cantrell:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions 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 submittal of an operating permit application are 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 were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, P.O. Box 1557, Jefferson City, Missouri 65102, www.ao.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:ahl

Enclosures

c: Southwest Regional Office
PAMS File: 2014-11-047

Permit Number: