

**AIR EMISSION PERMIT NO. 12300015- 002
IS ISSUED TO**

3M COMPANY
for
3M - R&D FACILITY - MAPLEWOOD
3M Center, I-94 and McKnight Road
Maplewood, Ramsey County, Minnesota 55144-1000

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date
Total Facility Operating Permit	07/29/97

This permit authorizes the Permittee to operate and modify the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal ; PSD/NSR

Issue Date: May 14, 1998

Expiration: May 14, 2003
All Title I Conditions do not expire.

Carolina Espejel-Schutt

Michael J. Sandusky
Division Manager
Air Quality Division

for Peder A. Larson
Commissioner
Minnesota Pollution Control Agency

MLB:lao

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(612)296-6300
Outside Metro Area	1-800-657-3864
TTY	(612)282-5332

The rule governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Certain requirements which have been determined not to apply are listed in Table A of this permit.

The permit shield, however does not apply to:

1. Any national ambient air quality standard adopted under section 109 of the Clean Air Act or increment or visibility requirement under part C of Title I of the Clean Air Act,
2. Any state ambient air quality standard under Minn. R. ch. 7009, and
3. The state noise pollution control rules, Minn. R. ch. 7030.

FACILITY DESCRIPTION:

This permit authorizes the modification and operation of the existing 3M Research and Development complex located at I-94 and McKnight Road in Maplewood, Minnesota. Even though the entire site is considered one stationary source, it will be covered by two Part 70 permits for administrative reasons. When determining applicability, the Permittee must consider the entire stationary source, not just the operations covered by one of the permits.

This permit covers the Research and Development (R&D) operations at the stationary source, which includes the pilot plants, the laboratories, and maintenance operations. The administrative portion of the stationary source will be covered by a separate permit. This permit supersedes all permits issued to the facility described in the Air Quality Division files under file number 23E except the following permits for the administrative buildings: 23E-76-O-1, 23E-92-I/O-1, and 23E-92-P-3.

The R&D operations result in emissions of Volatile Organic Compounds (VOC), Hazardous Air Pollutants (HAP), Carbon Monoxide (CO), Nitrous Oxides (NO_x), Sulfur Dioxide (SO₂), and Particulate Matter/Particulate Matter less than 10 µm in size (PM/PM₁₀).

The permitted potential to emit is greater than the major source thresholds in 40 CFR § 52.21 and 40 CFR pt. 70, so the facility is considered a major source under the New Source Review program, Part 70 permitting program (Minn. R. 7007.0200), and is major under the National Emission Standards for Hazardous Air Pollutants for Source Categories (40 CFR pt. 63). HAP emissions are not specifically addressed in this permit because U.S. Environmental Protection Agency has not yet promulgated standards for research and development facilities.

The permit authorizes a Prevention of Significant Deterioration (PSD) modification for VOC and pre-authorizes certain other changes to take place at the facility as long as the limits and other permit conditions are met. The permit addresses a certain defined set of applicable requirements. If the facility proposes to make a change that triggers a requirement not listed in the permit (e.g., 112(g)), then that change is not pre-authorized and would need to go through traditional permitting. If a change is specifically pre-authorized by this permit, notifications as described under Minn. R. 7007.1150, subp. C, and Minn. R. 7007.1250, subp. 4, are not required for those changes.

Due to the PSD modification, this permit establishes Best Available Control Technology (BACT) limits for VOC for the R&D operations at the stationary source as defined in Appendix I of the permit. This includes workpractice and inspection requirements, operational limits, and VOC usage limits. At permit reissuance, the Permittee will re-evaluate the BACT analysis.

The permit also carries forth previous federally enforceable operating limits that limit emissions of both PM₁₀ and PM that were taken in order to avoid classification as major modifications under the New Source Review program (40 CFR § 52.21). The permit also establishes limits on fuel usage to limit emissions of VOC, both PM₁₀ and PM, NO_x, SO₂, and CO, in order to avoid classification as a major modification under the New Source Review program (40 CFR § 52.21 and 40 CFR pt. 51, Appendix S). The permit also contains requirements to control both PM₁₀ and PM from spray booths and the carpentry shops.

TREATMENT OF CONFIDENTIAL INFORMATION:

Much of the information that will be tracked by the facility as required by this permit is treated as confidential information under Minn. Stat. § 13.37 and 116.075, subd. 2.

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
A. BACT LIMITS AND AUTHORIZATIONS	hdr
<p>VOC Changes Pre-authorized by R&D BACT: The Permittee may make changes that are consistent with the R&D process as defined in the BACT analyses and in Appendix I of this permit, provided the changes are in compliance with all permit requirements. This may include replacing emission units or stacks, moving existing emission units, changing existing emission units or stacks, or adding new emission units or stacks at the facility. If a proposed change triggers an applicable requirement that is not contained in this permit, or could cause an emissions increase of a different regulated pollutant (other than VOC), the change must go through the appropriate procedure in Minn. R. ch. 7007.</p>	Title I Condition: 40 CFR Section 52.21(j) (changes covered by BACT Limit)
<p>The Permittee shall conduct surveys of each R&D building twice per calendar quarter. The survey shall verify that good laboratory practices are being followed as outlined in provisions relating to air emissions in the "3M Guide". An outline of the key air provisions are in Appendix II of this permit.</p> <p>3M will maintain records on-site documenting when and where the surveys were conducted, as well as the observations made, and the status of actions taken as a result of the surveys.</p> <p>The current 14 R&D buildings are as follows: 201/203, 207, 208/218/219, 209, 212, 230, 235, 236, 240, 250/251/252, 253, 255, 260, and 270. If any additional buildings are used for R&D after permit issuance, they shall be added to the survey program.</p>	Title I Condition: 40 CFR 52.21(j) (BACT Limit)
<p>R&D Evaluation: The Permittee shall conduct an annual evaluation to verify that the operations authorized by the BACT limits in this permit are being operated in an R&D mode and within the scope of the BACT analysis. The details of the evaluation, including deadlines for key items, can be found in Appendix III of this permit.</p>	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
B. VOC PURCHASES RECORDKEEPING	hdr
<p>VOC purchases shall be tracked as described below and in the 3M Center Chemical Tracking Protocol (dated February 1997).</p> <p>VOC Purchase Calculation Method: By the 20th day of each month, the Permittee shall do the following calculation for all R&D facility non-combustion VOC purchases:</p> <p>a) Calculate the VOC purchased, in tons, for the previous month using the tracked VOC purchase data, VOC material content data, and the Scaling Factor described later in this permit.</p> <p>b) Calculate the cumulative 12-month VOC purchases in tons using data from the previous 12 months of calculations (or from the number of months since permit issuance).</p>	Minn. R. 7007.0800, subp. 5
<p>VOC Purchases Tracking: The Permittee shall track the purchases of 11 target VOCs by building on a monthly basis and shall specify whether they were purchased by a pilot plant or not and by which pilot plant. Details are shown in the 3M Center Chemical Tracking Protocol (dated February 1997). These monthly numbers will then be adjusted to determine the total VOC purchased each month by scaling the target VOC purchases with the VOC Scaling Factor as follows: tons of target VOC purchases x scaling factor = total VOC purchases in tons. The 11 target VOCs are listed below.</p> <p>Target VOCs: Ethyl Acetate, Ethyl Alcohol, Heptane, Hexane, Isopropyl Alcohol, Methyl Alcohol, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, Toluene, Trichloroethylene, Xylene</p>	Minn. R. 7007.0800, subp. 5
<p>VOC Purchase Tracking cont.: Once 2 years of actual purchase data has been collected, the Permittee can propose to track a revised number of VOCs that represent at least 55% of total VOC purchases. The Permittee shall submit the proposal with a revised 3M Center Chemical Tracking Protocol to the MPCA. Once the MPCA approves the proposal in writing, the Permittee shall track the new list of VOCs instead of the list in this permit. The replacement list shall become a fully enforceable part of this permit. The MPCA shall file a paper copy in the AQD permit file.</p>	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

VOC Scaling Factor: The VOC Scaling Factor is 1 divided by the weight fraction of the total VOC purchases at the stationary source that are the target VOCs per the 3M Center Chemical Tracking Protocol dated February 1997. (e.g., weight fraction of 0.85 gives a Scaling Factor of $1/0.85 = 1.18$)	Minn. R. 7007.0800, subp. 5
VOC Scaling Factor cont.: On an annual basis, by February 20th of each year, the Permittee shall analyze the target VOCs and determine the following: the total purchases of the target VOCs and all VOC for the previous calendar year, and the new VOC Scaling Factor to be used until the next evaluation. The new VOC Scaling Factor shall be used in the monthly calculations starting with the February 20th calculation.	Minn. R. 7007.0800, subp. 5
Material Content: VOC content of materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier, or by the lab or pilot plant formulation datasheets, for each material used. The Permittee can assume 100% VOC if exact VOC contents are not available or are too difficult to obtain. Other alternative methods approved by the MPCA may be used to determine the VOC content for demonstrating compliance with the VOC limits. The Division Manager reserves the right to require the Permittee to take samples of VOC containing materials and to conduct analyses of VOC content per EPA reference methods for the purpose of compliance demonstration. If the EPA reference method is used, it shall supersede the MSDS.	Minn. R. 7007.0800, subp. 5
C. VOC EMISSIONS RECORDKEEPING	hdr
VOC Emission Calculation Method: By the 20th day of each month, the Permittee shall do the following calculation for all R&D facility non-combustion VOC emissions: a) Calculate the VOC emissions for the previous calendar month using purchase data gathered per the 3M Center Chemical Tracking Protocol, material content data, and the Scaling Factor. --- Mass balance or emissions factors (as defined in Minn. R. 7005.0100) can be used to calculate VOC emissions from purchase data, or the Permittee can assume all purchases are emitted if mass balance or emissions factors are not feasible. --- The mass balance calculation can account for recovered/recycled VOCs as described under the Recovery/Recycling requirement.	Minn. R. 7007.0800, subp. 5
VOC Emission Calculation Method cont.: a) cont. --- If a VOC control device (that was in compliance with Table A) was used to control VOC emissions during the previous month, the control efficiency given in Table A can be assumed for the amount of VOC that was vented through the control device. For solvent recovery control devices, mass balance shall be used. b) Calculate the cumulative 12 month VOC emissions for the previous 12 months (or for the number of months since permit issuance).	Minn. R. 7007.0800, subp. 5
Recordkeeping: the Permittee shall keep and maintain records of operation and VOC purchases such that it can be determined which VOC emission calculation method applies to the various VOC purchases. Anytime a control device is used for credit in emission calculations, the Permittee shall keep records of the VOC input to the control device (and output for CE004).	Minn. R. 7007.0800, subp. 5
Recovery/Recycling: For each waste material accounted for in a mass balance equation the Permittee shall: 1). Analyze a representative sample of the waste material for weight percent VOC, unless the waste content can reasonably be assumed to be equivalent to the VOC input content (e.g., waste is not mixed with wastes from other processes, VOC does not react to form other materials during the process, etc.). 2). Keep records of the weight of the recovered waste material. 3). Calculate the weight of the recovered VOC using the weight percent VOC and weight of the recovered waste material.	Minn. R. 7007.0800, subp. 5
D. EQUIPMENT RECORDKEEPING	hdr
Recordkeeping: the Permittee shall keep complete descriptions of each piece of equipment described by EU002, EU003, EU007, EU011, and EU013 using the latest MPCA forms at either the appropriate pilot plant or the owner's address. The description shall give each unit a unique identification (ID) number. The Permittee shall submit updated versions of these descriptions with the Annual Report or state that there weren't any changes.	Minn. R. 7007.0800, subp. 5
Labeling: The Permittee shall affix a label to each piece of equipment described by EU002, EU003, and EU007 labeling it as such and with its unique ID number.	Minn. R. 7007.0800, subp. 5
E. GENERAL REQUIREMENTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

<p>The Permittee shall not begin construction of any single project or projects that are connected or phased which will cause a total increase in actual emissions of greater than 99 tons per year for any criteria pollutant without first getting a permit amendment to authorize the project. Connected and phased have meanings as defined in Minn. R. 4410.0200 subps. 9b and 60. The Permittee shall not begin construction of any other project which is listed in Minn. R. 4410.4300 or Minn. R. 4410.4400 without first getting a permit amendment to authorize the project. Such projects may require the completion of an Environmental Assessment Worksheet or an Environmental Impact Statement prior to the amendment being issued. This is a state only requirement and is not federally enforceable.</p>	<p>Minn. R. 4410.4300 and Minn. R. 4410.4400</p>
<p>The Permittee can make changes as allowed under Minn. R. 7007.1300 (Insignificant Modifications) and Minn. R. 7007.1250 (Insignificant Activities). Where applicable, these units are also included in the appropriate groups (GPs) or emissions units (EUs) listed in this permit.</p>	<p>Minn. R. 7007.1250; Minn. R. 7007.1300</p>
<p>Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.</p>	<p>Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)</p>
<p>Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.</p>	<p>Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)</p>
<p>Shutdowns: Notify the Commissioner at least 24 hours in advance of shutdown of any process or control equipment if the shutdown would cause any increase in the emissions of a regulated air pollutant. This does not apply to the following non-required control equipment listed in this permit: CE001, CE002, CE004, and CE006. At the time of notification, inform the Commissioner of the cause of the shutdown and the estimated duration. Notify the Commissioner again when the shutdown is over.</p>	<p>Minn. R. 7019.1000, subp. 3</p>
<p>Breakdowns: Notify the Commissioner within 24 hours of discovery of a breakdown of more than one hour duration of any process or control equipment if the breakdown causes any increase in the emissions of a regulated air pollutant. This does not apply to the following non-required control equipment listed in this permit: CE001, CE002, CE004, and CE006. At the time of notification or as soon thereafter as possible, the permittee shall also inform the Commissioner of the cause of the breakdown and the estimated duration. Notify the Commissioner again when the breakdown is over.</p>	<p>Minn. R. 7019.1000, subp. 2</p>
<p>Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.</p>	<p>Minn. R. 7011.0020</p>
<p>Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A and/or B.</p>	<p>Minn. R. ch. 7017</p>
<p>Oral Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, orally notify the Commissioner of any deviation from permit conditions which could endanger human health or the environment.</p>	<p>Minn. R. 7019.1000, subp. 1</p>
<p>Discovery of Deviations Endangering Human Health or the Environment Report (written): due two working days after discovery of deviation, submit a written description of any deviation endangering human health or the environment to the Commissioner. Include the following information in this written description: cause of the deviation; exact dates of the period of the deviation; if the deviation has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.</p>	<p>Minn. R. 7019.1000, subp. 1(A) through 1(E)</p>
<p>Application for Permit Amendment: If you need a permit amendment, submit application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.</p>	<p>Minn. R. 7007.1150 through Minn. R. 7007.1500</p>
<p>Emission Fees: due 60 days after receipt of an MPCA bill.</p>	<p>Minn. R. 7002.0005 through Minn. R. 7002.0095</p>
<p>Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.</p>	<p>Minn. R. 7011.0150</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises, to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.	Minn. R. 7007.0800, subp. 9(A)
Recordkeeping: Maintain records describing any changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2) including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
Recordkeeping: Retain all records at the stationary source or at the owner's address for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Extension Requests: The permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Modeling Protocol for PM10: due within 3 years of permit issuance. This protocol will describe the proposed modeling methodology and input data, in accordance with all requirements of 40 CFR pt. 51, App. W.	Minn. R. 7009 and 40 CFR pt. 50
Modeling Study Results for PM10: due within 4 years of permit issuance. To be submitted after the MPCA has reviewed and approved the modeling protocol.	Minn. R. 7009 and 40 CFR pt. 50
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.	Minn. R. 7030.0010 - 7030.0080
General Conditions: The Permittee shall comply with the General Conditions in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: GP 003 Facility Wide Firm Natural Gas Cap

- Associated Items:**
- CE 001 Catalytic Afterburner
 - CE 002 Direct Flame Afterburner
 - CE 003 Mat or Panel Filter
 - CE 004 Solvent Recovery Unit
 - CE 005 Mat or Panel Filter
 - EU 001 Miscellaneous Pilot Plant VOC Equipment (not subject to 40 CFR pt. 60)
 - EU 002 PST Coating Equipment (subject to 40 CFR pt. 60, subp. RR)
 - EU 003 Mag. Coating Equipment (subject to 40 CFR pt. 60, subp. SSS)
 - EU 004 Ozone Generating Units
 - EU 005 Direct Heating Equipment (e.g., ovens, furnaces)
 - EU 006 Indirect Heating Equipment (e.g., boilers; not subject to 40 CFR pt. 60)
 - EU 007 Indirect Heating Equipment (subject to 40 CFR pt. 60, subp. Dc)
 - EU 008 Miscellaneous Laboratory Sources
 - EU 009 Machine Shops
 - EU 010 Carpentry Shops
 - EU 011 Dry Cleaning Equipment -Bldg 260-B444
 - EU 012 Pilot Plant Particulate Sources (non-combustion)
 - EU 013 Booths Without Spray Application Equipment
 - EU 014 Spray Booth 209- C163A - 1
 - EU 015 Spray Booth 209-C163A-2
 - EU 016 Spray Booth 209-N-132
 - EU 017 Ethylene Oxide Sterilizers -- Bldg 201, Nurse; Bldg 270, NB352 and NB358
 - EU 018 Spray Booth 216-2S
 - EU 019 270-636448, 270-000112 Coater/Oven
 - EU 020 Spray Booth 230-G43B
 - EU 022 Spray Booth 235-WN-116
 - EU 023 Spray Booth 235-A-353
 - EU 024 270-583991, 270-583990 Coater/Oven
 - EU 025 Spray Booth 240-SE Wall
 - EU 026 Spray Booth 250-E-126A
 - EU 027 Spray Booth 250-E-127
 - EU 028 Spray Booth 250-E-118
 - EU 029 Spray Booth 250-E-123A
 - EU 030 LPB Pilot Plant
 - EU 031 Spray Booth 251-B-230
 - EU 032 Spray Booth 251-B-242
 - EU 033 Spray Booth 251-B-330
 - EU 034 Can Spray Booth 250-23E-91-I/O-8, # 11; 250-E-313

What to do	Why to do it
A. LIMITS AND AUTHORIZATIONS	hdr
Fuel Limit. The Permittee shall burn only natural gas at the R&D facility covered by this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21
Firm Natural Gas Limit. Calculations shall be completed by the 20th of the month for the previous 12 month period as described below. The limits for the first 11 months are as described below. All firm natural gas combustion at the R&D facility is included in this group and this limit. Limit on Natural Gas Fuel Usage: less than or equal to 750.0 million cubic feet/year using 12-month Rolling Sum	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

<p>Firm Natural Gas Limits for First 11 Months after Permit Issuance. For the first 11 months after permit issuance, the natural gas fuel usage limit shall be as follows, calculated as a sum for the total months since issuance:</p> <p>Month 1 - 62.5 million cubic feet Month 2 - 125 million cubic feet Month 3 - 187.5 million cubic feet Month 4 - 250 million cubic feet Month 5 - 312.5 million cubic feet Month 6 - 375 million cubic feet Month 7 - 437.5 million cubic feet Month 8 - 500 million cubic feet Month 9 - 562.5 million cubic feet Month 10 - 625 million cubic feet Month 11 - 687.5 million cubic feet</p>	<p>Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21</p>
<p>Pre-authorized changes: The Permittee may replace emission units or stacks, change or move existing emission units or stacks, or add new emission units or stacks to GP003, provided the replaced, changed, or new emission units meet the requirements for GP003 and qualify as either EU005, EU006, EU007, CE001, CE002, or CE004. This includes equipment that might otherwise be classified as insignificant under Minn. R. 7007.1300 or changes made under Minn. R. 7007.1250.</p> <p>If a proposed change triggers an applicable requirement that is not contained in this permit, the change must go through the appropriate procedure in Minn. R. ch. 7007.</p>	<p>Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21</p>
<p>B. MONITORING REQUIREMENTS</p>	<p>hdr</p>
<p>Monitoring and Recordkeeping. By the 20th of each month the Permittee shall do the following: 1). Read the fuel meters or purchase records and calculate the amount of natural gas used at the R&D facility for the last month. 2). Calculate the fuel used for the previous 12 month period (or since permit issuance). This number must be less than the limit given above.</p>	<p>Minn. R. 7007.0800, subp 5</p>
<p>Monitoring Equipment. The Permittee shall install and maintain fuel meters to measure natural gas usage at the R&D facility. Meters may be owned and maintained by the natural gas supplier, but they must meet all permit requirements. All meters must be calibrated at least annually and a written record shall be kept of the results of the calibration.</p>	<p>Minn. R. 7007.0800, subp. 4</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 001 Miscellaneous Pilot Plant VOC Equipment (not subject to 40 CFR pt. 60)

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(B)
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 002 PST Coating Equipment (subject to 40 CFR pt. 60, subp. RR)

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. LIMITS AND AUTHORIZATIONS	hdr
Any affected pressure sensitive tape or label coating line (per 40 CFR 60.440) which inputs to the coating process 45 Mg (approx. 50 tons) of VOC or less per 12 month period is subject to the limits in this section of the permit. If the amount of VOC inputs exceeds this level in any 12 month period, the coating line is then subject to additional requirements in 40 CFR pt. 60, subp. RR. The Permittee must get the appropriate permit amendment to add these requirements to this permit.	40 CFR Section 60.440(b); Minn. R. 7011.2560
Preauthorized Change: The Permittee may add new affected facilities or reconstruct or modify existing facilities such that they become affected facilities without getting a permit amendment as long as the proposed change complies with all permit conditions. If the proposed change could potentially cause an emissions increase of a regulated pollutant other than VOC, or if the proposed change would be subject to different or additional requirements than those given in this permit, the change must go through the appropriate procedure in Minn. R. ch. 7007.	Minn. R. 7007.0750, subp. 6
B. RECORDKEEPING	hdr
Monthly Recordkeeping: The Permittee shall maintain a calendar month record of all coatings used and the results of the reference test methods specified in 40 CFR Section 60.446(a) or the manufacturer's formulation data used for determining the VOC content of those coatings, for each coater subject to this standard.	40 CFR Section 60.445(a); Minn. R. 7011.2560
12 Month Recordkeeping: the Permittee shall maintain a 12 month record of the amount of solvent applied in the coating at each coater subject to this standard.	40 CFR Section 60.445(d); Minn. R. 7011.2560
If the Permittee wishes to pursue an alternative method of complying with 40 CFR Section 60.445(a) or (d), the Permittee shall submit an alternative compliance plan to the MPCA: upon approval by U.S. EPA, the Permittee shall then follow that plan in place of the above permit conditions. The plan shall become a fully enforceable part of this permit.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.445(a) and 40 CFR Section 60.445(d)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 003 Mag. Coating Equipment (subject to 40 CFR pt. 60, subp. SSS)

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. LIMITS AND AUTHORIZATIONS	hdr
Any new coating operation that utilizes less than 38 cubic meters (approx. 10,038 gallons) of solvent or any modified or reconstructed coating operation that utilizes less than 370 cubic meters (approx. 97,744 gallons) of solvent for the manufacture of magnetic tape per calendar year is subject to the limits in this section of the permit. If the amount of solvent utilized at any coating operation exceeds these amounts in any calendar year, the coating operation is then subject to additional requirements in 40 CFR pt. 60, subp. SSS. The Permittee must get the appropriate permit amendment to add these requirements to this permit.	40 CFR Section 60.710(b); Minn. R. 7011.3450
Preauthorized Change: The Permittee may add new affected facilities or reconstruct or modify existing facilities such that they become affected facilities without getting a permit amendment as long as the proposed change complies with all permits conditions. If the proposed change could potentially cause an emissions increase of a regulated pollutant other than VOC, or if the proposed change would be subject to different or additional requirements than those given in this permit, the change must go through the appropriate procedure in Minn. R. ch. 7007.	Minn. R. 7007.0750, subp. 6
B. RECORDKEEPING	hdr
Semiannual Recordkeeping: The Permittee shall make semiannual estimates of the projected annual solvent to be utilized for the manufacture of magnetic tape at each affected facility in that calendar year and maintain records of these estimates.	40 CFR Section 60.714(a)(1); Minn. R. 7011.3450
Solvent Usage Recordkeeping: The Permittee shall maintain records of the actual annual use at each affected facility.	40 CFR Section 60.714(a)(2); Minn. R. 7011.3450
C. REPORTING	hdr
Projected Solvent Use Notification: for the first calendar year of operation of any affected coating operation, the Permittee shall submit, with the notification of projected startup, a material flow chart indicating projected solvent use. This applies to new or existing units that become affected facilities under 40 CFR Section 60.710 after permit issuance.	40 CFR Section 60.717(b); Minn. R. 7011.3450
Actual Solvent Use Report: for the first calendar year of operation, the Permittee shall submit actual solvent use at each affected coating operation at the end of the initial calendar year. This applies to new or existing units that become affected facilities under 40 CFR Section 60.710 after permit issuance.	40 CFR Section 60.717(b); Minn. R. 7011.3450
For each affected coating operation initially utilizing less than the applicable volume in 40 CFR Section 60.710(b) per calendar year shall: 1). report the first calendar year in which actual annual solvent use exceeds the applicable volume; and 2). report the first semiannual estimate in which annual solvent use would exceed the applicable volume. This permit condition does not satisfy the requirements of Minn. R. 7007.1150 pertaining to permit amendments.	40 CFR Section 60.717(c); Minn. R. 7011.3450
If the Permittee wishes to pursue an alternative method of complying with 40 CFR Section 60.714(a)(1) or (a)(2), or 40 CFR Section 60.717(b), the Permittee shall submit an alternative compliance plan to the MPCA: upon approval by U.S. EPA, the Permittee shall then follow that plan in place of the above permit conditions. The plan shall become a fully enforceable part of this permit.	40 CFR Section 60.13(i) to comply with 40 CFR 60.714(a)(1) or (a)(2), or 40 CFR Section 60.717(b)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 004 Ozone Generating Units**Associated Items:** GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(B)
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 005 Direct Heating Equipment (e.g., ovens, furnaces)**Associated Items: GP 003 Facility Wide Firm Natural Gas Cap**

What to do	Why to do it
Fuel Usage: natural gas only.	Minn. R. 7007.0800, subp. 2
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period.	Minn. R. 7011.0610, subp. 1(A)(2)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 006 Indirect Heating Equipment (e.g., boilers; not subject to 40 CFR pt. 60)**Associated Items:** GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
Fuel Usage: natural gas only.	Minn. R. 7007.0800, subp. 2
Each individual unit shall have a heat input capacity less than 10 MMBtu/hr.	Minn. R. 7007.0800, subp. 2
Total Particulate Matter: less than or equal to 0.4 lbs/million BTU heat input for units on which construction, modification or reconstruction was commenced prior to February 1, 1977. (potential to emit is limited by burning of natural gas only to 0.011 lb/MMBtu)	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (units which construction, modification or reconstruction was commenced prior to February 1, 1977).	Minn. R. 7011.0510, subp. 2
Total Particulate Matter: less than or equal to 0.4 lbs/million BTU heat input for units which construction, modification or reconstruction was commenced after January 31, 1977. (potential to emit is limited by burning of natural gas only to 0.011 lb/MMBtu)	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units on which construction, modification or reconstruction was commenced after January 31, 1977).	Minn. R. 7011.0515, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 007 Indirect Heating Equipment (subject to 40 CFR pt. 60, subp. Dc)

Associated Items: GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. LIMITS AND AUTHORIZATIONS	hdr
Fuel Usage: natural gas only.	Minn. R. 7007.0800, subp. 2
Burner Type: All boilers subject to 40 CFR pt. 60, subp. Dc shall have low NOx burners.	Minn. R. 7007.0800, subp. 2
Each individual unit shall have a heat input capacity less than 100 MMBtu/hr (and greater than 10 MMBtu/hr).	Minn. R. 7007.0800, subp. 2
Preauthorized Change: The Permittee may add new affected facilities or reconstruct or modify existing facilities such that they become affected facilities without getting a permit amendment as long as the proposed change complies with all permit conditions and is included in GP003. If the proposed change would be subject to different or additional requirements than those given in this permit, the change must go through the appropriate permit amendment per Minn. R. ch. 7007.	Minn. R. 7007.0750, subp. 6
B. RECORDKEEPING AND REPORTING	hdr
The Permittee shall keep records of the amount of natural gas combusted at each of these units on a monthly basis by the 20th of the month for the previous calendar month. These records can consist of purchase records, receipts, or fuel meter readings.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.48c(g)
If the Permittee wishes to pursue an alternative method of complying with 40 CFR Section 60.48c(g), the Permittee shall submit an alternative compliance plan to the MPCA: upon approval by U.S. EPA, the Permittee shall then follow that plan in place of the above permit conditions. The plan shall become a fully enforceable part of this permit.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.48c(g)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 008 Miscellaneous Laboratory Sources

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
<p>Laboratory-scale coating equipment used for pressure sensitive tapes or labels or magnetic media tape coating is not subject to the Pressure Sensitive Tape and Label NSPS (40 CFR pt. 60, subp. RR) or the Magnetic Tape NSPS (40 CFR pt 60, subp. SSS), and this equipment is protected by the permit shield provision of Minn. R. 7007.1800 from any expectation to comply with these requirements.</p> <p>Accordingly, the Permittee is not required to make notifications under the NSPS general provisions or keep records or make reports under these rules related to this laboratory-scale coating equipment. This permit shield does not apply to any coating equipment located in a pilot plant at the facility.</p>	<p>Minn. R. 7007.1800, subp. (A)(2)</p>
<p>Particulate Matter: The research and development laboratory and maintenance processes currently consist of many small processes that generate very small amounts of particulate matter emissions. Any VOC emissions from these units are covered by the BACT limits. The particulate generating processes include, but are not limited to grinding, curing, drying, flagging, crushing, sieving, material handling, etching, welding, pouring, classifying, cutting, drilling, sanding, jointing, planing, lathing, sawing, and milling. This is mainly equipment that can be classified as insignificant under Minn. R. 7007.1300 or changes made under Minn. R. 7007.1250.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>Prior to permit reissuance, the Permittee shall survey a representative sample of the laboratory processes to determine if the assumptions used in the original permit application are still valid and accurate. This information shall be included in the application for reissuance.</p>	<p>Minn. R. 7007.0800, subp. 4</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(A)</p>
<p>Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(B)</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 1</p>
<p>Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 2</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 009 Machine Shops

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
<p>Particulate Matter: The Permittee currently has 9 machine shops at the stationary source. A machine shop, in general, is an area where metal is processed and handled. Any VOC emissions from these units are covered by the BACT limits. Processes include, but are not limited to grinding, milling, lathing, sawing, welding, crushing, etching, pouring, screening, and sieving. This is mainly equipment that can be classified as insignificant under Minn. R. 7007.1300 or changes made under Minn. R. 7007.1250.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>The Permittee shall maintain a site diagram of the facility which shows the locations of the machine shops. The Permittee shall update the diagram any time a machine shop is added or moved so that the map is current and available upon request.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>Prior to permit reissuance, the Permittee shall survey a representative sample of the machine shops to determine if the assumptions used in the original permit application are still valid and accurate. This information shall be included in the application for reissuance.</p>	<p>Minn. R. 7007.0800, subp. 4</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(A)</p>
<p>Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(B)</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 1</p>
<p>Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 2</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 010 Carpentry Shops

- Associated Items:** CE 006 Centrifugal Collector - Medium Efficiency
 CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 GP 001 All Pilot Plant VOC
 GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
Particulate Matter: The Permittee currently has 4 carpentry shops at the stationary source. A carpentry shop, in general, is an area where wood is processed and handled. Any VOC emissions from these units are covered by the BACT limits. Processes include, but are not limited to cutting, drilling, sanding, jointing, planing, lathing, sawing, and milling. This is mainly equipment that can be classified as insignificant under Minn. R. 7007.1300 or changes made under Minn. R. 7007.1250.	Minn. R. 7007.0800, subp. 2
The Permittee shall maintain a site diagram of the facility which shows the locations of the carpentry shops. The Permittee shall update the diagram any time a carpentry shop is added or moved so that the map is current and available upon request.	Minn. R. 7007.0800, subp. 5
Control Equipment: All carpentry shop room air shall be vented to control equipment described by CE007. The Permittee shall properly operate the control equipment according to the manufacturer's specifications at all times the carpentry shops are in use.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020(F) & Minn. R. 7019.3050
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(B)
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 011 Dry Cleaning Equipment -Bldg 260-B444

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
The Permittee shall close the door of each dry cleaning machine immediately after transferring articles to or from the machine, and shall keep the door closed at all other times.	40 CFR Section 63.322(c)
The Permittee shall operate and maintain each dry cleaning system according to the manufacturer's specifications and recommendations.	40 CFR Section 63.322(d)
The Permittee shall drain all cartridge filters in their housing, or other sealed container, for a minimum of 24 hours, or shall treat such filters in an equivalent manner, before removal from the dry cleaning facility.	40 CFR Section 63.322(i)
The Permittee shall store all perchloroethylene and wastes that contain perchloroethylene in solvent tanks or solvent containers with no perceptible leaks.	40 CFR Section 63.322(j)
<p>The Permittee shall inspect the following components weekly for perceptible leaks while the dry cleaning system is operating:</p> <ul style="list-style-type: none"> (1) Hose and pipe connections, fittings, couplings, and valves. (2) Door gaskets and seatings. (3) Filter gaskets and seatings. (4) Pumps. (5) Solvent tanks and containers. (6) Water separators. (7) Muck cookers (8) Stills. (9) Exhaust dampers (10) Diverter valves. (11) Cartridge filter housings. <p>If the total facility consumption is below the applicable consumption levels of 40 CFR Section 63.320(d) or (e) [less than 140 gallons perchloroethylene per year], the Permittee shall inspect the components listed above biweekly for perceptible leaks while the dry cleaning system is operating.</p>	40 CFR Section 63.322(k), (l)
The Permittee shall repair all perceptible leaks detected under 40 CFR Section 63.322(k) within 24 hours. If repair parts must be ordered, either a written or verbal order for those parts shall be initiated within two working days of detecting such a leak. Such repair parts shall be installed within five working days after receipt.	40 CFR Section 63.322(m)
<p>When calculating yearly perchloroethylene consumption for the purpose of demonstrating applicability according to 40 CFR Section 63.320, the Permittee shall perform the following calculation on the first day of every month:</p> <ul style="list-style-type: none"> (1) Sum the volume of all perchloroethylene purchases made in each of the previous 12 months, as recorded in the log described in 40 CFR Section 63.324(d)(1). (2) If no perchloroethylene purchases were made in a given month, then the perchloroethylene consumption for that month is zero gallons. (3) The total sum calculated in paragraph (d) of this section is the yearly perchloroethylene consumption of the facility. 	40 CFR Section 63.323(d)
<p>The Permittee shall keep receipts of perchloroethylene purchases in a log with the following information, shall maintain such information on site, and show it upon request for a period of five years:</p> <ul style="list-style-type: none"> (1) The volume of perchloroethylene purchased each month by the dry cleaning facility as recorded from perchloroethylene purchases; if no perchloroethylene is purchased during a given month, then the Permittee would enter zero gallons into the log. (2) The calculation and result of the yearly perchloroethylene consumption determined on the first day of each month as specified in 40 CFR Section 63.323(d) (3) The dates when the dry cleaning system components are inspected for perceptible leaks, as specified in 40 CFR Section 63.322(k) or (l), and the name or location of dry cleaning system components where perceptible leaks are detected. (4) The dates of repair and records of written or verbal orders for repair parts to demonstrate compliance with 40 CFR Section 63.322(m) and (n). 	40 CFR Section 63.324(d)(1-4)
The Permittee shall retain onsite a copy of the design specifications and the operating manuals for each dry cleaning system and each emission control device located at the dry cleaning facility.	40 CFR Section 63.324(e)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 012 Pilot Plant Particulate Sources (non-combustion)

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
<p>PM Calculations: By the 20th of the month, the Permittee shall do the following:</p> <p>a) Spreadsheet 1: For all equipment located in the Pilot Plants at the time of permit issuance, the Permittee shall calculate the actual emissions or worst case actual emissions of PM for the previous 12 months. The Permittee can use a mass balance approach or emission factors (as defined in Minn. R. 7005.0100).</p> <p>b) Spreadsheet 2: For equipment added or modified after permit issuance, the Permittee shall calculate the actual emissions of PM for the previous 12 months. The Permittee can use a mass balance approach or emission factors (as defined in Minn. R. 7005.0100). For the purpose of this permit condition only, modified means that the existing emission unit had an increase in actual emissions of PM compared to the previous 12 month period.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>On an annual basis, by April 1, the Permittee shall update Spreadsheet 1, referenced above, to reflect all equipment as it exists in each Pilot Plant as of January 1 of that year. A new Spreadsheet 2 will be developed each year which will show the changes made that calendar year.</p> <p>As part of this update, the Permittee will evaluate the emission calculation methods to determine if new better data or emission factors are available.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>The Permittee shall maintain the necessary records in order to do the emission calculations listed above.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(A)</p>
<p>Opacity: less than or equal to 20 percent opacity, except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(B)</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 1</p>
<p>Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 2</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 013 Booths Without Spray Application Equipment

Associated Items: CE 003 Mat or Panel Filter

CE 005 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
<p>The Permittee currently has 6 spray booths that do not have spray application equipment (e.g., only use small aerosol spray cans). One of these booths is listed as individual EU in this permit with it's own requirements (EU034). The remaining 5 must meet the requirements of EU013.</p> <p>The Permittee may move these existing booths as long as all permit conditions are met and as long as the booths continue to have no spray application equipment. If any of the spray booths that do not have spray application equipment are changed such that application equipment is installed, this shall be treated as a modification and must go through the appropriate procedure per Minn. R. ch. 7007.</p> <p>This emission unit includes equipment that can be classified as insignificant under Minn. R. 7007.1300 or changes made under Minn. R. 7007.1250.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>The Permittee shall maintain a written document which shows the locations of the booths that do not have spray application equipment. The Permittee shall update the document anytime a booth is moved so that the document is current and available upon request. This can be the same record as required under the Total Facility requirements in this permit (Recordkeeping).</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>Control Equipment: The Permittee shall vent emissions from all of these spray booths to control equipment meeting the requirements of CE003 or CE005 of this permit.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(A)</p>
<p>Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0710, subp. 1(B)</p>
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 1</p>
<p>Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).</p>	<p>Minn. R. 7011.0715, subp. 2</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 014 Spray Booth 209- C163A - 1

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 150.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period.	Minn. R. 7011.0710, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 015 Spray Booth 209-C163A-2

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 150.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period.	Minn. R. 7011.0710, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 016 Spray Booth 209-N-132

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 50.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 1000 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 1000 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 1000 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity .	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 017 Ethylene Oxide Sterilizers -- Bldg 201, Nurse; Bldg 270, NB352 and NB358**Associated Items: GP 003 Facility Wide Firm Natural Gas Cap**

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(A)
Opacity: less than or equal to 20 percent opacity , except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60 minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60 minute period (for units which were in operation before July 9, 1969).	Minn. R. 7011.0710, subp. 1(B)
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 018 Spray Booth 216-2S

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 100.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 1500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 1500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 1500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 019 270-636448, 270-000112 Coater/Oven

Associated Items: GP 003 Facility Wide Firm Natural Gas Cap
SV 024

What to do	Why to do it
<p>Volatile Organic Compounds: less than or equal to 5.0 tons/year using 12-month Rolling Sum (usage) calculated by the 20th of the month for the previous 12 months. For the first 11 months of operation after permit issuance, the limit shall be as follows calculated as a sum for the total months since issuance: Month 1 -- 2 tons Month 2 -- 4 tons Months 3 - 11 -- 5 tons VOC usage shall be tracked and calculated as explained below.</p>	<p>Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000</p>
<p>VOC Tracking: The Permittee shall keep complete and detailed records of all VOC usage at the coater and coating use parameters. These records shall include, but are not limited to, the weight of each coating used per batch, the weight percent VOC of each coating used for each batch, the total VOC coated per batch, and hours of operation for that batch. The VOC content of the coating shall be determined as specified under the Material Content condition listed at the Total Facility portion of this permit.</p> <p>Using the above data, the Permittee shall calculate the VOC used at the coater, in tons, for each calendar month by the 20 of the month, and add this to the previous 11 months usage.</p>	<p>Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000</p>
<p>This emission unit is an affected facility under 40 CFR pt. 60, subp. RR and must meet the permit requirements listed under EU002 of this permit.</p>	<p>40 CFR Section 60.440(b); Minn. R. 7011.2560</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 020 Spray Booth 230-G43B

Associated Items: CE 005 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 100.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 600 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE005 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 600 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 600 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity .	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 022 Spray Booth 235-WN-116

Associated Items: CE 003 Mat or Panel Filter

CE 008 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 30.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE008 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-93-I/O-19)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 023 Spray Booth 235-A-353

Associated Items: CE 005 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 1200.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor or other product delivery device (e.g., pump) for use with airless spray gun equipment. The Permittee shall limit the Compressor (or other device) Operating Hours: less than or equal to 440 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE005 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor or Other Delivery Device Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor or delivery device. The meter shall have an automatic lock-out device that disables the compressor or delivery device when the hours limit is reached. Once the cumulative hours on the meter reaches 440 hours for the given calendar year, the compressor or delivery device shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor or Delivery Device Operating Hours: Once the compressor or delivery device has reached the limit of 440 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 024 270-583991, 270-583990 Coater/Oven

Associated Items: GP 003 Facility Wide Firm Natural Gas Cap

SV 024

SV 025

What to do	Why to do it
A. OPERATING LIMITS	hdr
<p>Volatile Organic Compounds: less than or equal to 18.0 tons/year using 12-month Rolling Sum (usage) calculated by the 20th of the month for the previous 12 months. For the first 11 months of operation after permit issuance, the limit shall be as follows calculated as a sum for the total months since issuance: Month 1 -- 9 tons Month 2 -- 12 tons Month 3 -- 15 tons Months 4-11 -- 18 tons VOC usage shall be tracked and calculated as explained below.</p>	<p>Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000</p>
<p>VOC Tracking: The Permittee shall keep complete and detailed records of all VOC usage at the coater and coating use parameters. These records shall include, but are not limited to, the weight of each coating used per batch, the weight percent VOC of each coating used for each batch, the total VOC coated per batch, and hours of operation for that batch. The VOC content of the coating shall be determined as specified under the Material Content condition listed at the Total Facility portion of this permit.</p> <p>Using the above data, the Permittee shall calculate the VOC used at the coater, in tons, for each calendar month by the 20 of the month, and add this to the previous 11 months usage.</p>	<p>Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000</p>
B. MINNESOTA RULE EMISSION LIMITS	hdr
<p>Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.</p>	<p>Minn. R. 7011.0715, subp. 1</p>
<p>Opacity: less than or equal to 20 percent opacity</p>	<p>Minn. R. 7011.0715, subp. 2</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 025 Spray Booth 240-SE Wall

Associated Items: CE 003 Mat or Panel Filter

CE 008 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 100.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 100 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE008 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-92-I/O-15)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 100 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 100 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 026 Spray Booth 250-E-126A

Associated Items: CE 003 Mat or Panel Filter

CE 008 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 3.70 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 200 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE008 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-91-I/O-8)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 200 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 200 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 027 Spray Booth 250-E-127

Associated Items: CE 005 Mat or Panel Filter

CE 009 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 150.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 300 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE009 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-91-I/O-8)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 300 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 300 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 028 Spray Booth 250-E-118

Associated Items: CE 003 Mat or Panel Filter

CE 008 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 150.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 300 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE008 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-91-I/O-8)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 300 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 300 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 029 Spray Booth 250-E-123A

Associated Items: CE 005 Mat or Panel Filter

CE 009 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 150.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 300 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE009 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-91-I/O-8)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 300 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 300 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 030 LPB Pilot Plant

Associated Items: GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
This emission unit includes the LPB coater and all its supporting equipment in the pilot plant.	Minn. R. 7007.0800, subp. 2
A. MONITORING AND RECORDKEEPING	hdr
<p>VOC Monitoring and Recordkeeping: The Permittee shall monitor and record in a log book to be maintained on-site, usage parameters for each instance the pilot plant coater is operated and coating solution is applied. These parameters shall include at a minimum, a list of all solutions applied, percent solids, percent VOC, date of operation, start and finish times, and quantity of solution coated.</p> <p>By the 20th day of each month, the Permittee shall calculate the actual emissions from the coater operation for the previous calendar month. The Permittee shall also calculate the cumulative 12 month rolling sum of actual emissions from the coater operation and compare it relative to the pilot plant coater and supporting equipment Potential to Emit of 16.2 tpy of VOC.</p>	Minn. R. 7007.0800, subp. 4 and 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 031 Spray Booth 251-B-230

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 70.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 032 Spray Booth 251-B-242

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 70.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 500 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 500 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 500 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 033 Spray Booth 251-B-330

Associated Items: CE 003 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
Process Throughput: less than or equal to 225.0 lbs/hour spray gun capacity for any given spray gun. The Permittee shall operate only one gun at a time in the spray booth. The Permittee shall maintain documentation of spray gun capacity in pounds per hour (e.g., manufacturers specifications).	Title I Condition: Limit used in analysis under 40 CFR Section 52.21(j); Minn. R. 7007.3000
The spray booth shall have only one compressor for use with spray guns. The Permittee shall limit the Compressor Operating Hours: less than or equal to 100 hours/year	Title I Condition: 40 CFR Section 52.21(j) (BACT Limit); Minn. R. 7007.3000
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE003 of this permit.	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Compressor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the compressor. The meter shall have an automatic lock-out device that disables the compressor when the hours limit is reached. Once the cumulative hours on the meter reaches 100 hours for the given calendar year, the compressor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Monitoring for BACT limit under 40 CFR Section 52.21(j); Minn. R. 7007.3000
Recordkeeping for Compressor Operating Hours: Once the compressor has reached the limit of 100 hours per calendar year, the Permittee shall notify personnel that the spray booth is no longer available for spraying for the remainder of the calendar year (memo or posting by the booth). In addition, the Permittee shall maintain a written or computerized log stating that the booth has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 034 Can Spray Booth 250-23E-91-I/O-8, # 11; 250-E-313

Associated Items: CE 003 Mat or Panel Filter

CE 005 Mat or Panel Filter

CE 008 Mat or Panel Filter

GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
Control Equipment: The Permittee shall vent emissions from this spray booth to control equipment meeting the requirements of CE008 of this permit.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21 (permit 23E-91-I/O-8)
<p>This spray booth does not have spray application equipment (e.g., only uses small aerosol spray cans). The Permittee may move this existing booth as long as all permit conditions are met and as long as the booth continues to have no spray application equipment. Installation of spray application equipment would be treated as a modification and must go through the appropriate procedure per Minn. R. ch. 7007.</p> <p>This emission unit includes equipment that could otherwise be classified as insignificant under Minn. R. 7007.1300.</p>	Minn. R. 7007.0800, subp. 2
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735 (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 1
Opacity: less than or equal to 20 percent opacity (for units which were not in operation before July 9, 1969).	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: EU 040 250 Automotive Room Vacuum System

Associated Items: CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
A. OPERATING LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot	Title I Condition: Limit to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot . This is more restrictive than Minn. R. 7011.0715, subp. 1 (0.3 grains/dscf of exhaust gas unless required to further reduce emissions in order to comply with the limit in Minn. R. 7011.0730 or Minn. R. 7011.0735.).	Title I Condition: Limit to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
The automotive room shall have only one vacuum system. The Permittee shall limit the Vacuum System Motor Operating Hours: less than or equal to 3640 hours/year	Title I Condition: Limit to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
Control Equipment: The Permittee shall vent emissions from this emission unit to CE010 of this permit.	Title I Condition: Limit to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
B. MONITORING AND RECORDKEEPING	hdr
Monitoring for Vacuum System Motor Operating Hours: The Permittee shall install, operate, and maintain a cumulative hour meter on the motor. The meter shall have an automatic lock-out device that disables the motor when the hours limit is reached. Once the cumulative hours on the meter reaches 3640 hours for the given calendar year, the motor shall be removed, locked-out, or rendered inoperable until the next calendar year (January 1).	Title I Condition: Limit to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
Recordkeeping for Vacuum System Motor Operating Hours: Once the motor has reached the limit of 3640 hours per calendar year, the Permittee shall notify personnel that the vacuum system is no longer available for the remainder of the calendar year (memo or posting). In addition, the Permittee shall maintain a written or computerized log stating that vacuum system has reached the limit on which date. The hour meter shall be reset each January and the cumulative hours for the past calendar year shall be recorded.	Minn. R. 7007.0800, subp. 5
C. MINNESOTA RULE EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity .	Minn. R. 7011.0715, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 001 Catalytic Afterburner

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
The operation of this piece of control equipment is not necessary in order for the process to meet applicable emissions limits. However, the Permittee wishes to take credit for its operation for the purposes of reporting actual emissions for emission inventory. Therefore, in order for the VOC to be considered controlled for the purposes of emissions inventory, the catalytic afterburner must comply with the requirements of this permit during the time credit for control is taken. The VOC used during that time shall be considered controlled, and the control efficiency used is the limit given in this table.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
Volatile Organic Compounds: greater than or equal to 95 percent control efficiency or greater than or equal to 57 percent control efficiency, whichever is applicable based on if the device has a total enclosure or a hood capture system.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
Temperature: greater than or equal to 800 degrees F (absolute minimum) at the inlet, or as specified by the manufacturer, until a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent performance test where compliance for VOC emissions was demonstrated. If the temperature at any time drops below the minimum temperature, the VOC shall be considered uncontrolled until the minimum temperature is once again achieved.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
B. MONITORING AND RECORDKEEPING	hdr
Recordkeeping: The Permittee shall keep a log that shows when the control equipment was operated and at what emissions unit. The log shall also show the VOC input to the control device during the time that the control equipment was operating.	Minn. R. 7007.0800, subp. 5
Hood Certification and Recordkeeping. If the control device does not have a total enclosure as defined in Minn. R. 7011.0060, subp. 5, the Permittee can use the hood control efficiency listed in Minn. R. 7011.0070, subp. 1 (and given above as 57%) if the hood conforms to the rule requirements listed in Minn. R. 7011.0070, subp. 1 and certifies this as required in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of this on site, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.	Minn. R. 7007.0800, subp. 5
The Permittee shall maintain either a continuous hard copy readout of the inlet and outlet temperatures, or maintain a hard copy of manual readings taken at least every 15 minutes when in operation.	Minn. R. 7007.0800, subp. 5
The Permittee shall install the necessary monitoring equipment for measuring and recording the temperature as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the process is in operation in order for the VOC emissions from the process to be considered controlled.	Minn. R. 7007.0800, subp. 4
The Permittee shall determine the catalyst bed reactivity per the manufacturer's specifications and maintain documentation of the results.	Minn. R. 7007.0800, subp. 4
The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.	Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 002 Direct Flame Afterburner

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
The operation of this piece of control equipment is not necessary in order for the process to meet applicable emissions limits. However, the Permittee wishes to take credit for its operation for the purposes of reporting actual emissions for emission inventory. Therefore, in order for the VOC to be considered controlled for the purposes of emissions inventory, the afterburner (thermal oxidizer) must comply with the requirements of this permit during the time credit for control is taken. The VOC used during that time shall be considered controlled, and the control efficiency used is the limit given in this table.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
Volatile Organic Compounds: greater than or equal to 95 percent control efficiency or greater than or equal to 57 percent control efficiency, whichever is applicable based on if the device has a total enclosure or a hood capture system.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
Temperature: greater than or equal to 1400 degrees F (absolute minimum) at the Combustion Chamber, or as specified by the manufacturer, until a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent performance test where compliance for VOC emissions was demonstrated. If the temperature at any time drops below the minimum temperature, the VOC shall be considered uncontrolled until the minimum temperature is once again achieved.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)
B. MONITORING AND RECORDKEEPING	hdr
Recordkeeping: The Permittee shall keep a log that shows when the control equipment was operated and at what emissions unit. The log shall also show the VOC input to the control device during the time that the control equipment was operating.	Minn. R. 7007.0800, subp. 5
Hood Certification and Recordkeeping. If the control device does not have a total enclosure as defined in Minn. R. 7011.0060, subp. 5, the Permittee can use the hood control efficiency listed in Minn. R. 7011.0070, subp. 1 (and given above as 57%) if the hood conforms to the rule requirements listed in Minn. R. 7011.0070, subp. 1 and certifies this as required in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of this on site, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.	Minn. R. 7007.0800, subp. 5
The Permittee shall maintain either a continuous hard copy readout of the temperature in the combustion chamber, or maintain a hard copy of manual readings taken at least every 15 minutes when in operation.	Minn. R. 7007.0800, subp. 5
The Permittee shall install the necessary monitoring equipment for measuring and recording the temperature as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the process is in operation in order for the VOC emissions from the process to be considered controlled.	Minn. R. 7007.0800, subp. 4
The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.	Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 003 Mat or Panel Filter

- Associated Items:** EU 013 Booths Without Spray Application Equipment
 EU 014 Spray Booth 209- C163A - 1
 EU 015 Spray Booth 209-C163A-2
 EU 016 Spray Booth 209-N-132
 EU 018 Spray Booth 216-2S
 EU 022 Spray Booth 235-WN-116
 EU 025 Spray Booth 240-SE Wall
 EU 026 Spray Booth 250-E-126A
 EU 028 Spray Booth 250-E-118
 EU 031 Spray Booth 251-B-230
 EU 032 Spray Booth 251-B-242
 EU 033 Spray Booth 251-B-330
 EU 034 Can Spray Booth 250-23E-91-I/O-8, # 11; 250-E-313
 GP 001 All Pilot Plant VOC
 GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
For Booths that are not total enclosures as defined in Minn. R. 7011.0060, subp.5: Operate and maintain control equipment to limit Particulate Matter < 10 micron: greater than or equal to 74 percent control efficiency	Minn. R. 7007.0800, subp. 2
For Booths that are not total enclosures as defined in Minn. R. 7011.0060, subp.5: Operate and maintain control equipment to limit Total Particulate Matter: greater than or equal to 74 percent control efficiency	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
Hood Certification and Recordkeeping. If the control device does not have a total enclosure as defined in Minn. R. 7011.0060, subp. 5, the Permittee can use the hood control efficiency listed in this permit (74%) if the hood conforms to the rule requirements listed in Minn. R. 7011.0070, subp. 1 and the Permittee certifies this as required in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of this on site, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.	Minn. R. 7007.0800, subp. 2
With each use of the spray booth, the Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. If the filters are found to need repair or replacement, the researcher shall make the correction or notify plant maintenance immediately, and the booth shall not be used until the filters are repaired or replaced. The Permittee shall maintain a written record of any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Monthly Filter Inspection. The Permittee shall inspect and record the filter condition every calendar month if the booth was operated that month. The Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Periodic Inspections. The Permittee shall inspect the control equipment components as frequently as required by the manufacturing specification, or as specified in an Operation and Maintenance Plan that follows standard industry practices. The Permittee shall inspect components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts. The Permittee shall also inspect components that are not subject to wear including structural components, housings, ducts, and hoods. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. This can be in the form of computer records.	Minn. R. 7007.0800, subp. 14
The Permittee shall operate the control equipment monitoring equipment at all times the control equipment is required to operate.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 004 Solvent Recovery Unit

Associated Items: GP 001 All Pilot Plant VOC

GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. OPERATING LIMITS	hdr
<p>The operation of this piece of control equipment is not necessary in order for the process to meet applicable emissions limits. However, the Permittee wishes to take credit for its operation for the purposes of reporting actual emissions for emission inventory. Therefore, in order for the VOC to be considered controlled for the purposes of emissions inventory, the solvent recovery device must comply with the requirements of this permit during the time credit for control is taken. The VOC used during that time shall be considered controlled, and a mass balance will be used to calculate emissions from the control device.</p>	<p>Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F)</p>
B. MONITORING AND RECORDKEEPING	hdr
<p>Recordkeeping: The Permittee shall keep a log that shows when the control equipment was operated and at what emissions unit. The VOC emission reduction will be determined by mass balance over the solvent recovery device. The Permittee shall maintain monthly records of the weight of VOC used and the weight of VOC recovered per the Recovery requirement listed in the Total Facility part of this permit.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>Hood Certification and Recordkeeping. If the control device does not have a total enclosure as defined in Minn. R. 7011.0060, subp. 5, the Permittee can use a hood capture efficiency of 60% if the hood conforms to the rule requirements listed in Minn. R. 7011.0070, subp. 1 and certifies this as required in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of this on site, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.</p>	<p>Minn. R. 7007.0800, subp. 5</p>
<p>Monitoring: The Permittee shall install the necessary monitoring equipment for measuring and recording the cumulative VOC recovered by the device over a calendar month period as required by this permit. If installation of monitoring equipment is not possible, the cumulative amount of VOC recovered shall be manually recorded on a monthly basis for months when the control equipment is in use. The monitoring equipment must be installed, in use, and properly maintained, or the recordkeeping system must be in use, when the process is in operation in order for the VOC emissions from the process to be considered controlled in the calculations in this permit.</p>	<p>Minn. R. 7007.0800, subp. 4</p>
<p>The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.</p>	<p>Minn. R. 7007.0800, subp. 14</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 005 Mat or Panel Filter

- Associated Items:** EU 013 Booths Without Spray Application Equipment
 EU 020 Spray Booth 230-G43B
 EU 023 Spray Booth 235-A-353
 EU 027 Spray Booth 250-E-127
 EU 029 Spray Booth 250-E-123A
 EU 034 Can Spray Booth 250-23E-91-I/O-8, # 11; 250-E-313
 GP 001 All Pilot Plant VOC
 GP 003 Facility Wide Firm Natural Gas Cap

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
For Booths that are total enclosures as defined in Minn. R. 7011.0060, subp. 5: Operate and maintain control equipment to limit Particulate Matter < 10 micron: greater than or equal to 92 percent control efficiency	Minn. R. 7007.0800, subp. 2
For Booths that are total enclosures as defined in Minn. R. 7011.0060, subp. 5: Operate and maintain control equipment to limit Total Particulate Matter: greater than or equal to 92 percent control efficiency	Minn. R. 7007.0800, subp. 2
B. MONITORING AND RECORDKEEPING	hdr
With each use of the spray booth, the Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. If the filters are found to need repair or replacement, the researcher shall make the correction or notify plant maintenance immediately, and the booth shall not be used until the filters are repaired or replaced. The Permittee shall maintain a written record of any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Monthly Filter Inspection. The Permittee shall inspect and record the filter condition every calendar month if the booth was operated that month. The Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Periodic Inspections. The Permittee shall inspect the control equipment components as frequently as required by the manufacturing specification, or as specified in an Operation and Maintenance Plan that follows standard industry practices. The Permittee shall inspect components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts. The Permittee shall also inspect components that are not subject to wear including structural components, housings, ducts, and hoods. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. This can be in the form of computer records.	Minn. R. 7007.0800, subp. 14
The Permittee shall operate the control equipment monitoring equipment at all times the control equipment is required to operate.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 006 Centrifugal Collector - Medium Efficiency**Associated Items: EU 010 Carpentry Shops**

What to do	Why to do it
The operation of this piece of control equipment is not necessary in order for the process to meet applicable emissions limits. However, the Permittee wishes to take credit for its operation, based on an MPCA approved performance test, for the purposes of reporting actual emissions for emission inventory. Therefore, in order for the carpentry shop to be considered controlled for the purposes of emissions inventory, the control device must comply with the requirements of this permit during the time credit for control is taken.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F) & Minn. R. 7019.3050
The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.	Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 010 Carpentry Shops

What to do	Why to do it
The operation of this piece of control equipment is not necessary in order for the process to meet applicable emissions limits. However, the Permittee wishes to take credit for its operation, based on an MPCA approved performance test, for the purposes of reporting actual emissions for emission inventory. Therefore, in order for the carpentry shop to be considered controlled for the purposes of emissions inventory, the control device must comply with the requirements of this permit during the time credit for control is taken.	Minn. Stat. 116.07, subd. 4a; Equipment used under Minn. R. 7019.3020 (F) & Minn. R. 7019.3050
The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.	Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 008 Mat or Panel Filter

Associated Items: EU 022 Spray Booth 235-WN-116

EU 025 Spray Booth 240-SE Wall

EU 026 Spray Booth 250-E-126A

EU 028 Spray Booth 250-E-118

EU 034 Can Spray Booth 250-23E-91-I/O-8, # 11; 250-E-313

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
For Booths that are not total enclosures as defined in Minn. R. 7011.0060, subp.5: Operate and maintain control equipment to limit Particulate Matter < 10 micron: greater than or equal to 74 percent control efficiency	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21
For Booths that are not total enclosures as defined in Minn. R. 7011.0060, subp.5: Operate and maintain control equipment to limit Total Particulate Matter: greater than or equal to 74 percent control efficiency	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21
B. MONITORING AND RECORDKEEPING	hdr
Hood Certification and Recordkeeping. If the control device does not have a total enclosure as defined in Minn. R. 7011.0060, subp. 5, the Permittee can use the hood control efficiency listed in this permit (74%) if the hood conforms to the rule requirements listed in Minn. R. 7011.0070, subp. 1 and the Permittee certifies this as required in Minn. R. 7011.0070, subp. 3. The Permittee shall maintain a copy of this on site, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.	Minn. R. 7007.0800, subp. 2
With each use of the spray booth, the Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. If the filters are found to need repair or replacement, the researcher shall make the correction or notify plant maintenance immediately, and the booth shall not be used until the filters are repaired or replaced. The Permittee shall maintain a written record of any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Monthly Filter Inspection. The Permittee shall inspect and record the filter condition every calendar month if the booth was operated that month. The Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Periodic Inspections. The Permittee shall inspect the control equipment components as frequently as required by the manufacturing specification, or as specified in an Operation and Maintenance Plan that follows standard industry practices. The Permittee shall inspect components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts. The Permittee shall also inspect components that are not subject to wear including structural components, housings, ducts, and hoods. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. This can be in the form of computer records.	Minn. R. 7007.0800, subp. 14
The Permittee shall operate the control equipment monitoring equipment at all times the control equipment is required to operate.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 009 Mat or Panel Filter

Associated Items: EU 027 Spray Booth 250-E-127

EU 029 Spray Booth 250-E-123A

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
For Booths that are total enclosures as defined in Minn. R. 7011.0060, subp. 5: Operate and maintain control equipment to limit Particulate Matter < 10 micron: greater than or equal to 92 percent control efficiency	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21
For Booths that are total enclosures as defined in Minn. R. 7011.0060, subp. 5: Operate and maintain control equipment to limit Total Particulate Matter: greater than or equal to 92 percent control efficiency	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.2
B. MONITORING AND RECORDKEEPING	hdr
With each use of the spray booth, the Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. If the filters are found to need repair or replacement, the researcher shall make the correction or notify plant maintenance immediately, and the booth shall not be used until the filters are repaired or replaced. The Permittee shall maintain a written record of any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Monthly Filter Inspection. The Permittee shall inspect and record the filter condition every calendar month if the booth was operated that month. The Permittee shall visually inspect the condition of the wall filters, including but not limited to, alignment, saturation, tears, and holes. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection.	Minn. R. 7007.0800, subp. 4
Periodic Inspections. The Permittee shall inspect the control equipment components as frequently as required by the manufacturing specification, or as specified in an Operation and Maintenance Plan that follows standard industry practices. The Permittee shall inspect components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts. The Permittee shall also inspect components that are not subject to wear including structural components, housings, ducts, and hoods. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. This can be in the form of computer records.	Minn. R. 7007.0800, subp. 14
The Permittee shall operate the control equipment monitoring equipment at all times the control equipment is required to operate.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

Subject Item: CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 040 250 Automotive Room Vacuum System

What to do	Why to do it
A. EMISSIONS AND OPERATING LIMITS	hdr
Pressure Drop: greater than or equal to 0.45 inches of water column and less than or equal to 0.80 inches of water column , recorded once each operating day.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
The Permittee shall operate the control equipment any time the emission unit (EU040) is operated.	Title I Condition: Limit taken to avoid major modification classification under 40 CFR Section 52.21(permit 23E-91-I/O-8)
Calibrate the pressure gauge annually, or as often as required by manufacturing specifications, and maintain a written record of the calibration and any action resulting from the calibration.	Minn. R. 7007.0800, subp. 2 & 14
The Permittee shall maintain each piece of control equipment according to the manufacturer's specifications, shall conduct inspections, and shall maintain documentation of those actions.	Minn. R. 7007.0800, subp. 14

TABLE B: SUBMITTALS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood
Permit Number: 12300015 - 002

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit . The application shall describe the facility (in terms of emission units, stacks, etc.) as it exists at the time of the application. Updated stack information shall be provided for the pilot plant equipment.	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup . Submit name and number of each unit and the actual date of initial startup of each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.710 after permit issuance.	EU003
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup . Submit the name and number of each unit and the actual date of initial startup of each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.40c after permit issuance.	EU007
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup . Submit the name and number of each unit and the actual date of initial startup of each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.440 after permit issuance.	EU002
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup , but no more than 60 days before. Submit name and number of each unit and the anticipated date of initial startup for each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.710 after permit issuance.	EU003
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup , but no more than 60 days before. Submit the name and number of each unit and the anticipated date of initial startup for each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.40c after permit issuance.	EU007
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup , but no more than 60 days before. Submit the name and number of each unit and the anticipated date of initial startup for each unit. This applies to new or existing units that become affected facilities under 40 CFR Section 60.440 after permit issuance.	EU002
Notification of the Date Construction Began	due 30 days after Start Of Construction . Submit the name and number of each unit and the date construction of each unit began. This applies to new or existing units that become affected facilities under 40 CFR Section 60.440 after permit issuance.	EU002
Notification of the Date Construction Began	due 30 days after Start Of Construction . Submit the name and number of each unit and the date construction of each unit began. This applies to new or existing units that become affected facilities under 40 CFR Section 60.710 after permit issuance.	EU003
Notification of the Date Construction Began	due 30 days after Start Of Construction Submit the name and number of each unit and the date construction of each unit began. This applies to new or existing units that become affected facilities under 40 CFR Section 60.40c after permit issuance.	EU007
When the permittee installs this piece of control equipment, they shall send to the MPCA a Notification	due 30 days after Equipment Installation	CE001, CE002

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

When the permittee installs this piece of control equipment, they shall send to the MPCA a Notification	due 30 days after Equipment Installation	CE004
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TABLE B: RECURRENT SUBMITTALS

05/14/98

Facility Name: 3M - R & D Facility - Maplewood

Permit Number: 12300015 - 002

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance . The first report covers January 1 - June 30. The second report covers July 1 - December 31.	Total Facility
Annual Report	due 91 days after end of each calendar year following Permit Issuance (April 1). The Annual Report shall qualitatively describe the changes made at the R&D facility during the previous calendar year. The report shall document the background information and results of the VOC target evaluation, including the target VOCs and new scaling factor. The report shall also include the results of the R&D Evaluation described in Appendix III of this permit. This report may be submitted with the annual emissions inventory, but it shall be a separate document marked as the Annual Report.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner. The report covers all deviations experienced during the calendar year.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance (April 1). To be submitted on a form approved by the Commissioner.	Total Facility

APPENDIX I

Facility Name: 3M - Research Center - Maplewood

Permit Number: 12300015-002

Processes Included in BACT:

The purpose of the BACT analysis is to address all R&D equipment—in laboratories, pilot plants, machine shops, and carpentry shops—with regard to volatile organic compounds (VOC) emissions. If the equipment is similar in purpose, emission quantities, and exhaust stream concentrations to equipment explicitly included in the BACT analysis, then it will be considered to be part of this BACT analysis. This BACT analysis covers the following emission units (EU): EU001 through EU004, EU008 through EU020, EU022 through EU034, and EU101 through EU122.

The following emission units are **not** part of the BACT review:

- Boilers at Bldg. 210
- Emergency generators
- Cooling towers
- Outdoor storage tanks
- Gas station
- Firm natural gas boilers
- Firm natural gas combustion equipment

Equipment that has an existing air permit (other than those listed above) is included within the scope of the analysis.

R&D VOC Process Description:

R&D describes operations using a wide variety of input materials with a wide variety of small, often modular, multipurpose pieces of equipment with the purpose of developing new, innovative products, processes, and/or technologies. The processes encompassed within R&D at 3M Center are many and varied. The 3M Center Emissions Study identified different types of processes that are used. Some emit VOC, PM/PM₁₀, or both, some are non-emitting. A list of the VOC processes is presented below. These processes include: the 39 identified by the 3M Center Emission Study, all previously permitted equipment, all equipment identified in the pilot plants (updated 1997), and the generic equipment list included in the 3M Center R&D permit application.

Although the processes identified appear to be distinct, much of the equipment is used for multiple purposes and uses a wide variety of chemicals. R&D includes both bench-, off-the-bench, and pilot-plant-scale processes, as well as machine shop and carpentry shop activities that support them. Pilot-plant-scale processes have by far greater emissions than a similar bench- or off-the-bench scale process.

R&D VOC Processes Included in BACT		
Absorbing/Adsorbing	Foaming	Photo Processing
Analytical Testing	Filtering	Plating
Aqueous Removal	Firing/Baking (Furnace)	Printing
Chilling	Flagging (Cutting)	Pumping
Cleaning	Grinding	Purifying
Coating/Drying	Hand Spreads	Reacting
Combustion	Heating	Sanding
Compressing	Homogenizing	Sawing
Condensing	Hot Melt Application	Screening
Crushing	Humidifying/Moisturizing	Separator
Curing	Imaging	Sieving
Cutting/Drilling	Lathing	Solvent Tempering
Development	Material Handling, Pouring	Specification Testing
Distilling	Milling	Sterilizers (ethylene oxide)
Drying	Miscellaneous Laboratory Activities	Spraying
Electrophotography	Mixing	Storing/Container/Tanks
Etching	Ozone Generating Units	Treating
Extracting	Packaging	Weighing
Extruding	Packaging Aerosols	Welding/Soldering
Fluidized Bath/Bed		Wet Grinding

APPENDIX II

Facility Name: 3M - Research Center - Maplewood

Permit Number: 12300015-002

R&D Survey Information:

3M's approach to safety, health, and environmental issues for R&D is contained in a general set of standard operating procedures called the 3M Guide to Laboratory Practices manual (3M Guide). The 3M Guide is updated annually, available electronically, and is used regularly by R&D employees. This set of good laboratory management practices are highlighted or updated periodically in a newsletter called "3M Laboratory Guidelines" and are typically published monthly in electronic and paper form. 3M's approach incorporates "Four Cardinal Rules" described below:

Four Cardinal Rules of Hazardous Waste Management at 3M Center See Section 16 of 3M Guide

1. Hazardous waste must be packaged and labeled as such immediately
2. Never sewer capturable amounts of hazardous materials
3. Never evaporate for the purpose of disposal -- keep containers closed
4. Always follow the compactor/dumpster policy

In addition to these rules, the 3M Guide contains the following key elements that relate to air emissions:

- Procedures for ordering chemicals through central locations. This allows purchases to be reviewed and tracked for the site.
- A chemical hygiene plan with procedures and control measures to protect employees from chemical exposures, per the OSHA Standard 29 CFR Section 1910.1450.
- Processes that prohibit using evaporation for the purpose of solvent disposal.
- Procedures for minimizing lab waste and chemical purchases.
- Procedures for control containment and cleanup of lab spills.
- Procedures for making routine surveys to verify that the lab practices are being followed.

APPENDIX III

Facility Name: 3M - Research Center - Maplewood

Permit Number: 12300015-002

R&D Evaluation Procedure:

By April 1 of each year, the Permittee shall verify that the pilot plant operations that are covered by the R&D BACT analysis meet the definition of R&D and are within the scope of the BACT analysis by following the procedure given below.

Activities will be considered to be R&D for the purposes of this permit and the BACT analysis if all of the following criteria are met:

1. They are operated under the close supervision of technically trained personnel, and they are conducted for the primary purpose of theoretical research and development into new or improved processes or products;
2. For any given pilot plant, the percentage of hours worked with an “Intent-to-distribute for sale in commerce”, or ITDFSC, in a calendar year are less than or equal to 15 percent of the total hours worked in the pilot plant in that calendar year; AND
3. For pilot plant emissions units not listed in Table A1 of the BACT, the actual emissions in a calendar year are less than 1 tpy of VOC, and for units listed in Table A1 of the BACT, the actual emissions are less than the Method 5¹ PTE number listed for that unit in Table A1 of BACT.

The Permittee shall include the results of this analysis in the Annual Report listed in Table B of this permit. This report will include the hours and percentage of ITDFSC activities in each pilot plant and information on any emission unit found to have emitted more than 1 tpy of VOC. If the emission unit actual emissions are greater than 1 tpy of VOC, but are less than Method 5¹ PTE in Table A1 of the BACT, this information shall also be provided.

If any pilot plant is found to have ITDFSC activities at greater than 15 percent, or if any emission unit had actual emissions of VOC greater than the Method 5¹ PTE number in Table A1 of the BACT analysis, or greater than 1 tpy of VOC for those units not included in Table A1 of the BACT, the Permittee shall do the following:

1. Meet with the MPCA within 30 days of the date of submitting the Annual Report. The Permittee shall come to the meeting prepared to explain the results of the analysis. This meeting will be used to discuss the reasons for the results and what possible action is necessary, if any.
2. If a permit is found to be necessary, the Permittee shall submit a schedule for applying for the appropriate permit within 14 days of the meeting.

¹ The Method 4 PTE numbers listed in Table A1 shall be used instead of the Method 5 numbers for the two Building 270 coaters, since these units are limited to their Method 4 PTE.

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 12300015-002

This technical support document is for all the interested parties of the permit and to meet the requirements that have been set forth by the federal regulations and Minnesota Rules (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1.). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the determination to issue the permit.

During the 30 day public notice, only one request was received asking for a copy of the draft permit, and no comments were received. Since no comments were received, the appeal process in 40 CFR pt. 124 is not applicable, and the effective or issue date of the permit is the same as the approval date. EPA sent a letter dated May 14, 1998, stating that they had no comments on the proposed permit (see correspondence file).

1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 8731)
3M Company	3M Research and Development Center
900 Bush Avenue, Bldg. 42-2E-27	I-94 and McKnight Rd
P.O. Box 33331	Maplewood, Minnesota 55144-1000
St. Paul, Minnesota 55133-3331	

This permit is a Part 70 total facility operating permit issued under Minn. R. ch. 7007. The stationary source is an existing facility that is major for all air quality programs. The permit also pre-authorizes changes at the site that can be made over the life of the permit as long as the changes are within the scope of the Best Available Control Technology (BACT) analysis submitted by the facility (dated March 1998) or the other operational requirements (e.g., fuel cap).

The original application was received November 9, 1995. Many subsequent submittals were received in response to additional information requests from the MPCA. The final, updated certified copy of the application was received March 2, 1998.

This permit supersedes nearly all previously issued permits for this stationary source (see Attachment 8 for list of permit numbers). The permits issued in AQD file No 23E that are NOT superseded are listed in the Facility Description in the permit.

This permit only covers part of the defined stationary source (as described below). The administrative or utility functions at the site will be covered by a separate Part 70 permit for administrative reasons.

1.2. Description of the Facility

Source Description:

The 3M facility at this location is one stationary source under NSR and the Part 70 Operating Permit Program, but will be covered by 2 separate permits: the Research and Development (R&D facility) complex that will be covered by this permit, and the Administrative Buildings (to be covered by a different permit -- see Attachment 4 explaining the stationary source definition). In addition, the site is considered one stationary source under the National Emissions Standards for Hazardous Air Pollutants for Source Categories (NESHAPs) in 40 CFR pt. 63.

The R&D operations covered by this permit consists of the research and development laboratories, pilot plants, and maintenance operations. They are specifically listed in Attachment 4 to the TSD.

The Center occupies approximately 425 acres in Maplewood, consists of approximately 39 buildings that support more than 50 different operating divisions, and contains more than 200 group or staff departments. Each division, while part of 3M Company, has autonomous operations. There are currently 14 laboratory buildings at the site. There are currently 22 pilot plants at the site.

Emissions and Controls:

These operations result in emissions of volatile organic compounds (VOCs), hazardous air pollutants (HAPs), carbon monoxide (CO), nitrous oxides (NO_x), sulfur dioxide (SO₂), and particulate matter (PM/PM₁₀). The permit requires particulate controls on all spray booths and carpentry shops. The permit has operating restrictions on all spray booths, natural gas combustion sources, and several other emissions units. Some of these limits are new and were relied on as PTE in the BACT analysis, while some were previous limits taken to avoid the NSR major modification requirements.

The potential to emit of R&D emissions units is difficult to calculate compared to units used in manufacturing. The units, by design, are not intended to operate continuously for long periods of time. The units are located in laboratories or in areas where it would be physically impossible to process material in a manner such that the equipment could be operated for long periods of time -- due to space limitations, physical constraints for moving materials in and out of the buildings, building code issues, etc.. In addition, units are portable, and often easily disassembled and reassembled to be something entirely different. This makes it very difficult to predict the types of materials that will be processed or made on a given emissions unit.

MPCA, U.S. EPA, and 3M worked extensively to arrive at a PTE calculation method for the R&D units at this facility. A description of the final agreed upon calculation method can be found in Attachment 2 of this document, and in Attachment A of the BACT analysis. The end result is a PTE calculation method for VOC emissions at the site based on an average predicted utilization rate based on historical utilization, and a PTE method for PM/PM₁₀ for pilot plant equipment based on historical data plus a cushion, similar to that used for grain elevators. The VOC method is used to calculate the site-wide PTE, while the PM/PM₁₀ is used to calculate the total PTE for the pilot plants. The difference in methodologies is mainly due to the availability of data. 3M has considerably more information of past performance and usage of VOC emitting equipment since this is the primary pollutant at the facility. The PM/PM₁₀ equipment was not looked at as closely in the past since it has lower potential and actual emissions than the VOC equipment. 3M intends to evaluate an alternative PTE calculation procedure for the remaining PM equipment (mainly spray booths) at some time in the future.

This permit is written based on information that is available at this time. As 3M implements the tracking requirements of this permit, better and more complete information will be available than existed for writing the permit. It may be found that the new information shows that past assumptions were wrong. Both the MPCA and 3M understand that as new or better quality data becomes available, the permit may need to be reopened or amended to make corrections.

1.3 Description of any Changes Allowed with this Permit Issuance

A. VOC PSD Modification

Background:

The R&D complex under consideration here exists for the purpose of developing new ideas and information that will be used by the Permittee to make changes throughout the corporation. Unlike a manufacturing plant that is designed to make specific, tangible products, or a utility that is designed to produce power, the *product* of R&D is *design information or change*. By far, the primary purpose of this facility is to develop and discover new and better products and processes to produce products to meet rapidly changing market demands. Since the product of this R&D facility is new information, and since the value of the information produced is largely dependent upon its newness and timeliness, it is essential to have a permitting arrangement that protects the environment and at the same time minimizes delays.

At this R&D facility, it is difficult from one month to the another to predict the extent or type of chemicals or equipment that will be used in an experiment. However, long-term experience has shown that the majority of changes at the site have very low potential and actual emissions (actuals less than 0.1 tpy). Therefore, dedicating MPCA resources in reviewing each individual change produces little environmental benefit. This situation leads the MPCA to view this R&D permitting action in a more efficient manner. Since the product of this facility is information, the pollutant emitting raw material is viewed as

the dryer, a pilot coater, a grinder, a batch of chemicals, etc. The MPCA, does not, for example, permit each load of coal that comes to a power plant nor each batch of iron ore that is processed; but the MPCA analyzes the process that combusts the coal or processes the ore to assure that the environment and public are protected. In this permit, the MPCA is proposing for comment to the public its analysis of the aggregated emission producing process from this R&D facility rather than each individual piece of research equipment.

This approach may seem unfamiliar to the reader, however, it is within the scope of the State rules and Federal policy for Prevention of Significant Deterioration. For example, U.S. EPA has required an engine test cell to undergo permit review rather than each engine entering the cell. The purpose of the testing was to gather information (the product) under various load conditions. In the same manner, it is more appropriate to permit the larger R&D facility rather than each piece of emitting research equipment used. Also being proposed, is a procedure to distinguish R&D activities and actual production activities. This is necessary to assure that the authorizations granted in this permit are limited to R&D.

R&D BACT:

The Permittee, at the request of U.S. EPA, did a BACT analysis for the entire system of change that is R&D as it exists at this facility. The facility can continue to make changes consistent with this system of change, during the 5 year permit, as long as they meet BACT and the assumptions used in the BACT analysis. The scope of the R&D process is defined in Attachment 4 to the TSD and Appendix I of the permit. This is a site specific R&D definition since the processes and materials at the 3M Center are very unique. Anything within that process definition is considered covered by the BACT analysis. After 5 years, the facility will re-evaluate the BACT analysis to make sure the assumptions used and the conclusions are still correct. If so, then the BACT can be renewed in the reissuance of the Title V permit.

If the Permittee wishes to make a change that is within the scope of the BACT analysis and that will comply with the BACT requirements in the permit, they cannot automatically assume the change can be made. In addition to these requirements, all applicable requirements that apply to the change must already be in the permit. The permit addresses a certain defined set of applicable requirements, so if the facility proposes to make a change that triggers a requirement not listed in the permit (e.g., 40 CFR pt. 63, subp. B, New Source Performance Standard or NSPS other than ones in the permit), then that change is not pre-authorized, even if it is within the scope of the BACT analysis. It would need to go through traditional permitting. Also, if the change could cause an emissions increase of a different regulated pollutant (e.g., PM/PM₁₀) that, by itself, would need a permit amendment, it is not pre-authorized.

Any previously issued permit limits on VOC that were taken to avoid major modification classification under NSR are now eliminated since 40 CFR § 52.21(r)(4) has been satisfied -- all the existing units now have BACT.

B. Firm Natural Gas Units

The permit establishes a fuel cap that keeps emissions from the burning of natural gas (in all but the boilers) to less than the NSR significance levels. This fuel is used mainly in ovens, dryers, and in lab experiments (e.g., Bunsen burners). The Permittee is then allowed to add, replace, or modify the units that fall under this cap since any change is kept to less than the significance levels. This cap is referred to as the “firm” gas cap by 3M. The other combustion devices (boiler and chillers) use interruptable gas. They are not under this cap and will be included in the Administrative Part 70 permit.

The permit contains the requirements of 40 CFR pt. 60, subp. Dc for natural gas boilers. The installation of these units is pre-authorized under this fuel cap as long as they have low NO_x burners.

C. Other Pre-Authorized Changes

The permit contains the requirements of 40 CFR pt. 60, subp. RR and SSS for units that are below certain usage thresholds (see permit requirements for EU002 and EU003). The installation of additional units, or the modification or reconstruction of existing units such that they become affected facilities, is pre-authorized by this permit, as long as the change is within the scope of the BACT analysis, does not trigger requirements different than those in the permit (e.g., must be below usage thresholds of the applicable NSPS), and as long as the change does not cause an increase of a different regulated pollutant that, by itself, would need a permit amendment.

1.4 Facility Emissions:

Table 1. Total R&D Facility* Potential to Emit Summary and Attainment Status:

Pollutant	Potential to Emit (Tons/year =TPY)	Attainment or Unclassified? (Yes or No)
Particulate Matter (PM)	68.1	Not Applied
Particulate Matter less than 10 micron (PM ₁₀)	68.1	Yes
Sulfur Dioxide (SO ₂)	0.558	Yes
Nitrogen Oxides (NO _x)	42.115	Yes
Volatile Organic Compounds (VOCs)/Ozone	1700	Yes
Carbon Monoxide (CO)	47.19	No
Lead	0.0001	Yes
Hazardous Air Pollutants -- Total	greater than 25	Not Applied

*The remaining PTE of the stationary source is not included in this table, but is included in the classifications in Table 2.

Table 2. Facility Classification

Classification (put x in appropriate box)	Major	Synthetic Minor	Minor	N/A
Prevention of Significant Deterioration	X			
Non Attainment Area (list pollutant)	CO			
Part 70 Operating Permit Program	X			
National Emission Standards for Hazardous Air Pollutants for Source Categories (Pt. 63 NESHAPs)	X			

1.5 Confidentiality of Information

Confidential treatment of information from facilities is allowed under Minnesota and federal law if certain conditions are met (Minn. Stat. § 13.37 and Minn. Stat. § 116.07, subd. 2.). Emissions data is required to be public information under the Clean Air Act (42 U.S.C. § 7414(c)); however, U.S.EPA has a very narrow definition of emissions data for research and development facilities (40 CFR § 2.301(a)(2)(ii)).

The MPCA agreed that some of the information submitted by 3M that was used in the development of the proposed permit should be treated as confidential information. Specifically, emission unit information regarding manufacturer, model number, and location at the site is being treated as confidential information under Minn. Stat. § 116.075, subd. 2. Some data collected by the source that will be used in calculations required by the permit can be treated as confidential information under the provisions given for R&D information under 40 CFR § 2.301. This information includes the data used to derive the laboratory VOC emission factor as well as the laboratory VOC emission factor itself, data from the 3M emissions study, specific and total VOC purchases or emissions as it pertains to specific emission units other than those subject to NSPS or other unit specific limits, the calculated scaling factor, and the pilot plant particulate matter calculation spreadsheets. While some of the data used in the calculations is confidential, the end result of those calculations is public information. For example, the information used to calculate actual emissions of PM from each individual emission unit in the pilot plants is confidential (e.g., capacity, level of utilization), but the total actual emissions of PM from the all the pilot plants and the general calculation methodology is public.

All permit application materials that contain confidential information were submitted in two forms -- a confidential version and a public version with the confidential information blacked out or marked as confidential in some way.

1.6 Delta Permit Issues

This permit is written in the MPCA AQD database known as Delta. It is a computer document that is generated by the permit application that was entered into the database. Not all forms can be entered into the computer and are therefore kept as hard copies in the paper files (e.g., building diagrams). In addition, the entered application is not the same as the application that the Permittee originally submitted. The content of the application changed based on negotiations over the past 2 years - e.g., requirements were added or revised, the way equipment was listed was changed in order to deal with the permitting strategy of a facility-wide BACT.

This permit deviates from much of the standard AQD policy and guidance regarding drafting permits in the Delta system. The permit team decision to not follow all guidance is based on the uniqueness of this source. What follows is a discussion of the main areas where this permit differs from standard guidance.

Emission Units (EUs):

Traditionally, all individual emission units are entered into the computer system and are then listed in the permit with their appropriate requirements. The R&D complex has thousands of individual "pieces of equipment" that if looked at separately, are tiny in terms of emissions. As a whole, they add up to a major source for Part 70, NSR, and Part 63. Also, the permit has a great deal of flexibility in that it allows the Permittee to move, add, and replace equipment consistent with the R&D process as defined in the BACT analysis, as well as under the firm gas cap. Since the actual equipment at the site is going to change, and individually, the vast majority of the units on site would otherwise be considered insignificant under Title V, wherever possible, the individual pieces of equipment were not entered into the actual permit database. The majority of emission units defined in the permit are actually categories of units (e.g., ovens, Equipment subject to 40 CFR pt. 60, subp. SSS). All equipment at the source falls into one of the categories, and may fall into more than one. Equipment that has recordkeeping, monitoring, and reporting requirements must be labeled as belonging to one of the categories. This will enable an inspector to identify the units and determine what limits and requirements apply. The only units that are entered individually are the ones with unit specific limits or tracking requirements.

Emission Units numbered greater than EU100 are entered for the emissions inventory database and are not used in the permit. The GI-05B form (which defines the EUs) will be used to generate a computer report for emissions inventory. For the inventory, the actual, or estimated actual emissions from each pilot plant are reported separately, so this form had to have them listed individually.

The BACT limits are all listed at the total facility level (TF) since they apply to all R&D VOC-emitting operations. A group (GP001) was created for use on GI-07 to represent all of the pilot plants since it is not possible to list emissions at the total facility level on GI-07.

Stacks and Vents (SVs):

Traditionally, each unit that is vented out of a building is listed in the application as going to a specific stack. The Permittee did provide this information in a confidential paper document for the major pieces of equipment in the pilot plants. However, in the Delta or computer permit application, the stack/vents or SVs are not tied to specific equipment for most of the EUs; therefore, no permit limits are listed at the stacks (e.g., emission limits are usually listed at the stack level). There are a couple reasons for this. The first is that some of the emission units are actually groups that vent out of several stacks, so the choice of stack would be arbitrary and would serve no purpose. The second is that much of the equipment moves around so the current stack is not necessarily relevant to finding the unit in the future or relevant to compliance with the permit. If a specific unit is required to test or model in the future, the stack or vent parameters will be determined and used.

Control Equipment (CEs):

Traditionally, permits should contain each specific piece of control equipment with its individual operation and maintenance requirements (O&M). For this permit, it was decided to list the types of control equipment with general O&M instead of specific information wherever possible. There were several reasons for this. The first reason is that much of the equipment does not yet, and may never, actually exist. The Permittee wanted the flexibility to have the equipment in the future, so it was pre-authorized by the permit. Secondly, in terms of the existing control equipment, the Permittee has over 20 spray booths with mat or panel filters. To list what are essentially the same requirements for each set of filters seemed to add volume to the permit with no benefit to the Permittee, the public, or the MPCA in establishing or ensuring compliance. Instead, the filters are listed as four types of control depending on whether there is a total enclosure or a hood and why the control is necessary (e.g., Title I or not).

Ordering of Requirements:

The AQPS has guidance on the preferred ordering of requirements in Delta with suggested headers that can be used to divide the requirements. The order in this permit was chosen by the Permittee. Wherever possible, it agrees with the guidance, but it often does not. For example, the guidance says to list the emission limits first. For nearly every unit at 3M, the emission limit comes from a general rule requirement, while the other requirements (e.g., monitoring or recordkeeping) are driven by facility specific limits. For most units, 3M chose to have general things listed last.

2. Regulatory and/or Statutory Basis of Limits

2.1 Overall Facility Requirements

All general requirements and some site specific conditions are listed at the total facility level. The site specific requirements are listed first.

Insignificant Activities:

Part 70 requires that insignificant activities (listed in Minn. R. 7007.1300) be included when they affect applicability; therefore, this permit requires the Permittee to include all sources of emissions at the R&D facility in calculations, including what would otherwise be called insignificant activities. The vast majority of the sources at 3M could be looked at as insignificant activities under Minnesota rules, but when the emissions are added together, the sources as a group are not insignificant activities as defined by the regulations.

Reporting:

Overall, the Permittee will be required to submit an annual report summarizing the compliance status of the facility for the past calendar year. The report will describe the changes made over the last year (e.g., new pilot plant added or removed, etc.). It shall also include the results of the annual target VOC analysis with background information (a confidential submittal) and the R&D evaluation.

Application for Reissuance:

This is an expiring permit, so the Permittee will be required to submit an application for reissuance 180 days prior to expiration. At this time, it is believed that for permits issued in Delta, the Permittee will be given a printout of the existing permit application from the computer system and will then update the forms (Note: since this is a new computer system and very few permits have been issued and none have been re-issued, it is not certain at this time whether this approach will actually work -- this is just the current understanding of how the system will work). The current Delta stack vent information is for the pilot plant equipment that has actual emissions greater than 1 ton per year. The Permittee will be required to update this stack information in the reissuance application. In addition, the permit requires the Permittee to do surveys for several emission units which must be contained in the application for reissuance (EU008 and EU009). The BACT analysis will need to be re-evaluated and updated as part of the reissuance application as well.

Environmental Review:

This permit will allow certain changes to occur as long as the BACT limits are met. This means actual emissions could increase due to the changes that take place. It is possible that a proposed change could be on the list of changes that trigger mandatory environmental review. In order to make sure it is clear to all parties that this permit does not authorize those changes to occur, this permit contains a general requirement that this permit does not authorize any change that needs environmental review under Minn. R. 4410.4030 and Minn. R. 4410.4400 and a statement as to when such a review may be required.

Regulatory Overview of Facility

The purpose of this table is to give a summary of the significant sources of emissions and the applicable regulations and standards. It is not designed for the discussion of specific limits or requirements, unless they are unusual and need some explanation. More detailed information is obtainable from the permit itself. This section is intended to provide users in the future with a quick picture of how the facility is being regulated and permitted.

TF, EU, GP, or SV #	Applicable Regulations	Comments:
TF	40 CFR § 52.21(j)	Prevention of Significant Deterioration. BACT Limits for VOC. BACT Summary table is in the next section of the TSD.
GP001	NA	This group is listed in order to facilitate listing the total pilot plant VOC PTE on Form GI-07. It has no requirements in the permit.
GP003	40 CFR § 52.21	Prevention of Significant Deterioration. Limits taken to avoid PSD for natural gas combustion equipment. The permit limits fuel use to natural gas only and sets an R&D facility wide fuel usage limit. The limit is a 12 month rolling limit due to substantial and unpredictable variations in fuel usage. The Permittee will calculate usage on a monthly basis using fuel meters and/or purchase records. Some of the meters are owned and maintained by the gas supplier. These are marked with a red tag. The remaining meters are owned and maintained by the Permittee. Regardless of who owns the meters, the Permittee is responsible for making sure permit requirements are met. Attachment 2 contains the PTE calculations associated with the fuel usage limit. Note: the Admin. permit will cover other fuel burning equipment (e.g., boilers) that burn fuel other than natural gas as well as natural gas.
EU001 EU004 EU008 EU009 EU017	Minn. R. 7011.0710 Minn. R. 7011.0715	Standards of Performance for Existing and New Industrial Process Equipment EU001, EU004, and EU017 are not expected to have any PM emissions. EU008 and EU009 are discussed individually later in this document.

TF, EU, GP, or SV #	Applicable Regulations	Comments:
EU002	40 CFR pt 60, subp. RR	<p>New Source Performance Standard for Pressure Sensitive Tape and Label Surface Coating Operations</p> <p>All coating equipment at the site that is subject to this standard uses less than the VOC threshold given in 40 CFR § 60.440(b) so only recordkeeping applies (and construction notifications per the general provisions). The permit allows the installation or modification of units such that they can become affected facilities under this subpart, as long as usage remains below the thresholds. If usage goes above the thresholds, the Permittee must obtain an amendment to add the additional requirements from the standard (e.g., emission or control limits). Per a U.S. EPA determination, the laboratory pressure sensitive tape and label coating equipment (EU008) is not subject to this standard.</p>
EU003	40 CFR pt. 60, subp. SSS	<p>New Source Performance Standard for Magnetic Tape Coating Facilities</p> <p>All coating equipment at the site that is subject to this standard uses less than the VOC threshold given in 40 CFR § 60.710(b) so only recordkeeping and reporting applies (and construction notifications per the general provisions). The permit allows the installation or modification of units such that they can become affected facilities under this subpart, as long as usage remains below the thresholds. If usage goes above the thresholds, the Permittee must obtain an amendment to add the additional requirements from the standard (e.g., emission or control limits). Per a U.S. EPA determination, the laboratory magnetic tape coating equipment (EU008) is not subject to this standard.</p>
EU005	Minn. R. 7011.0610 Minn. R. 7007.0800, subp. 2	Standard of Performance for Direct Heating Equipment Fuel limited to natural gas only (also in GP003).

TF, EU, GP, or SV #	Applicable Regulations	Comments:
EU006	Minn. R. 7011.0510 Minn. R. 7011.0515 Minn. R. 7007.0800, subp. 2	Standards of Performance for New and Existing Indirect Heating Equipment Fuel limited to natural gas only (also in GP003). Due to only burning natural gas, the hourly PTE of EU006 units is less than the allowable under the generally applicable requirements. For example, the maximum size unit for EU006 is 10 MMBtu/hr. A unit that size, based on AP-42, Chpt 1.4, has a PTE of 0.011 lb/MMBtu. The rule limit is 0.4 lb/MMBtu.
EU007	40 CFR pt. 60, subp. Dc Minn. R. 7007.0800, subp. 2	New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units. Limited to low NO _x burner technology and fuel limited to natural gas only. Because there is a limit that they can only burn natural gas, the Permittee must maintain records of natural gas usage and file the various construction notifications as required under Subpart A of 40 CFR pt. 60. The facility does not currently have any of these units. These units would also be subject to limits under GP003.
EU010	Minn. R. 7007.0800, subp. 2	Requirement to operate carpentry shops with control equipment in accordance with operating conditions during a recent performance test used to develop an emissions factor for the carpentry shops. This factor can then be used for the emissions inventory.
EU011	40 CFR pt 63, subp. M	National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities. 3M Center has one dry-to-dry dry cleaning machine on site for internal use only. It is used for R&D purposes. The Permittee has certified that it has never used more than 140 gallons of perchloroethylene (tetrachloroethylene) per year. Under 40 CFR § 63.320, this means the only parts of the standard applicable to the source are listed at 40 CFR § 63.320(d). The Permittee stated they submitted the required notification of applicability under 40 CFR § 63.324(a) on December 28, 1993, and that they submitted the required notification of compliance status under 40 CFR § 63.324(b) on December 28, 1993.

TF, EU, GP, or SV #	Applicable Regulations	Comments:
EU012	Minn. R. 7007.0800, subp. 5 Minn. R. 7011.0710 Minn. R. 7011.0715	Recordkeeping requirements for calculating particulate emissions from the pilot plant equipment. Standards of Performance for Existing and New Industrial Process Equipment
EU013	Minn. R. 7007.0800, subp. 2 & 5 Minn. R. 7011.0710 Minn. R. 7011.0715	Requirement to control spray booths that use only spray cans and keep records of the locations of the booths (they are portable). Standards of Performance for Existing and New Industrial Process Equipment
EU014 EU015	40 CFR § 52.21(j) Minn. R. 7007.0800, subp. 2 Minn. R. 7011.0710	Prevention of Significant Deterioration. BACT Limits for VOC. BACT Summary table is in the next section of the TSD. Requirement to control PM/PM ₁₀ emissions w/filters. Standards of Performance for Existing Industrial Process Equipment
EU016 EU018 EU020 EU023 EU013 EU032 EU033	40 CFR § 52.21(j) Minn. R. 7007.0800, subp. 2 Minn. R. 7011.0715	Prevention of Significant Deterioration. BACT Limits for VOC. BACT Summary table is in the next section of the TSD. Requirement to control PM/PM ₁₀ emissions w/filters. Standards of Performance for New Industrial Process Equipment
EU022 EU025 EU026 EU027 EU028 EU029	40 CFR § 52.21(j) 40 CFR § 52.21 Minn. R. 7011.0715	Prevention of Significant Deterioration. BACT Limits for VOC. BACT Summary table is in the next section of the TSD. Prevention of Significant Deterioration. Control requirements that were taken to avoid PSD for PM/PM ₁₀ in previous permit (removal would trigger 40 CFR § 52.21(r)(4)). Standards of Performance for New Industrial Process Equipment
EU019 EU024	40 CFR § 52.21(j) Minn. R. 7011.0715	Prevention of Significant Deterioration. BACT Limits for VOC. BACT Summary table is in the next section of the TSD. Standards of Performance for New Industrial Process Equipment

TF, EU, GP, or SV #	Applicable Regulations	Comments:
EU030	Minn. R. 7007.0800, subp. 4 & 5 Minn. R. 7011.0715	Requirement to track VOC emissions as a result of an enforcement action and previously issued permit No. 23E-I/O-97-1 and Amendment No. 1. The listed PTE is for equipment that was covered by the original permit and amendment, not future equipment that is covered by the BACT requirements. Standards of Performance for New Industrial Process Equipment
EU034 EU040	40 CFR § 52.21 Minn. R. 7011.0715	Prevention of Significant Deterioration. Control requirements that were taken to avoid PSD for PM/PM ₁₀ in previous permit (removal would trigger 40 CFR § 52.21(r)(4)). Standards of Performance for New Industrial Process Equipment
CE001 CE002 CE004 CE006 CE007	Minn. Stat. § 116.07, subd. 4a, Minn. R. 7019.3020 (F)	Requirements necessary for control equipment to be credited for emissions inventory.
CE003 CE005	Minn. R. 7007.0800, subp. 2	Control efficiency and other operating parameter requirements to limit PM/PM ₁₀ PTE.
CE008 CE009 CE010	40 CFR § 52.21	Prevention of Significant Deterioration. Control requirements that were taken to avoid PSD PM/PM ₁₀ in previous permit (removal would trigger 40 CFR § 52.21(r)(4)).

2.2 BACT Summary (VOC)

The following table gives an overview of the VOC BACT limits and the associated monitoring, recordkeeping, and reporting requirements (MR&R). Further information on the total facility MR&R is provided in the second part of the table.

What the limit applies to (e.g., EU)	Limit	Monitoring, Recordkeeping, and Reporting Requirements
TF -- applies to all R&D operations as defined in Attachment 4 to TSD	Workpractice standard -- guidelines are in the permit	Complete 2 surveys each quarter of each R&D building to ensure the "3M Guide to Laboratory Practices" is being followed.

What the limit applies to (e.g., EU)	Limit	Monitoring, Recordkeeping, and Reporting Requirements
TF continued	Operate only in an R&D manner	Annual Evaluation to show operations are within the scope of R&D used in the BACT analysis -- in terms of manner of operation and in terms of level of emissions. This involves using the 3M Center Chemical Tracking Protocol.
Spray Booths -- EUs 014-016, 018, 020, 022, 023, 025-029, and 031-033	Gun capacity limits Hours of operation limits These limits were relied on in the BACT analysis when determining the economic feasibility of adding VOC controls; therefore, they are treated the same as BACT limits since revising them could change the BACT determination.	Record of gun capacity. Meter on each compressor that shows hours of operation. More discussion of this under Section 2.3.
EU019, Coater/Oven	12 Month Rolling Sum limit on VOC Usage (Limit based on reasonable expected use of VOCs. The limit was relied on in the BACT analysis when determining the economic feasibility of adding VOC controls; therefore, it is treated the same as BACT limits since revising it could change the BACT determination.).	Records of VOC materials used with monthly calculation of VOC usage. The limit is a 12 month rolling limit due to substantial and unpredictable variations in usage.

What the limit applies to (e.g., EU)	Limit	Monitoring, Recordkeeping, and Reporting Requirements
EU024, Coater/Oven	12 Month Rolling Sum limit on VOC Usage (Limit based on reasonable expected use of VOCs. The limit was relied on in the BACT analysis when determining the economic feasibility of adding VOC controls; therefore, it is treated the same as BACT limits since revising it could change the BACT determination.).	Records of VOC materials used with monthly calculation of VOC usage. The limit is a 12 month rolling limit due to substantial and unpredictable variations in usage.

Monitoring and Recordkeeping Requirements for Total Facility BACT Limits

Quarterly Survey of R&D Buildings

The specifics of the R&D survey can be found in Appendix II of the permit. The Permittee will conduct a survey of each R&D building (or group of buildings where they are physically connected) twice per quarter. This survey is intended to verify that the workpractice standard is being followed. It is not MPCA's intent to regulate what is good laboratory work practices beyond what it included in the BACT, but to see that the surveys take place and that corrective action determined by 3M to be necessary is taken in a reasonable time frame.

Annual R&D Evaluation

The Permittee will conduct an annual analysis as detailed in Appendix III of the permit. The goal of this analysis is to ensure that the facility is operating in an R&D manner and within the scope of the BACT analysis. The analysis looks at two things -- that the activities still meet the definitional component of R&D (the first two criteria are used to determine this) and that the emissions levels are still represented by the numbers and assumptions used in the BACT analysis (the third criteria). If any activity or pilot plant is found to not pass one of these criteria, the Permittee will meet with the MPCA to determine if any action is necessary -- e.g., minor permit amendment to permit an individual activity as a non-R&D activity -- according to deadlines given in Appendix III. [Note: This evaluation is limited to pilot plants and does not include laboratories. Due to the nature and physical design of laboratories, it is nearly impossible that they could be used for anything other than R&D.]

This is an annual evaluation that takes place "after the fact". It is a backwards look to determine if over the past year, the operations are still operating in an R&D manner and within the scope of the BACT analysis. This is not the normal way of evaluating activities under the NSR program. Traditionally, the Permittee would look at a proposed change prior to making it to determine if any type of pre-construction permitting is necessary. However, this was not the approach taken here due to the nature of this R&D source (as explained at the beginning of this document), the fact that +99% of the historical operations have always met the definition of R&D and the Permittee has every intention of continuing to operate as an R&D source, and most importantly,

the extremely low emissions that come from any given R&D activity at the site. This last item ensures that the environmental risk of waiting until after the fact is very, very low.

Definitional Component:

The background of this is explained in greater detail in the permit application (at the GI-01 tab). Appendix I of the permit and Attachment 4 of this document give the R&D process description for this facility that was used in the BACT analysis. It is a site-specific description that defined the scope of the processes that were evaluated in the analysis.

As part of this component, the Permittee will look at the percentage of hours worked in each pilot plant in a non-R&D mode (making something that is sold). The Permittee uses timesheet codes to track this information for tax purposes. This number must be less than 15% for each pilot plant in order to be considered R&D. This gives the Permittee the flexibility to have the occasional non-R&D activity with the vast majority still being R&D. [Note: Non-R&D for the purposes of this permit and BACT analysis does not necessarily mean a manufacturing mode.]

What would happen if any given pilot plant were to fail this criteria? As explained in Appendix III, the Permittee would meet with the MPCA to explain the reasons. It does not automatically mean that the pilot plant is outside the scope of the BACT analysis. However, for the sake of this example, let's assume a pilot plant was found to clearly no longer be R&D. The Permittee would most likely determine what specific operation within the pilot plant was no longer R&D. This activity could then be "pulled out" of the R&D BACT and be treated separately in the permit. Based on the low PTEs of the activities at this site, it is likely that the activity would not be subject to any NSR permitting requirements and it would be permitted under the state permit amendment procedures.

Emissions Component:

This is also explained in greater detail in the permit application. For this criteria, the Permittee will look at the actual emissions of VOC from each unit in the pilot plants. In order to not pass this criteria, the actual emissions from a pilot plant emission unit would need to be greater than 1 ton of VOC if it was not one of the specific units evaluated in the BACT analysis, or greater than the PTE used in the BACT analysis if it was included.

Historically, 99% of the pilot plant units emit less than 1 tpy of VOC. The units that have historically emitted greater than 1 tpy of VOC were included in the BACT analysis at their Method 5 PTE levels (EUs 019 and 024 used Method 4 numbers which are now unit-specific permit limits).

So, how would a unit fail this criteria and what would most likely need to happen? If a unit not included in the BACT analysis is found to emit greater than 1 tpy, the Permittee will evaluate whether or not the emissions are still consistent with the BACT analysis. It is clear that it is very unlikely that any unit will emit higher than the numbers used in the BACT analysis (since these were the PTEs of the largest emitting R&D units on-site) so it is reasonable to expect that no permitting action will be necessary for these units emitting more than 1 tpy of VOC.

If one of the units that was included in the BACT analysis has actual emissions greater than the PTE used in that analysis, the Permittee would need to determine if this affects the conclusions of that analysis. If not, it is likely no permitting action would be necessary. If it did affect the

conclusions, some type of permitting action would be necessary -- either a new BACT determination for that unit or a unit-specific limit to avoid NSR.

Facility-wide VOC Tracking: (this is in addition to unit specific tracking for EU019, EU024 and EU030)

The details of the VOC tracking can be found in a document titled "3M Center Chemical Tracking Protocol" updated 02/12/97. There is both a confidential and public version of this document. The Permittee purchases hundreds of different VOCs in very, very small amounts. In addition, there are several different procedural ways that materials can be purchased. Currently, each method is tracked separately and compiled. Tracking and compiling every single VOC purchase would be overly burdensome and unfeasible. Instead, the permit requires the Permittee to track a certain list of target VOCs that currently represent the majority of the VOCs used (and emitted). Tracking more than these 11 would not substantially increase the percentage. Each additional VOC represents less than 1 percent of the total; therefore MPCA believes that the 11 is a very good representation.

In addition, the materials that are tracked are those that are 95% pure, or 95% one VOC. 3M did a study and found that due to the fact that they are a research institution, of the top tracked VOCs, 94% of their laboratory purchases are 95% pure. 3M has stated that to try and track EVERY material that has ANY amount of the tracked VOCs in it would be overly burdensome. They purchase thousands of materials that may have some of the tracked VOCs in them in trace amounts. 3M believes that since the majority of the tracked purchases are accounted for, accurate tracking can be assured by the proposed tracking system. MPCA believes this approach provides good representation of VOC usage for the intended purpose.

Monthly Calculation and Annual Analysis: (this is in addition to unit specific calculations for EU019, EU024, and EU030)

The Permittee will determine the total VOC purchases by building and pilot plant by scaling up the target purchases monthly. This involves making an assumption that the target list is substantially the same percentage of the total purchases over the course of the year. This assumption will be evaluated annually and corrections will be made to the scaling factor on an annual basis.

VOC Emissions Calculations: (this is in addition to unit specific emission calculations for EU030)

Emissions can be calculated using mass balance or emission factors (as defined in Minn. R. 7005.0100 -- Attachment 5 to TSD). The permit gives requirements in order to take credit for VOCs that are recovered or recycled. The Permittee can assume all purchases are emitted if mass balance is not feasible or emission factors do not exist. The permit requires that the Permittee keep records of operation and purchases so that the calculation method can be correlated to specific VOC purchases (e.g., know that 100 pounds of VOC went to a certain process that has a specific emission factor).

The MPCA has approved a VOC emission factor for the laboratory operations (confidential document dated 2/25/97 revised 2/28/97). The factor was derived by 3M and is only

representative of the 3M Maplewood R&D laboratories. The factor cannot be used to extrapolate emission calculations for the pilot plants. 3M looked at the various processes performed in the laboratories and was able to divide them into 4 main categories, all of which have applicable AP-42 emission factors. By collecting data for a certain period of time, 3M calculated the emissions of each purchased VOC for each process using the individual process emission factor. 3M then added the numbers to get overall purchases and emissions to determine the composite emission factor. The emission factor is being treated as confidential information.

Control Equipment:

The Permittee, in the future, may want to install pollution control equipment in order to reduce VOC emissions. The Permittee would like to receive credit for these reduced emissions when filing their emissions inventory report that is used for charging annual fees. The permit allows the installation and use of both thermal and catalytic afterburners, and solvent recovery units. The permit establishes monitoring, operation and maintenance, recordkeeping, and reporting requirements for the control equipment.

2.3 Particulate Equipment Limits

Particulate rules and applicable requirements were listed in the table at the beginning of Section 2 of this document. What follows is a discussion of permit issues that were unusual, less straightforward, or that needed to be addressed specifically.

EU013 and EU034 Booths Without Spray Application Equipment

The facility currently has 6 booths without spray application equipment. One of them is listed as EU034 due to previous limits taken to avoid a major modification classification. The others are identified as EU013. These booths are currently used for various types of operations (e.g., brush or dip application, painting using small spray cans) which have no spray application equipment. The permit states that the facility can move these booths as long as they comply with the permit limits and as long as they have no spray application equipment.

There is also a general limit listed here that all of these booths must be controlled. Assuming control, these booths have PTEs much less than the applicable Minnesota Rule limit on PM.

The Permittee will maintain records on site of all these booths and their locations. The Permittee submitted this information (in the paper permit application) for all of the six existing booths. Since the assigned ID number for these booths (required under the total facility requirements) contains both the building and room number making them easy to identify, these booths are not required to have "EU013" on their ID label.

The PTE for EU034, based on the Title I limits, is in Attachment 3 to this document.

EUs 014-016, 018, 020, 022, 023, 025-029, and 031-033 Existing Spray Application Booths

Each booth that has spray application equipment has a booth specific limit on gun capacity and hours of compressor (or other delivery device for EU023) operation that are listed as VOC BACT limits. These operational limits also limit the PM/PM₁₀ PTE of the booths.

The PM/PM₁₀ PTEs are based on the following calculations assuming conservative solids contents and transfer efficiencies.

- Per AP-42, Chapter 4, the highest solids in a typical industrial coating is 57.2% by volume, or using the densities given in AP-42, 70% by weight.

$$= \frac{7.35 \text{ lbs solids}}{\text{gallon of coating}} * \frac{\text{gallon of coating}}{10.35 \text{ lb coating}} = \frac{0.70 \text{ lbs solids}}{\text{lb coating}}$$

- 3M also asked their researchers, for each booth, what was the highest solids content used in their booth. The numbers used in the PTE are either 70%, or the survey data, whichever is highest. See Attachment 3 to the TSD for calculations for each booth.
- Per the Air Pollution Engineering Manual (AWMA), Chapter 10, Table 2, transfer efficiencies vary depending on the method of application and the surface being coated. Of the 15 transfer efficiencies given, 10 are 70 percent or greater. The remaining 5 range from 10-50 percent. 30% was chosen as mid range of the low efficiencies.
- All spray booths must be controlled for particulate matter by either CE003, CE005, CE008, or CE009. The permit requires the filters to achieve at least 92% reduction, with either a hood capture of 80% or a total enclosure, as applicable. This results in an overall control of either 92% or 74%.

The PTE of a booth is found by doing the following calculation:

$$PTE_{\text{tpy}} = \frac{X \text{ lb}}{\text{hr}} (\text{gun capacity}) * \frac{Y \text{ lbs solids}}{\text{lb coating}} * 0.70 (\text{overspray}) * (1 - \text{control}) * \frac{Z \text{ hr}}{\text{yr}} (\text{hours limit}) * \frac{\text{ton}}{2000 \text{ lb}}$$

where Y is either a default of 70% (0.70), or the higher booth-specific data.

Putting the gun and hours limits in the above equation for each spray application booth, the PTEs can be calculated. This spreadsheet is in Attachment 3 to this document (total PTE = 52.217 tpy PM/PM₁₀ for these booths, not including EU034). Based on confidential information submitted by the Permittee on actual operating conditions, the equivalent PTE of these booths (in lb/hr or gr/dscf) are less than the applicable PM limits in the Industrial Process Equipment Rule (Minn. R. 7011.0710 & 7011.0715).

Some of the booths had previous permits with control requirements that were taken to avoid major modification classification under NSR. Previous PM/PM₁₀ permit limits are discussed in Attachment 6 to this document. These booths must be controlled by CE008 or CE009.

Monitoring and Recordkeeping:

Gun capacity is documented by recordkeeping. Hours of operation shall be monitored by hour meters on the compressor or delivery device at each booth. While straight annual limits are not usually considered enforceable because it is not possible to determine compliance until the end of the year, in this instance the cumulative hour meters ensure that the limit is enforceable. In addition, no monthly recordkeeping is required in order for the limit to be practicably enforceable. When the meter reaches the hours limit for the calendar year, it will automatically shut off the compressor. At that time, the Permittee will notify personnel that that particular booth cannot be used for spraying for the remainder of the calendar year. In addition, the Permittee must keep a log of all booths (by ID number) that have reached their hours limit and on what date the limit was reached. At the beginning of the year, before re-setting the meters, the Permittee must record the hours for each booth in a log.

While this limit would not be used in a manufacturing plant (e.g., the incentive to get production out might lead personnel to find a way to use the spray booth by moving a different compressor into the booth), the nature of the spray booths at the 3M Center make this limit reasonable. The existing booths are not used on any type of continuous basis. As a matter of fact, several are used only a couple hours a year. It is very reasonable for personnel, upon finding a specific booth inoperable, to walk over to a different booth that has not yet reached its limit for the year.

The permit specifies monitoring and recordkeeping requirements for the control equipment that mirrors the requirements in the Minnesota control equipment performance standard (Minn. R. 7011.0060-0080).

008 - R&D Labs

The Permittee did a survey of a sample of the laboratory particulate sources not included elsewhere (e.g., not including spray booths) to determine the particulate emissions from the labs (confidential document dated 02/10/97). Based on the survey, the potential to emit from all of the labs is roughly 0.332 tons per year of PM/PM₁₀. PTE for the labs is estimated using AP-42 emissions factors and highest projected materials usage data. (note: nearly all individual units in the labs would be considered insignificant activities in Minn. R. 7007.1300, subp. 2 or 3)

Prior to permit reissuance, the Permittee will need to re-evaluate the assumptions used in this analysis and calculate a new PTE for the labs.

Per a U.S. EPA determination, the laboratory pressure sensitive tape and label coating, and the laboratory magnetic tape coating equipment, are not affected facilities under NSPS (40 CFR pt 60, subp. RR and SSS). The applicability determination letter dated February 27, 1998, is in Attachment 10 to this document. The permit shield applies in this instance.

009 - Machine Shops

The Permittee did a survey of the machine shops currently on site to determine the particulate emissions from the shops (confidential document dated 02/10/97). Based on the survey, the

potential to emit from all 9 of the shops is roughly 0.306 tons per year of PM/PM₁₀. Because the machine shops are mainly used for maintenance and are not engaged in the manufacture of products for commercial sale in commerce, the capacity to emit is best calculated by scaling up historical data. PTE for the shops is estimated using AP-42 emissions factors and highest projected materials usage data (see Attachment 2). (note: individually, nearly all the emissions units in the shops would be considered insignificant activities in Minn. R. 7007.1300, subp. 2 or 3)

The Permittee will need to re-evaluate the assumptions used in this analysis (including emission calculation methods) prior to permit reissuance.

010 - Carpentry Shops

The permit requires that all the room air from the shops be filtered through a fabric filter (CE007). In addition, the larger units have their own control devices (CE006 or CE007), but these are not needed to meet applicable requirements. A performance test was done to determine an emission factor for a carpentry shop. 3M may use this factor for both PTE and reporting actual emissions for emissions inventory for any carpentry shop meeting the same types of operational parameters as the shop that was tested (e.g., level of control).

Most of the emissions from the woodworking equipment could otherwise qualify as an insignificant activity under Minn. R. 7007.1300, subp. 2 or 3. (see Attachment 2)

The PTE from the 4 shops is 0.578 based on the test data. This assumes any given shop will have processes consistent with the tested shop. Based on the similarity of the existing shops, this is a valid assumption.

012 - Pilot Plant Particulate Sources (non-combustion, not spray booths)

There are no PM limits on pilot plant equipment in the permit other than general requirements. This means no specific PM tracking system was necessary. However, the facility plans to eventually do a PM/PM₁₀ PSD modification, so this system is being put in place in anticipation of eventually needing to track PM/PM₁₀ emissions. This does not assure that this system will necessarily meet the needs of the eventual PSD modification.

The permit contains a system for tracking emissions of PM/PM₁₀ from the pilot plants. Each individual piece of equipment (over 400 units) is used so infrequently and, in general, has very small potential and even smaller actual emissions. Even though individually the units have a very small impact, when added together, the R&D PTE is roughly 7.56 tons (actuals are estimated at roughly 2 tons per year).

The proposed tracking method fits in with the already constructed computer program and available data for the existing equipment in the pilot plants.

PM/PM₁₀ Recordkeeping:

The permit explains that the Permittee will estimate PM/PM₁₀ emissions each month using 2 spreadsheets - 1 for existing and “unchanged” equipment (spreadsheet 1), and 1 for new and/or “changed” (spreadsheet 2). The template for the first spreadsheet exists (contained in confidential submittal 02/10/97), is fixed for the calendar year, and shows the tons per year for all equipment as it exists at the time of permit issuance. The general calculation methodology uses AP-42 factors to arrive at short term PTE and scales up historical utilization to arrive at annual PTE. The PTE calculation methodology is explained in Attachment 7 to this document. The permit as written does not allow credit for the use of air pollution control devices for these sources when calculating actual emissions; therefore, they are not required to be controlled. Very few emission factors exist that truly represent the emissions at this facility; they all over estimate emissions by varying degrees.

Each month, the Permittee will evaluate each piece of equipment in spreadsheet 1 as represented on the spreadsheet. If the unit can no longer be represented by the spreadsheet (e.g., the unit was modified such that the capacity or hourly emission rate has increased; if it operated more hours such that its 12 month emissions total increased over the last 12 months), then the unit will also be accounted for in spreadsheet 2. This will result in double counting, which is very conservative environmentally, and it minimizes that cost to the Permittee for updating and revising computer programming. Spreadsheet 2 will list all of the “changed” units and all new units. At the end of the year (by April 1), the Permittee shall update spreadsheet 1 to contain all changes through the last calendar year. Part of this update includes evaluating emission calculation methods to see if better factors have been developed over the past year. A new spreadsheet 2 will be created for the next calendar year in January. It is possible there will be 2 different spreadsheet 2’s for part of the period of January through April, and all three need to be added together to get a total PM/PM₁₀ number if that is the case (e.g., spreadsheet 2 for last year, spreadsheet 2 for this year, spreadsheet 1 which has not yet been fully updated). The Permittee may do the calculations for PM only and assume that PM₁₀ is equivalent to the PM number. Attachment 7 shows example scenarios for how the 2 spreadsheets will work.

040 - Automotive Room Vacuum System

This was a previously permitted operation that took operational limits and control requirements in order to avoid PSD PM/PM₁₀(removal would trigger 40 CFR § 52.21(r)(4)). The limits are summarized earlier in the Regulatory Overview table and are detailed in Attachment 3 to this document.

The monitoring and recordkeeping requirements for the hours of operation limit is the same as that used for the spray booth compressor hours (explained earlier).

In the previous permit (23E-91-I/O-8), the pressure drop range for the control device was specified as between 4.5 and 7.5 inches of water column. This was an error. The control device manual supplied by the manufacturer specifies the range as 0.45 - 0.80 inches of water column. The maximum reading on the gauge is only 2.0 inches. This permit corrects this error.

2.4 CO, NO_x, and SO_x

The majority of emissions of these pollutants come from combustion of natural gas which is limited under a fuel usage limit at GP003 (discussed at beginning of Section 2). However, there are several processes in the pilot plants which are non-combustion that emit CO, NO_x and SO_x by chemical reaction. These emissions are not included in the BACT and are not otherwise limited. Increases from these units are not pre-authorized by the permit (e.g., are not part of BACT or fuel cap). A confidential document (dated 2/24/98) shows the calculations for each unit. Calculations are based on stoichiometric formulas and mass balance. The totals are given below:

Pollutant	PTE (tons per year)	Est. Actuals (tons per year)
Non-combustion CO	24.315	0.001
Non-combustion NO _x	4.615	0.081
Non-combustion SO _x	0.333	0.00

2.5 Hazardous Air Pollutant Limits

There are no HAP limits in the permit for any equipment other than the dry cleaning equipment that was covered previously at the beginning of Section 2. U.S. EPA is evaluating whether or not to list research and development at its own source category for the NESHAP program. If this happens, it is likely to apply to the 3M R&D operations.

3. Conclusion

Based on the information provided by 3M Company, the MPCA has reasonable assurance that the proposed modification and operation of the emission facility, as described in the Air Emission Permit No. 12300015-002 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

<p>Attachments:</p> <ol style="list-style-type: none">1. GI-07 Facility Emission Summary + Emissions Inventory Data2. R&D PTE Information3. PTE Calculation Information4. Source Definition5. Emission Factor Definition6. PM/PM₁₀ Limits from Previous Permits7. Pilot Plant PM Example8. AQD Permits Superseded by This Permit9. BACT Analysis10. NSPS Applicability Determination	<p>Need further information? <u>Permit Engineer:</u> Peggy Bartz Telephone No.: (612)297-8113 <u>MPCA Permit Team Members:</u> Cary Hernandez and Bob Berg <u>Region V U.S. EPA Team</u> <u>Members:</u> Ron VanMersbergen and Rachel Rineheart</p>
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