

**AIR EMISSION PERMIT NO. 04900007- 001
IS ISSUED TO**

USG Interiors, Inc.

USG Interiors, Inc. - Red Wing
27384 Highway 61 Boulevard
Red Wing, Goodhue County, Minnesota 55066

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
Total Facility Operating Permit

Application Date

This permit authorizes the permittee to 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 as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal ; Part 70

Issue Date: July 21, 1999

Expiration: July 21, 2004

All Title I Conditions do not expire.

	<u>Don Smith</u>
for	Rodney E. Massey District Manager South District
for	Karen A. Studders Commissioner Minnesota Pollution Control Agency

JR:lk

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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	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules 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 standards, other than those for sulfur dioxide, adopted under section 109 of the Clean Air Act or increment or visibility under Part C of Title I of the Clean Air Act;**
- 2. Any state ambient air quality standard under Minn. R. ch. 7009, *other than sulfur dioxide; and***
- 3. The state noise pollution control rules, Minn. R. ch. 7030.**

FACILITY DESCRIPTION:

USG produces mineral wool at its plant in Red Wing. The mineral wool is then sent to other facilities to be made into products such as ceiling tiles. Main emission sources involved in this process are the two cupolas, where the stone and slag are heated and melted with coke, the blow chambers where the melt is spun and blown into wool fibers, and the facility boiler, used for heating the facility when the cupolas are not operating. The boiler is fueled with natural gas. There are also storage tanks for diesel fuel, oxygen, polyethylene glycol, and chain lube. All are below the size that would be subject to any federal or state regulation. Fugitive particulate matter emission sources are produced by raw material handling and storage piles, and unpaved roads. The plant is an existing major source for sulfur dioxide, carbon monoxide, and carbonyl sulfide.

TABLE A: LIMITS AND OTHER REQUIREMENTS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

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
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Fugitive Emissions Control Plan: The Permittee shall submit a fugitive emissions control plan within 60 days after permit issuance for review and approval by the Commissioner. The plan shall identify all fugitive emission sources, primary and contingent control measures, and recordkeeping. The Permittee shall follow the actions and recordkeeping specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive emission control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient air monitors.	Minn. R. 7007.0800, subp. 2
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Any limit set as a result of a performance test (conducted before or after permit issuance) applies until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
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.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
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.	Minn. R. 7007.0800, subp. 4(D)
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.	Minn. R. 7011.0020
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. This includes bypassing the fabric filter control system for the cupolas. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
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.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
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.	Minn. R. 7011.0150
Application for Permit Amendment: If a permit amendment is needed, submit an 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.	Minn. R. 7007.1150 through Minn. R. 7007.1500
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)
Record keeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or 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)
Record keeping: Retain all records at the stationary source 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 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)
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
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
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)
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

Subject Item: SV 005 Day Vac Screen Filter (CE 002)**Associated Items:** EU 003 Blow Chamber #1

EU 004 Blow Chamber #2

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to reduce further to the less stringent limit given in either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
PERFORMANCE TESTING	hdr
Performance Test: due 240 days after Permit Issuance to measure total particulate matter (TSP) emissions.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4
CONTROL EQUIPMENT REQUIREMENTS	hdr
Day Vac Filter (CE 002) Inspection: Once each operating day, visibly inspect the Day Vac Filter for the presence of any screen holes or tears, or the presence of any other impairment of the Day Vac Filter that reduces particulate matter collection efficiency. Record the results of each inspection after completion of the inspection.	Minn. R. 7007.0800, subps. 4 and 5
Corrective Action: If the daily inspection reveals the presence of any holes or tears in any Day Vac Filter screen, or if the Permittee observes any other impairment of the Day Vac Filter that reduces particulate matter collection efficiency, take appropriate corrective action as soon as possible to repair the screen and/or to restore Day Vac Filter collection efficiency. Record all corrective actions taken upon completion of the action.	Minn. R. 7007.0800, subps. 14 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

Subject Item: SV 009 (CE 001 bagfilter and CE 003 thermal oxidizer)**Associated Items:** EU 001 Cupola #1

EU 002 Cupola #2

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to further reduce emissions to the less stringent limit given in either 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 for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.	Minn. R. 7011.0610, subp. 1(A)(2)
Sulfur Dioxide: less than or equal to 371 lbs/hour based on a 1-hour average	Minn. R. 7009.0020-.0080, Ambient Standards for Sulfur Dioxide
CONTROL EQUIPMENT REQUIREMENTS	hdr
Except during periods of breakdown of control equipment, vent all emissions from EU 001 and EU 002 through CE 001 and CE 003.	Minn. R. 7007.0800, subp. 2, Minn. R. 7009.0080, State Ambient Standards for Carbon Monoxide and Hydrogen Sulfide, and 40 CFR 50, National Ambient Air Standards for Carbon Monoxide
CE 003 firebox Temperature: greater than or equal to 1400 degrees F and less than or equal to 1750 degrees F using 3-hour Average	Minn. R. 7007.0800, subp. 14; Minn. R. 7009.0020 and Minn. R. 7009.0080 (Ambient Standards for Carbon Monoxide and Hydrogen Sulfide)
Corrective Action: If during operation of EU 001 and/or EU 002 the CE 003 3-hour block temperature average is outside the permitted range, the Permittee shall take corrective action as soon as possible to restore the temperature to within the required range. The Permittee shall record in a log all corrective actions taken upon completion of each action. The reporting requirements specified under the total facility requirements section, for shutdowns and breakdowns, must also be followed.	Minn. R. 7007.0800, subp. 2 and 5
Maintain pressure drop across the baghouse according to manufacturer's recommended pressure drop range. This pressure drop range shall be listed in the O and M Plan for these units.	Minn. R. 7007.0800, subp. 14
Corrective Action: If during operation of EU 001 and/or EU 002 the baghouse differential pressure drop is outside the permitted range, the Permittee shall take corrective action as soon as possible to restore the pressure drop to within the required range. The Permittee shall record in a log all corrective actions taken upon completion of each action. The reporting requirements specified under the total facility requirements section, for shutdowns and breakdowns, must also be followed.	Minn. R. 7007.0800, subp. 2 and 5
MONITORING	hdr
CE 003 Temperature Monitoring: Install, operate, and maintain a temperature measurement device that continuously measures the operating temperature of CE 003 and determines and records the temperature in 15-minute block averages. Ensure the immediate repair or replacement of the temperature monitoring system (TMS) parts to correct routine or otherwise predictable malfunctions. The TMS shall be installed such that representative measurements of temperature in the firebox are obtained. The TMS shall be installed, operational and the data verified either prior to or in conjunction with conducting the performance tests required in this table.	Minn. R. 7007.0800, subp. 4 and 5; Minn. R. 7017.1000, subp. 1
CE 002 Differential Pressure Monitoring: Operate, and maintain a differential pressure monitoring device that continuously measures the pressure drop across the baghouse, CE002. Differential pressure drop shall be recorded once every 2 hours that the cupolas are in operation.	Minn. R. 7007.0800, subp. 4 and 5
PERFORMANCE TESTING	hdr
Initial Performance Test: due 240 days after Permit Issuance to measure PM, Hydrogen Sulfide (H2S) and Sulfur Dioxide (SO2) emissions.	Minn. R. 7017.2020, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

Subject Item: EU 005 Heating Boiler**Associated Items:** SV 001

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0550
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.	Minn. R. 7011.0515, subp. 2
OPERATING RESTRICTIONS AND MONITORING	hdr
Fuel Restriction: EU 005 fuel is restricted to natural gas only.	Minn. R. 7007.0800, subp. 2
Fuel Type Monitoring: the Permittee shall keep a record log of all fuel types combusted in EU 005. Records shall be entered in the log no less frequently than once each calendar half year.	Minn. R. 7007.0800, subps. 4 and 5

TABLE B: SUBMITTALS

07/21/99

Facility Name: USG Interiors Inc - Red Wing
Permit Number: 04900007 - 001

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

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Computer Dispersion Modeling Results	due 365 days after Permit Issuance	Total Facility
Performance Test Notification (written)	due 30 days before Performance Test	SV005, SV009
Performance Test Plan	due 30 days before Performance Test	SV005, SV009
Performance Test Report - Microfiche Copy	due 105 days after Performance Test	SV005, SV009
Performance Test Report	due 45 days after Performance Test	SV005, SV009
PM10, Hydrogen Sulfide, and NOx Emissions Computer Dispersion Modeling Protocol	due 180 days after Permit Issuance	Total Facility
Testing Frequency Plan	due 60 days after Initial Performance Test. The plan shall specify a testing frequency using the initial PM, H2S and SO2 performance test data and MPCA guidance. Future performance tests based on year (12-month), 36-month, and 60-month intervals, or as applicable shall be required on written approval by MPCA per Minn. R. 7017.2020, subp. 1.	SV009

TABLE B: RECURRENT SUBMITTALS

07/21/99

Facility Name: USG Interiors Inc - Red Wing

Permit Number: 04900007 - 001

What to send	When to send	Portion of Facility Affected
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar half-year following Initial Startup of the Monitor System. The monitor subject to this requirement is the CE 003 Continuous Temperature Monitor. If there were no exceedances in the reporting period, the Permittee shall submit the report indicating that no excess emissions occurred during the reporting period.	SV009
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31.	Total Facility
Compliance Certification	due 31 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, both to the Commissioner, and to the U.S. EPA regional office in Chicago. This report covers all deviations experienced during the calendar year. The EPA copy shall be sent to: Mr. George Czerniak, Chief, Air Enforcement and Compliance Assurance Branch, Air and Radiation Division, EPA Region V, 77 West Jackson Boulevard, Chicago, Illinois 60604.	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

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 04900007-001

This Technical Support Document (TSD) is for all the interested parties of the permit. The purpose of this document is to set forth the legal and factual basis for the permit conditions, including references to the applicable statutory or regulatory provisions.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner and Operator Address	Facility Address (SIC Code: 3296)
USG Interiors Box 4470 Chicago, Illinois 60680-4470	27384 Highway 61 Blvd Red Wing, Minnesota Goodhue County

1.2. Description of the Facility

USG produces mineral wool at its plant in Red Wing. The mineral wool is then sent to other facilities to be made into products such as ceiling tiles. Main emission sources involved in this process are the two cupolas, where the stone and slag are heated and melted with coke, the blow chambers where the melt is spun and blown into wool fibers, and the facility boiler, used for heating the facility when the cupolas are not operating. The boiler is fueled with natural gas. There are also some tanks. All are below the size that would be subject to any federal or state regulation. The tanks are used for storing gasoline, diesel fuel, oxygen, polyethylene glycol, and chain lube. Fugitive particulate matter emission sources are raw material handling and storage and unpaved roads.

1.3 Description of any changes allowed with this permit issuance

No changes are allowed by this permit.

1.4 Description of all amendments issued since the issuance of the last total facility permit and to be included in the Part 70 Permit.

Permit Number and Issuance Date	Action Authorized
04900007-002	Installation of a thermal oxidizer for controlling the cupola CO, H ₂ S, and COS emissions

Permit Action Number:
Date: 3/2/2004

1.5. Facility Emissions:

Table 1. Total Facility Potential to Emit Summary:

EU #	SV#	Emission Unit Description	PM tpy	PM10 tpy	SO2 tpy	NOx tpy	CO tpy	VOC tpy	H ₂ S tpy	Pb tpy	COS	All HAPs tpy
001 002		Cupolas	*104	*104	1625	147	460	0.43	2.06	0.002	4.8	7.5
003 004		Blow Chambers	*295	*295								<1
005		Boiler	0.08	0.08	0.01	1.75	0.37	0.67		neg	<1	<1

	PM tpy	PM10 tpy	SO2 tpy	NOx tpy	CO tpy	VOC tpy	H ₂ S tpy	Pb tpy	COS	All HAPs tpy
Total Facility Limited Potential Emissions*	399	399	1625	149	460	1	2.06	0.002	4.8	7.5

*Calculations based on the state performance standard, rather than emission factors.

Table 2. Facility(TF) and Permit Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	PM, PM10, SO2, CO		NOx, VOC
NAAR (list pollutant)			
Part 70 Permit Program (list pollutant)	PM10, SO2, NOx, CO		VOC

* Refers to potential emissions that are less than those specified as major by 40 CFR 52.21, 40 CFR pt. 51 Appendix S, and 40 CFR pt. 70.

2. Regulatory and/or Statutory Basis

Summary Regulatory and/or Statutory Basis of the Emission or Operational Limit

Permit Action Number:

Date: 3/2/2004

Regulatory Overview of Facility

EU, GRP, or SV #	Applicable Regulations	Comments:
EU001, 002 (SV009)	Minn. R. 7011.0600-.0625 Minn. R. 7009.0020	Standards of Performance for Fossil Fuel Burning Direct Heating Equipment Minnesota Ambient Air Quality Standards for Carbon Monoxide, Sulfur Dioxide, and Hydrogen Sulfide
EU003, 004	Minn R 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment
EU005	Minn. R. 7007.0510	Standards of Performance for Existing Indirect Heating Equipment

3. Technical Information

The control equipment at the facility consists of a baghouse and thermal oxidizer on the cupola, and wall filters on the blow chambers. The combination of the baghouse and thermal oxidizer on the cupola constitutes maximum available control technology under the draft federal NESHAPs regulations that will apply to major facilities of this type (40 CFR 63 Subp. DDD). The cupola, however, because it is a preexisting unit, would not be required under the draft regulation to have more control than just a baghouse. USG voluntarily installed the oxidizer in response to the complaints of neighbors. That installation was done in 1999.

The permit contains requirements to operate that oxidizer, even though no performance standards require it, because USG has performed dispersion modeling that requires the oxidizer temperature and flow rate to show compliance with the ambient standards for CO. (Sulfur dioxide modeling results were scaled to obtain estimates for CO impacts.)

Because the permit does contain a requirement to operate the oxidizer, the potential emissions were calculated assuming the control efficiency of approximately 98 percent of the oxidizer for COS, CO, and H₂S.

Emission Limits Derived From Dispersion Modeling:

Sulfur Dioxide: Dispersion modeling predicts a maximum sulfur dioxide ambient concentration of 1254 ug/m³. Based on the modeling results, the permit contains a sulfur dioxide limit for the cupolas of 371 lb/hour. USG included the emissions from the nearby Northern States Power plant in the modeling, as well as a background concentration of 45 ug/m³. 45 ug/m³ has been found to be a good assumption for sulfur dioxide ambient concentrations in rural Minnesota, and NSP is the only other significant source of sulfur dioxide in the area.

Permit Action Number:
Date: 3/2/2004

Carbon Monoxide: Results from the sulfur dioxide modeling were also used to predict carbon monoxide and hydrogen sulfide ambient concentrations as well, by scaling the results. (See attached calculations.) In order for the cupola stack to cause a violation of ambient standards, the emission rate from the cupolas must be at least as high as 10355 lb CO per hour. AP42 predicts CO emissions of only 250 tons CO per ton of charge, or 5250 lb per hour. Since the manufacturer has stated that the control efficiency of the oxidizer would be 99 percent, the expected emission rate should be about 52.5 lb CO per hour.

Because the expected CO emission rate is so far below that which would cause an ambient violation, no emission limit for CO or stack testing are required. The company is required, however, to operate the oxidizer when the cupola is operating, because the modeling results assume the dispersion characteristics of the oxidizer exhaust, namely high velocity and high temperature.

Hydrogen Sulfide: Without oxidizer operation, potential H₂S emissions are 23.52 lb/hour, which could produce ambient concentrations on an hourly basis of 79.5 ug/m³. The standards are 10 ug/m³, not to be exceeded more than two times per year on a 1/2 hour average, and 42 ug/m³ not to be exceeded more than two times per 5 days on a 1/2 hour average. Because the 1/2 hour average is probably higher than the maximum predicted one hour average that the model gives, there is reason to believe that the ambient standards for H₂S could be violated if the oxidizer does not achieve high enough destruction efficiency. Therefore, the permit contains a requirement for testing for H₂S, a requirement to operate the oxidizer, and a requirement to perform more refined dispersion modeling for that pollutant. That modeling may be used in the future to set a permit limit for H₂S.

4. Conclusion

Based on the information provided by USG Interiors, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 04900007-001 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Jenny L. Reinertsen, Marshall Cole, Dave Vaaler

Attachment: 1. Emission Calculations

Attachment 1, Emission Calculations

DATE : September 2, 1998

TO : USG Interiors, Red Wing Facility File

FROM : Jenny Reinertsen, P.E.
South District
Major Facilities

PHONE : 282-9889

SUBJECT : Emission Calculations for the USG Red Wing Facility

Changes made to the emission calculations submitted by USG:

- Potential particulate emissions in the application for the cupola were calculated using stack test results. The potential emissions should be calculated from the maximum allowed by the applicable performance standard. In this case, that would be the amount allowed by the direct heating equipment performance standard, MR 7011.0610, at maximum capacity. This yields 104 tons particulate allowed from those units per year.
- The emission factor for NO_x from the cupola appears to be the factor given in AP42 in metric units (0.80). The correct factor given in English units is 1.6. This doubles the potential emissions of NO_x from the cupolas. If the same factor was used for calculating actual emissions, then those would be underestimated by a factor of 2 also.
- Like the cupolas, potential particulate emissions from the blow chambers should be calculated using the allowable limit from the applicable performance standards. These calculations yield potential emissions of 295 tons per year.
- Boiler emission calculations were given only a cursory check because they contribute little to overall facility emissions.
- Fugitive particulate emissions calculations, especially those from storage piles may need to be updated using the most recent AP42 calculation methods prior to dispersion modeling.
- Calculations of emissions from material handling also need to be corrected prior to modeling. The calculation method is correct, but the calculations were performed assuming that the material was handled only once at the facility. The calculation for emissions from handling and drop operations should be performed for each time the material is handled in the process. This was not corrected in the application prior to permit issuance because the sources still qualify as insignificant activities even if emissions are increased by a factor of 10 or more.

Permit Action Number:

Date: 3/2/2004