AIR EMISSION PERMIT NO. 00700019- 003

IS ISSUED TO

Norbord Industries Inc.

NORBORD MINNESOTA
4409 Northwood Road Northwest
Solway, Beltrami County, MN 56678

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):

Application Type	Application Date	Permit Number
Total Facility Operating Permit	November 15, 1995	00700019-001
Administrative Amendment	January 12, 2005	00700019-002
Administrative Amendment	June 16 and July 21, 2006	00700019-003

This permit supersedes permit number 00700019-002 and authorizes the Permittee to operate 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; Pt 70/NSR Authorization Administrative Amendment
Issue Date: May 11, 2004 Issue Date: January 26, 2007
Expiration: May 11, 2009
All Title I Conditions do not expire.

Richard J. Sandberg, Manager
Air Quality Permits Section
Industrial Division

for Brad Moore
Commissioner
Minnesota Pollution Control Agency

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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. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

Norbord Industries Inc. (formerly Northwood Panelboard Company) owns and operates an Oriented Strandboard (OSB) manufacturing facility in Beltrami County, Minnesota (Facility). The Facility is located approximately 10 miles west of Bemidji, Minnesota. To produce OSB, logs are sliced into small strands, which are then dried, blended with a phenol-formaldehyde resin and wax mixture, formed into layers, and finally pressed into wood panels. The equipment used for the process consists of two rotary drum dryers with two wood-fired Lamb burners, one flatline conveyor dryer with a Wellons wood-fired burner, one multi-opening board press, two Konus wood-fired burners which are the heat source for the press, and various handling, finishing, and forming processes.

The pollution control equipment and main pollutants of concern from the emission units at the facility are as follows: the two rotary dryers and Lamb burners are sources of particulate matter (PM), particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), and Nitrogen Oxides (NO_x). The

dryers/Lamb burners are currently controlled by an Electrified Filter Bed (EFB) which controls PM. The conveyor dryer and Wellons burner are also sources of PM, PM_{10}, VOC, CO and NO_x. The press is uncontrolled and is primarily a source of VOC. The Konus burners are sources of PM, PM_{10}, VOC, CO and NO_x and are each controlled by multiclones and an EFB. The in-plant particulate sources are generally controlled by baghouses. There are also fugitive particulate sources such as bark and fuel piles and paved and unpaved roads.

Permit action 001 incorporates limits and control requirements resulting from a backwards-PSD analysis performed by the Permittee, as submitted in May 2001 and as updated in July 2002 and January 2003. The Permittee will install a Regenerative Thermal Oxidizer (RTO) on the rotary dryers/Lamb burners, primarily for control of VOC, but also for control of PM and CO. The RTO will be in place following a particulate control device, either a new EFB or a Wet Electrostatic Precipitator (WESP). The WESP or EFB, and RTO are to be installed within 18 months of issuance of this Title V permit. BACT limits for PM, PM_{10}, VOC, CO and NO_x have been established as applicable on the rotary dryers/Lamb burners, Konus burners, board press, and various operations such as sawing and forming which are currently controlled by baghouses. The conveyor dryer system was installed as authorized in a PSD permit issued in 1995.

Administrative Amendment (Action 002): This amendment changes the deadline for submittal of a major amendment following loss of Clean Unit status. The deadline was extended by 120 days.

Administrative Amendment (Action 003): This permit action was initiated by a request from Norbord for a 120-day extension of the performance testing due date for testing NOx emissions from the Konus Burners. This permit action authorizes the 120-extension for this performance test in accordance with Minn. R. 7007.1400, subp. 1(H), moving the due date from October 29, 2006 to February 28, 2007.

The performance testing frequencies for PM, PM10 and CO on the Konus Burners (GP002) were also updated to reflect the new testing frequencies established in the March 2, 2006 letter from the MPCA to Norbord in accordance with Minn. R. 7007.1400, subp. 1(C). The new testing frequencies and test dates are shown in the table below:

Pollutant	New Testing Frequency	Next Test Date
Total Particulate Matter	Every 60 months from most recent test date	October 4, 2010
Particulate Matter < 10 microns	Every 60 months from most recent test date	October 4, 2010
Carbon Monoxide	Every 36 months from most recent test date	Ocotober 4, 2008

This permit action also removes all Clean Unit permit conditions in accordance with Minn. R. 7007.1400, subp. 1(I). The Clean Unit Designation is no longer available as of June 24, 2005.

TABLE A: LIMITS AND OTHER REQUIREMENTS

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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
FACILITY LIMIT	hdr
Process Throughput: greater than or equal to 95 percent using 12-month Rolling Average of hardwood as furnish.	Title I Condition: 40 CFR Section 52.21(j) (BACT limit for EU 012 - press); Minn. R. 7007.3000
Daily Recordkeeping. Once each day of operation, the Permittee shall calculate, record, and maintain the total quantity and type (i.e. hardwood, softwood) of wood furnish used at the facility. This shall be based on usage records.	Title I Condition: Monitoring for BACT limit; Minn. R. 7007.0800. subp. 4 and 5
Monthly Recordkeeping -- Hardwood Furnish Usage. By the 15th of the month, the Permittee shall calculate and record the following: 1) The total usage of furnish, and percentage of hardwood furnish for the previous calendar month using the daily usage records. 2) The 12 month rolling average percentage hardwood furnish usage for the previous 12 month period.	Minn. R. 7007.0800, subp. 4 and 5
ON-SITE ROAD SILT LOADING MEASUREMENT	hdr
1. Within 180 days of permit issuance (5/11/2004), measure the silt loading on the facility's on-site paved roads. Follow the notification and reporting requirements applicable to stack emissions testing given below as part of FC (total facilility) requirements. The measurements shall be made according to the applicable ASTM method, and shall be agreed upon between the Agency and the Permittee prior to the testing. The testing is for information gathering purposes. (Completed) 2. If the measured silt loading is less than or equal to the silt loading assumed in the most recent dispersion modeling analysis on record with the Agency, no further action is required.	Minn. R. 7009
3. If the measured silt loading is more than the silt loading assumed in the most recent dispersion modeling analysis on record, the Permittee shall submit a proposed compliance plan to the Agency within 45 days after the submittal of the silt measurements. The compliance plan will outline the Permittee's proposed plan and timetable and shall be submitted to the Commissioner for approval. The purpose of the plan will be to show compliance with all ambient standards and increments. (Completed) 4. The proposed compliance plan may include additional on-site road silt loading measurements, additional dispersion modeling, and/or mitigative controls (such as sweeping, flushing, vacuuming, etc.).	Minn. R. 7009
MODELING REQUIREMENTS	hdr
Parameters Used in Modeling: The stack heights, emission rates, and other parameters used in the modeling are listed in Appendix C of this permit. The Permittee must submit to the Commissioner for approval any revisions of these parameters and must wait for a written approval before making such changes. The information submitted must include, at a minimum, the locations, heights and diameters of the stacks, locations and dimensions of nearby buildings, the velocity and temperatures of the gases emitted, and the emission rates. The plume dispersion charateristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled as part of this permit. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must remodel.	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000

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For changes that do not involve an increase in an emission rate and that do not require a permit amendment, this proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit. For changes involving increases in emission rates and that require a minor permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit. For changes involving increases in emission rates and that require a permit amendment other than a minor amendment, the proposal must be submitted with the permit application. For any physical change to or change in the method of operation of a stack emitting PM10 or for any increase in PM10 emissions (whether or not the increase would require a permit amendment of any type), the Permittee may be required to remodel, subject to the Agency's approval.	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Property Line Fencing: the Permittee shall maintain the fencing and gates which have previously been installed to enclose the boundaries of the property. The property shall be enclosed with a continuous fence, excluding access points, and shall have installed gates or a guard at each access point, except as described below. The Permittee shall thereafter keep the gates closed unless: 1) A guard is present controlling access at a gate; or 2) Authorized persons are entering or leaving the property through a gate. Access points such as a railroad shall be patrolled and shall be posted with "No Trespassing" signs. The Permittee shall inspect the fencing and gates once per year to ensure compliance with access control. The Permittee shall complete all repairs and maintenance to the fencing and gates as soon as possible but no later than 30 days after the Permittee observes the need for repair or maintenance.	Minn. R. 7007.0800, subp. 2
OPERATIONAL REQUIREMENTS	hdr
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
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)
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)
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
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
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 enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
PERFORMANCE TESTING	hdr
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

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Performance Test Notifications and Submittals: Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements. Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test	Minn. R. 7017.2030, subp. 1-4 and Minn. R. 7017.2035, subp. 1-2
Limits set as a result of a performance test (conducted before or after permit issuance) apply 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 REQUIREMENTS	hdr
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. Within 60 days of issuance of this permit, implement new monitoring requirements and procedures as required by this permit.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission 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)
RECORDKEEPING	hdr
Recordkeeping: 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)
REPORTING/SUBMITTALS	hdr
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. 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

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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
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)
Emission 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.	Minn. R. 7019.3000 through Minn. R. 7019.3010
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095

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Subject Item: **GP 001 Lamb Burners and Dryers**

Associated Items: CE 019 Electrostatic Precipitator - High Efficiency

CE 020 Thermal Oxidizer

CE 023 Electrostatic Precipitator - High Efficiency

CE 024 Thermal Oxidizer

CE 025 Thermal Oxidizer

EU 001 Face Dryer/Lamb Burner

EU 002 Core Dryer/Lamb Burner

EU 004 Face Burner 1 (backup burner)

EU 005 Core Burner 2 (backup burner)

What to do	Why to do it
LIMITS	hdr
Total Particulate Matter: less than or equal to 0.49 lbs/ton of oven dried product. This is more stringent than limit in Minn. R. 7011.0610, subp 1(A), which also applies.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 12.2 lbs/hour	Title I Condition: 40 CFR Section 52.21(m) (modeling); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 0.49 lbs/ton of oven dried product.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
Carbon Monoxide: less than or equal to 32.4 lbs/hour	Title I Condition: 40 CFR Section 52.21 (m) (modeling); Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 1.3 lbs/ton of oven dried product.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 25 lbs/hour	Title I Condition: 40 CFR Section 52.21 (m) (modeling); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 1.0 lbs/ton of oven dried product.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.59 lbs/ton of oven dried product. The VOC limit is on an "as VOC basis", and is to be measured using the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input . The PTE of this unit is 2.2 lb/hr.	Minn. R. 7011.0610, subp. 2(B)(1)
Fuel Usage: limited to hog fuel (bark, wood, trims and dust collected from baghouses), propane, natural gas, and up to 150 lb/hr (monthly average) of the total fuel combusted may consist of manufacturing residue. Cellulose based sorbents and alternate biomass fuels may be combusted subject to the approval by the MPCA.	Minn. R. 7007.0800, subp. 2
Manufacturing residue: The manufacturing residue must be generated on site and may consist of the following: wood flake resin and wax accumulations cleaned from equipment, water-based paint residues from edgesealing and stenciling operations, WESP effluent and sludges, confidential office records (paper) and corrugated cardboard unsuitable for recycling. In addition, the manufacturing residue shall not contain any of the following: any hazardous waste listed in Minn. R. 7045.0135, any wastes specified in Minn. R. 7045.0131 as hazardous, or batteries or any other material where mercury has been purposely introduced. Absorbent material from spills containing oil, anti-freeze, water-based paints, or soy or water-based ink may be combusted. The spilled material other than oil shall not contain: any hazardous waste listed in Minn. R. 7045.0135 or any wastes specified in Minn. R. 7045.01313 as hazardous. The oil in any absorbent material shall only be on-specification used oil.	Minn. R. 7007.0800, subp. 2

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Biomass Fuel Usage: The Permittee may use specific biomass fuel subject to approval from the MPCA. "Biomass" means the materials define in Minn. Stat. Section 216C.051, subd. 7, including herbaceous crops, trees, agricultural waste, and aquatic plant matter, and excluding mixed municipal solid waste as defined in Minn. Stat. Section 115A.03. For each biomass fuel type, the Permittee may initiate a trial period consisting of no more than 90 days where that type of fuel is combusted. In order to continue operation with this type of fuel, the Permittee shall submit a proposal, subject to MPCA written approval, providing details of the new fuel (such as proximate and ultimate analysis), the method of introduction into the combustion chamber and an estimate of the change in emissions of regulated pollutants. If the emissions change is uncertain, or an increase in emissions is indicated, the Permittee shall include a schedule for performance testing in the proposal.	Minn. R. 7007.0800, subp. 2
CONTROL EQUIPMENT - EFB	hdr
Initial Startup: due 540 days after 05/11/2004 New EFBs (if installed)	Title I Condition: to meet BACT limit; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1.0 inches of water column and less than or equal to 9.0 inches of water column across the EFB, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3, based on the range recorded during the most recent MPCA approved performance test where compliance for PM and/or PM10 emissions was demonstrated. If the pressure drop falls outside the range, this shall be reported as a deviation.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 2 and 14
EFB Bed Voltage: greater than or equal to 5.0 kV, unless a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the minimum bed voltage recorded during the most recent MPCA approved performance test where compliance for PM and/or PM10 emissions was demonstrated. If the EFB bed voltage falls below the minimum, this shall be reported as a deviation.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 2 and 14
EFB Ionizer Voltage: greater than or equal to 15.0 kV, unless a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the minimum EFB ionizer voltage recorded during the most recent MPCA approved performance test where compliance for PM and/or PM10 emissions was demonstrated. If the EFB ionizer voltage falls below the minimum, this shall be reported as a deviation.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop and EFB Bed Voltage and EFB Ionizer Voltage. Once each day while in operation, the Permittee shall monitor and record the pressure drop, bed voltage and ionizer voltage. The Permittee shall record the time and date of each pressure drop, bed voltage, and ionizer voltage reading and whether or not the recorded measurement was within the range specified in this permit.	Title I Condition: Monitoring for BACT limit; Minn. R. 7007.0800, subp. 4 and 5
CONTROL EQUIPMENT - RTO	hdr
Initial Startup: due 540 days after 05/11/2004 RTO	Title I Condition: to meet BACT limit; Minn. R. 7007.3000
Temperature: greater than or equal to 1450 degrees F using 3-hour Average (block) at the Combustion Chamber unless a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent MPCA approved performance test where compliance for VOC emissions was demonstrated. If the three-hour block average temperature drops below the minimum temperature limit, the VOC used during that time shall be considered uncontrolled until the average minimum temperature limit is once again achieved. This shall be reported as a deviation.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 2 and 14
CONTROL EQUIPMENT	hdr
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Volatile Organic Compounds: greater than or equal to 90 percent control efficiency	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter and Particulate Matter < 10 micron: greater than or equal to 90 percent control efficiency	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000
The Permittee shall operate and maintain the control equipment (electrified filter bed (EFB) and thermal oxidizer (RTO)) any time that any process equipment controlled by the control equipment is in operation. The Permittee intends to install three RTOs, but will generally use any two at a time, with the third one available as back-up. All monitoring, inspection requirements, etc. will be identical for all three RTOs. Performance testing will be conducted with two RTOs on line, to verify proper operation with two RTOs.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 4, 5 and 14
MONITORING	hdr
The Permittee shall maintain a continuous hard copy readout or electronic file of the temperature readings and calculated three hour block average temperatures for the combustion chamber.	Title I Condition: Monitoring for BACT limit

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Daily Monitoring: The Permittee shall physically check the temperature recording device for the thermal oxidizer and any other recording device used for monitoring of control equipment as required by the permit at least once each operating day to verify that it is working and recording properly.	Minn. R. 7007.0800, subp. 4 and 5
Monitoring Equipment: The Permittee shall install and maintain thermocouples for the thermal oxidizer to conduct temperature monitoring required by this permit. The Permittee shall install and maintain equipment for monitoring number of fields on line for the electrostatic precipitators and for monitoring the presence of quench water flow. The Permittee shall install and maintain equipment for monitoring EFB pressure drop, bed voltage and ionizer voltage. The monitoring equipment must be installed, in use, and properly maintained whenever operation of the monitored control equipment is required. The Permittee shall maintain and operate a thermocouple monitoring device that continuously indicates and records the combustion chamber temperature of the thermal oxidizer. The Permittee shall maintain and operate monitoring devices to continuously indicate the EFB pressure drop, bed voltage and ionizer voltage.	Minn. R. 7007.0800, subp. 4 and 5
Quarterly Inspections: At least once per calendar quarter, the Permittee shall inspect the control equipment external system components, including but not limited to the electrical systems. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Inspections: At least once per calendar year, the Permittee shall inspect the control equipment internal system components, including but not limited to the refractory and heat exchanger systems of the thermal oxidizer. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Calibration: The Permittee shall calibrate the temperature monitor at least annually and shall maintain a written record of the calibration and any action resulting from the calibration.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: If the temperature is below the minimum specified by this permit or if the thermal oxidizer or any of its components are found during the inspections to need repair, the Permittee shall take corrective action as soon as possible. Corrective actions shall return the temperature to at least the permitted minimum and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the thermal oxidizer. The Permittee shall keep a record of the type and date of any corrective action taken.	Minn. R. 7007.0800, subp. 4, 5, and 14
The Permittee shall operate and maintain the thermal oxidizer in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
PERFORMANCE TESTING	hdr
Performance Test: due 180 days after Initial Startup of thermal oxidizers to determine opacity and total particulate matter, particulate matter < 10 microns, carbon monoxide, nitrogen oxides, and volatile organic compound emissions. VOC emissions shall be measured in accordance with the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Title I Condition: Monitoring for BACT limits
RECORDKEEPING	HDR
Recordkeeping: - Production rate: On each day of operation, the Permittee shall calculate, record, and maintain the production rate in ODT/hr for the previous calendar day. This shall be based on written production logs.	Title I Condition: Monitoring for Clean Unit Designation; Minn. R. 7007.0800. subp. 4 and 5
Daily Recordkeeping: On each day of operation, the Permittee shall calculate, record, and maintain records of, the total weight of manufacturing residue, absorbent material or biomass fed to the burner fuel stream.	Title I Condition: Monitoring for Title I Condition (40 CFR 52.21) and Minn. R. 7007.3000); Minn. R. 7007.0800. subp. 4 and 5
Monthly Recordkeeping - Within 15 days of the end of the month, the Permittee shall calculate and record the average hourly feed rate of manufacturing residue and absorbent material burned in the boilers for the previous month. This feed rate in lb/hr shall be compared to the limit.	Minn. R. 7007.0800, subp. 4 and 5

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

Subject Item: **GP 002 Konus Burners**

Associated Items: CE 014 Electrified Filter Bed

CE 015 Electrified Filter Bed

EU 007 Konus Burner 1

EU 008 Konus Burner 2

What to do	Why to do it
LIMITS	hdr
Total Particulate Matter: less than or equal to 0.21 lbs/million Btu heat input . This is more stringent than limit in Minn. R. 7011.0610, subp 1(A), which also applies.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 8.4 lbs/hour	Title I Condition: 40 CFR Section 52.21 (m) (modeling); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 0.21 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
Carbon Monoxide: less than or equal to 44 lbs/hour	Title I Condition: 40 CFR Section 52.21 (m) (modeling); Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 1.1 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 12 lbs/hour	Title I Condition: 40 CFR Section 52.21 (m) (modeling); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.30 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.26 lbs/million Btu heat input . The VOC limit is based on using Method 25A, measured as propane.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 4.0 million Btu's/hour . The PTE of this unit is 2.2 lb/hr.	Minn. R. 7011.0610, subp. 2(B)(1)
Fuel Usage: Fuel Usage: limited to hog fuel (bark, wood, trims and dust collected from baghouses), propane, natural gas, and up to 150 lb/hr (monthly average) of the total fuel combusted may consist of manufacturing residue. Cellulose based sorbents and alternate biomass fuels may be combusted subject to the approval by the MPCA.	Minn. R. 7007.0800, subp. 2
Manufacturing residue: The manufacturing residue must be generated on site and may consist of the following: wood flake resin and wax accumulations cleaned from equipment, water-based paint residues from edgesealing and stenciling operations, WESP effluent and sludges, confidential office records (paper) and corrugated cardboard unsuitable for recycling. In addition, the manufacturing residue shall not contain any of the following: any hazardous waste listed in Minn. R. 7045.0135, any wastes specified in Minn. R. 7045.0131 as hazardous, or batteries or any other material where mercury has been purposely introduced. Absorbent material from spills containing oil, anti-freeze, water-based paints, or soy or water-based ink may be combusted. The spilled material other than oil shall not contain: any hazardous waste listed in Minn. R. 7045.0135 or any wastes specified in Minn. R. 7045.01313 as hazardous. The oil in any absorbent material shall only be on-specification used oil.	Minn. R. 7007.0800, subp. 2
Biomass Fuel Usage: The Permittee may use specific biomass fuel subject to approval from the MPCA. "Biomass" means the materials define in Minn. Stat. Section 216C.051, subd. 7, including herbaceous crops, trees, agricultural waste, and aquatic plant matter, and excluding mixed municipal solid waste as defined in Minn. Stat. Section 115A.03. For each biomass fuel type, the Permittee may initiate a trial period consisting of no more than 90 days where that type of fuel is combusted. In order to continue operation with this type of fuel, the Permittee shall submit a proposal, subject to MPCA written approval, providing details of the new fuel (such as proximate and ultimate analysis), the method of introduction into the combustion chamber and an estimate of the change in emissions of regulated pollutants. If the emissions change is uncertain, or an increase in emissions is indicated, the Permittee shall include a schedule for performance testing in the proposal.	Minn. R. 7007.0800, subp. 2
CONTROL EQUIPMENT	hdr
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter and Particulate Matter < 10 micron: greater than or equal to 95 percent control efficiency	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000

Facility Name: Norbord Minnesota

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Pressure Drop: greater than or equal to 1.0 inches of water column and less than or equal to 6.0 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3, based on the values recorded during the most recent MPCA approved performance test where compliance was demonstrated. The Permittee shall record the pressure drop once every 24 hours when in operation. This is the pressure drop across the bed of the EFB.	Title I Condition: Monitoring for PM, PM10 BACT limits; Minn. R. 7007.0800, subp. 2 and 14
EFB Bed Voltage: greater than or equal to 5.0 kV, unless a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the minimum bed voltage recorded during the most recent MPCA approved performance test where compliance for PM and/or PM10 emissions was demonstrated. If the EFB bed voltage falls below the minimum, this shall be reported as a deviation.	Title I Condition: Monitoring for PM, PM10 BACT limits; Minn. R. 7007.0800, subp. 2 and 14
EFB Ionizer Voltage: greater than or equal to 15.0 kV, unless a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the minimum EFB ionizer voltage recorded during the most recent MPCA approved performance test where compliance for PM and/or PM10 emissions was demonstrated. If the EFB ionizer voltage falls below the minimum, this shall be reported as a deviation.	Title I Condition: Monitoring for PM, PM10 BACT limits; Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop and EFB Bed Voltage and EFB Ionizer Voltage. Once each day while in operation, the Permittee shall monitor and record the pressure drop, bed voltage and ionizer voltage. The Permittee shall record the time and date of each pressure drop, bed voltage, and ionizer voltage reading and whether or not the recorded measurement was within the range specified in this permit.	Title I Condition: Monitoring for PM, PM10 BACT limits; Minn. R. 7007.0800, subp. 4 and 5
The Permittee shall operate and maintain the EFB at all times that any emission unit controlled by the EFB is in operation.	Title I Condition: BACT limit; Minn. R. 7007.0800, subp. 2 and 14
Quarterly Inspections: At least once per calendar quarter, the Permittee shall inspect the control equipment external system components, including but not limited to the electrical systems. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Inspections: At least once per calendar year, the Permittee shall inspect the control equipment internal system components. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop, EFB bed voltage or EFB ionizer voltage is outside the required operating range; or - the EFB or any of its components are found during the inspections to need repair. Corrective actions shall return the recorded parameter to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the EFB. The Permittee shall keep a record of the type and date of any corrective action taken for each EFB.	Minn. R. 7007.0800, subp. 4, 5, and 14
PERFORMANCE TESTING	hdr
Performance Test: due before end of each year starting 02/28/2007 to measure emision rate of nitrogen oxides. The next test is due February 28, 2007, and every 12 months thereafter. This administrative amendment grants a 120 day extension, the test was previously due October 29, 2006	Title I Condition: Monitoring for BACT limits; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each 60 months starting 10/04/2005 to measure emision rate of total particulate matter and particulate matter < 10 microns. The next test is due October 4, 2010 and every 60 months thereafter.	Title I Condition: Monitoring for BACT limits; MInn. R. 7017.2020, subp. 1
Performance Test: due before end of each 36 months starting 10/29/2005 to measure emission rates of carbon monoxide. The next test is due October 4, 2008, and every 36 months thereafter.	Title I Condition: Monitoring for BACT limits; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each 60 months starting 10/29/2004 to measure emission rate of volatile organic compounds. The next test is due October 29, 2009, and every 60 months thereafter.	Title I Condition: Monitoring for BACT limits; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each 60 months starting 10/29/2004 to measure opacity. The next test is due October 29, 2009, and every 60 months thereafter.	Minn. R. 7017.2020, subp. 1
RECORDKEEPING	hdr
Daily Recordkeeping: On each day of operation, the Permittee shall calculate, record, and maintain records of, the total weight of manufacturing residue, absorbent material or biomass fed to the burner fuel stream.	Title I Condition: Monitoring for Title I Condition (40 CFR 52.21) and Minn. R. 7007.3000); Minn. R. 7007.0800. subp. 4 and 5
Monthly Recordkeeping - Within 15 days of the end of the month, the Permittee shall calculate and record the average hourly feed rate of manufacturing residue and absorbent material burned in the boilers for the previous month. This feed rate in lb/hr shall be compared to the limit.	Minn. R. 7007.0800, subp. 4 and 5

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

Subject Item: **GP 003 Conveyor Dryer System**

Associated Items: CE 002 Electrostatic Precipitator - High Efficiency

CE 021 Centrifugal Collector - High Efficiency

CE 022 Centrifugal Collector - High Efficiency

EU 003 Wellons Burner

EU 020 Conveyor Zone 1, 2 & 3

SV 017

SV 018

What to do	Why to do it
LIMITS	hdr
Total Particulate Matter: less than or equal to 8.3 lbs/hour	Title I Condition: 40 CFR Section 52.21(k) (modeling); Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.10 lbs/million Btu heat input . The BACT limit is the same as the NSPS limit (40 CFR pt. 60, subp. Dc), which also applies.	Title I Condition: 40 CFR Section 52.21(j) (BACT limit); 40 CFR pt. 60, subp. Dc; Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 8.3 lbs/hour	Title I Condition: 40 CFR Section 52.21(k) (modeling); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 0.10 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT limit); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 22.4 lbs/hour	Title I Condition: 40 CFR Section 52.21(k) (modeling); Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.27 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT limit); Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 20.7 lbs/hour	Title I Condition: 40 CFR Section 52.21(k) (modeling); Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.25 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) (BACT limit); Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.16 lbs/million Btu heat input . The VOC limit is on an "as VOC basis", and is to be measured using the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Title I Condition: 40 CFR Section 52.21(j) (BACT limit); Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity , except for one 6-minute period per hour of not more than 27 percent opacity. This limit does not apply during periods of startup, shutdown, or malfunction.	40 CFR pt. 60.43c(c)
Fuel Usage: limited to hog fuel (bark, wood, trims and dust collected from baghouses), propane, natural gas, and up to 150 lb/hr (monthly average) of the total fuel combusted may consist of manufacturing residue. Cellulose based sorbents and alternate biomass fuels may be combusted subject to the approval by the MPCA.	Minn. R. 7007.0800, subp. 2
Manufacturing residue: The manufacturing residue must be generated on site and may consist of the following: wood flake resin and wax accumulations cleaned from equipment, water-based paint residues from edgesealing and stenciling operations, WESP effluent and sludges, confidential office records (paper) and corrugated cardboard unsuitable for recycling. In addition, the manufacturing residue shall not contain any of the following: any hazardous waste listed in Minn. R. 7045.0135, any wastes specified in Minn. R. 7045.0131 as hazardous, or batteries or any other material where mercury has been purposely introduced. Absorbent material from spills containing oil, anti-freeze, water-based paints, or soy or water-based ink may be combusted. The spilled material other than oil shall not contain: any hazardous waste listed in Minn. R. 7045.0135 or any wastes specified in Minn. R. 7045.01313 as hazardous. The oil in any absorbent material shall only be on-specification used oil.	Minn. R. 7007.0800, subp. 2

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Biomass Fuel Usage: The Permittee may use specific biomass fuel subject to approval from the MPCA. "Biomass" means the materials define in Minn. Stat. Section 216C.051, subd. 7, including herbaceous crops, trees, agricultural waste, and aquatic plant matter, and excluding mixed municipal solid waste as defined in Minn. Stat. Section 115A.03. For each biomass fuel type, the Permittee may initiate a trial period consisting of no more than 90 days where that type of fuel is combusted. In order to continue operation with this type of fuel, the Permittee shall submit a proposal, subject to MPCA written approval, providing details of the new fuel (such as proximate and ultimate analysis), the method of introduction into the combustion chamber and an estimate of the change in emissions of regulated pollutants. If the emissions change is uncertain, or an increase in emissions is indicated, the Permittee shall include a schedule for performance testing in the proposal.	Minn. R. 7007.0800, subp. 2
Production: less than or equal to 37550 lbs/hour using 8-hour Block Average (Production of Oven Dried Strands). This limit will be amended as specified in Minn. R. 7017.2025, upon completion of each subsequent performance test.	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3
Oven Dried Strand Production: less than 35000 lbs/hour using 30-day Rolling Average	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000
Daily Recordkeeping. At least once each 8-hour discrete block of each day of operation, the Permittee shall record the total quantity of oven dried strands produced in the conveyor-dryer system. This shall be based on production records. The Permittee, on each day of operation shall then calculate and record the following: 1) The total oven dried strand production for the previous calendar month using the daily production records. 2) The 30-day rolling average production for the previous 30-day period. 3) The 8-hour block average for each of the 8-hour blocks of the previous day.	Title I Condition: Monitoring for production limit; Minn. R. 7007.0800. subp. 4 and 5
CONTROL EQUIPMENT	hdr
The Permittee shall operate and maintain the control equipment (ESP) such that it achieves an overall control efficiency on the Wellons Burner for Total Particulate Matter and Particulate Matter < 10 micron: greater than or equal to 95 percent control efficiency	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000
Number of Fields on Line (for WESP): Greater than or equal to two, unless a new minimum is set based on the most recent MPCA-approved performance test where compliance for PM and PM10 emissions was demonstrated. If the number of fields on line falls outside the range, this shall be reported as a deviation.	Title I Condition: To meet BACT limit; Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Number of Fields On Line. Once each day while in operation, the Permittee shall monitor and record the number of fields on line. The Permittee shall record the time and date of each reading and whether or not the recorded measurement was within the range specified in this permit.	Minn. R. 7007.0800, subp. 4 and 5
Quarterly Inspections: At least once per calendar quarter, the Permittee shall inspect the control equipment's external system components. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Annual Inspections: At least once per calendar year, the Permittee shall inspect the control equipment's internal system components. The Permittee shall maintain a written record of the inspection and any corrective actions taken resulting from the inspection.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: If the ESP or any of its components are found during the inspections to need repair, the Permittee shall take corrective actions as soon as possible. Corrective actions shall include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the ESP. The Permittee shall keep a record of the type and date of any corrective action taken.	Minn. R. 7007.0800, subp. 4, 5, and 14
The Permittee shall operate and maintain the ESP in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
PERFORMANCE TESTING	hdr
Initial Performance Test: due 1095 days after 05/11/2004 to measure Total Particulate Matter; Particulate Matter less than 10 microns; Volatile Organic Compounds; Nitrogen Oxides; and Carbon Monoxide emissions. VOC emissions shall be measured in accordance with the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Minn. R. 7017.2020, subp. 1

Facility Name: Norbord Minnesota

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Performance Test: due before end of each 60 months following Initial Performance Test to measure Total Particulate Matter, Particulate Matter less than 10 microns, Volatile Organic Compounds and Carbon Monoxide emissions. VOC emissions shall be measured in accordance with the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Minn. R. 7017.2020, subp. 1
COMS	hdr
The owner or operator shall install, calibrate, maintain, and operate a COMS for measuring the opacity of emissions discharged to the atmosphere, and record the output of the system. The COMS is used to measure opacity from EU 003 (Wellons Burner).	40 CFR Section 60.47c(a); Minn. R. 7011.0570; Minn. R. 7017.1006
The span value of the COMS shall be between 60 and 80 percent.	40 CFR Section 60.47c(b); Minn. R. 7011.0570
COMS Daily Calibration Drift (CD) Check: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) opacity at least once daily. The COMS must be adjusted whenever the calibration drift (CD) exceeds twice the specification of PS-1 of 40 CFR 60, Appendix B.	Minn. R. 7017.1210, subp. 2; 40 CFR Section 60.13(d)
COMS Calibration Error Audit: due before end of each calendar half-year following Permit Issuance. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Filter values used shall correspond to approximately 11%, 20%, and 37% opacity.	Minn. R. 7017.1210, subp. 3
COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar half-year following COMS Calibration Error Audit.	Minn. R. 7017.1220
All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data for each successive 6-minute period.	Minn. R. 7017.1200, subp. 1, 2 & 3; 40 CFR Section 60.13(e)(1); 40 CFR Section 60.13(h)
Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130
QA Plan Required: Develop and implement a written quality assurance plan which covers each COMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain the written procedures listed in Minn. R. 7017.1210, subp. 1.	Minn. R. 7017.1210
RECORDKEEPING	hdr
Daily Recordkeeping: On each day of operation, the Permittee shall calculate, record, and maintain records of, the total weight of manufacturing residue, absorbent material or biomass fed to the burner fuel stream.	Title I Condition: Monitoring for Title I Condition (40 CFR 52.21) and Minn. R. 7007.3000); Minn. R. 7007.0800. subp. 4 and 5
Monthly Recordkeeping - Within 15 days of the end of the month, the Permittee shall calculate and record the average hourly feed rate of manufacturing residue and absorbent material burned in the boilers for the previous month. This feed rate in lb/hr shall be compared to the limit.	Minn. R. 7007.0800, subp. 4 and 5

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

Subject Item: **GP 004 Baghouses**

Associated Items: CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 005 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 006 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 009 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

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

CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
LIMITS	hdr
Total Particulate Matter: less than or equal to 0.004 grains/dry standard cubic foot . This applies separately to each baghouse/stack. This is more stringent than limit in Minn. R. 7011.0715, subp. 1(A), which also applies to each individual emission unit.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 0.004 grains/dry standard cubic foot . This applies separately to each baghouse/stack. In addition, the following limit applies to each emission unit/baghouse/stack: CE 004: 1.5 lb/hr CE 005: 1.5 lb/hr CE 006: 0.091 lb/hr CE 007: 0.75 lb/hr CE 008: 0.78 lb/hr CE 009: 0.65 lb/hr CE 010: 0.16 lb/hr CE 016: 0.16 lb/hr	Title I Condition: 40 CFR Section 52.21(j) (BACT) and 40 CFR Section 52.21(m) (modeling); Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
MONITORING	hdr
Visible Emissions: The Permittee shall check each fabric filter stack (SV 004, SV 005, SV 006, SV 007, SV 008, SV 009, SV 010 and SV 011) for any visible emissions once each day of operation during daylight hours. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation, in lieu of the visible emissions observation.	Title I Condition: Monitoring for BACT Limit (40 CFR Section 52.21); Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping of Visible Emissions and Pressure Drop. The Permittee shall record the time and date of each visible emission inspection and pressure drop reading, and whether or not any visible emissions were observed, and whether or not the observed pressure drop was greater than or equal to 0.1" water.	Title I Condition: Monitoring for BACT Limit (40 CFR Section 52.21); Minn. R. 7007.0800, subp. 4 and 5
CONTROL EQUIPMENT	hdr
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter and Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Title I Condition: 40 CFR Section 52.21; Minn. R. 7007.3000
The Permittee shall operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation.	Title I Condition: BACT Limit (40 CFR Section 52.21); Minn. R. 7007.0800, subp. 2 and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5 and 14
PERFORMANCE TESTING	hdr

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

Performance Test: due before end of each 60 months starting 10/29/2004 to measure total particulate matter, particulate matter < 10 microns, and opacity. The Permittee shall select three representative stacks/baghouses for testing. The next test is due October 29, 2009, and every 60 months thereafter.	Minn. R. 7017.2020, subp. 1

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

Subject Item: **EU 012 Board Press**

Associated Items: SV 012

What to do	Why to do it
LIMITS	hdr
Total Particulate Matter: less than or equal to 15 lbs/hour . This is more stringent than limit in Minn. R. 7011.0715, subp. 1(A), which also applies.	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 15 lbs/hour	Title I Condition: 40 CFR Section 52.21(j) (BACT) and 40 CFR Section 52.21(m) (modeling); Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Volatile Organic Compounds: less than or equal to 30.9 lbs/hour . The VOC limit is on an "as VOC basis", and is to be measured using the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit).	Title I Condition: 40 CFR Section 52.21(j) (BACT); Minn. R. 7007.3000
PERFORMANCE TESTING	hdr
Performance Test: due before end of each 36 months starting 10/29/2004 to measure total particulate matter, particulate matter < 10 microns, and volatile organic compounds emissions. VOC emissions shall be measured in accordance with the draft Oregon "Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry" (attached as Appendix D to this permit). The next test is due October 29, 2007, and every 36 months thereafter.	Title I Condition: Monitoring for BACT limits; Minn. R. 7017.2020, subp. 1

TABLE B: SUBMITTALS

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

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:

AQ Permit Technical Advisor
Industrial 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:

AQ Compliance Tracking Coordinator
Industrial 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

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of new EFBs and RTOs. Submit the name and number of the control device and the actual date of initial startup of the control device. This notification shall also state the effective and expiration dates of the Clean Unit Designation.	GP001
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of the RTOs.	GP001
Testing Frequency Plan	due 60 days after Initial Performance Test for nitrogen oxides. The plan shall specify a testing frequency based on the test data, variability of past test results, and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 intervals, or as applicable, shall be required upon written approval of the MPCA.	GP003
Testing Frequency Plan	due 60 days after Performance Test for opacity and total particulate matter, particulate matter < 10 microns, carbon monoxide, nitrogen oxides, and volatile organic compound emissions. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	GP001

TABLE B: RECURRENT SUBMITTALS

Facility Name: Norbord Minnesota

Permit Number: 00700019 - 003

What to send	When to send	Portion of Facility Affected
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter starting 05/11/2004 (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	GP003
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 05/11/2004 . 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. If no deviations have occured, the Permittee shall submit the report stating no deviations.	Total Facility
Compliance Certification	due 31 days after end of each calendar year starting 05/11/2004 (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

APPENDIX B
Insignificant Activities and Applicable Requirements
Facility Name: Norbord Minnesota
Permit Number: 00700019-003

Under Minn. R. 7007.1250, subp. 1(A), the Permittee may add insignificant activities to the stationary source throughout the term of the permit without getting permit amendments. Certain exclusions apply and are listed in Minn. R. 7007.1250, subp. 2.

The following sources at the Permittee's facility qualify as insignificant activities under Minn. R. 7007.1300, subps. 2, 3 and 4 and are not required to be listed in the permit.

Minn. R. 7007.1300, subp.	Rule Description of the Activity	General Applicable Requirement
3(A)	Fuel use: space heaters fueled by, kerosene, natural gas, or propane. *Norbord Minneosta has natural gas-fired space heaters*	Minn. R. 7011.0515 (PM and opacity)
3(D)(2)	Equipment venting PM/PM_{10} inside a building, provided that emissions from the equipment are filtered through an air cleaning system and vented inside of the building 100% of the time. *Norbord Minnesota has <?>*	Minn. R. 7011.0715 (PM and opacity)
3(H)(3)	Hydraulic fluid storage tanks.	Minn. R. 7011.0715 (PM and opacity)
3(H)(4)	Brazing, soldering or welding equipment.	Minn. R. 7011.0715 (PM and opacity)
3(H)(5)	Blueprint copiers and photographic processes.	Minn. R. 7011.0715 (PM and opacity)
3(H)(6)	Equipment used exclusively for melting or application of wax. *Norbord Minnesota has slack wax tanks.*	Minn. R. 7011.0715 (PM and opacity)
3(J)	Fugitive emissions from roads and parking lots.	Minn. R. 7011.0105 (opacity)
4(B)	Emission units with potential emissions of less than 2.28 lb/hr or actual emissions of less than 1.0 lb/hr of PM, PM_{10}, NO_x, SO_2, and VOCs. *Emission units that Norbord Minnesota has that qualify under this subpart include:* • *Cold cleaner parts washers* • *Standby generators*	Minn. R. 7011.0715 (PM and opacity)

APPENDIX C

Modeling Parameters (as of 5/20/03)

Facility Name: Norbord Minnesota

Permit Number: 00700019-003

ID	Description	Stack Height (ft)	Stack Temp. (°F)	Flow Rate (acfm)	Stack Diam. (ft)	NO_x (lb/hr)	CO (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)
GP 001	Rotary Dryer/Lamb Burner/WESP/RTO	150	220	110,000	5.67	25.0	32.4	15.0	2.2
EU 003	Wellons Burner	117	395	56,150	5.46	22.33	20.68	4.98	8.27
GP 002	Konus Burners	80	350	46,839	4.00	12.01	80.00	10.00	1.00
EU 014	Konus EFB Rock Clean 1 - Baghouse	15	109	4000	0.75	--	--	0.16	--
EU 015	Konus EFB Rock Clean 2 - Baghouse	15	109	4000	0.75	--	--	0.16	--
SV 006	Rough Cut Saw - Baghouse	15	80.3	Non-buoyant release		--	--	1.50	--
SV 007	Final Trim Saw – Baghouse	15	80.3	Non-buoyant release		--	--	1.50	--
SV 008	Rough and Final Trim Saw - Baghouse	13	80.3	Non-buoyant release		--	--	0.09	--
SV 009	Sander Tongue & Groove - Baghouse	14	78.5	Non-buoyant release		--	--	0.75	--
SV 010	Face & Core Dryer, EFB Rock Clean - Baghouse	60	125.3	Non-buoyant release		--	--	0.65	--
SV 011	Board Forming - Baghouse	12	78.5	Non-buoyant release		--	--	0.78	--
EU 012	Board Press	110	116	120,000	8.00	--	--	15.00	--
SV 017	Conveyor Dryer – Zone 1	65	170	23,500	2.7	--	--	1.66	--
SV 018	Conveyor Dryer- Zone 2 & 3	65	180	31,600	2.9	--	--	1.66	--

APPENDIX D

Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry

Facility Name: Norbord Minnesota
Permit Number: 00700019-003

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Guidance for Evaluating VOC Emissions from Drying and Hot-Pressing Activities Common to the Wood Products Industry

1. Purpose

The purpose of this document is to provide guidance to Source Test Coordinators on evaluating VOC testing strategies, calculating VOC emissions, and correcting existing VOC emissions testing data; provide guidance to permit writers on modifying permits in order to implement this new VOC testing strategy; and to provide guidance to permit writers and inspectors on making compliance determinations during the above permit modifications and in the interim period prior to permit modifications.

2. Applicability

The provisions of this guidance document apply to permitted facilities that dry wood (excluding dry kilns) and/or press resin-impregnated or adhesive-containing wood materials together under heat and pressure. These facilities include but are not limited to:

- Particle Board Facilities
- Medium Density Fiberboard Facilities
- Hardboard Facilities
- Plywood Manufacturing Facilities
- Veneer Drying Facilities
- Oriented Strand Board Facilities

3. Background

Recognizing there wasn't a perfect solution to quantifying VOC emissions from the wood products industry in Oregon, yet recognizing the need for a reasonable and consistent approach, ODEQ chose to quantify VOC emissions based on the carbon content of the VOC measured by Method 25A.

During EPA's enforcement actions in the Wood Products Initiative, EPA quantified VOC emissions by adjusting Method 25A data, correcting for a mass-to-carbon ratio of 1.13 (terpenes) and by applying a sample moisture correction factor.

In December of 2000, the EPA responded to an ODEQ inquiry regarding the calculation of VOC emissions. Within the EPA response, the total mass of VOCs was defined two ways:

> *For the purpose of major source or major modification determinations (and similarly for Title V applicability), emissions must be calculated as the total mass of VOCs (an "as VOC" basis). Expressing VOC emissions in any other way (e.g. as carbon) may underestimate the quantity of VOCs being emitted and thereby result in erroneous major source/modification determinations.*

However, for the purposes of determining compliance with source category specific emission limits or performance standards, VOCs may be expressed according to the test methods in the approved State Implementation Plan or 40 C.F.R. Part 60, Appendix A, as specified in the particular rule or regulation. This can be on a carbon, propane calibration gas, or compound specific basis.

ODEQ recognized they had to develop a new method for quantifying VOC emissions from the wood products industry because their current methods underestimated actual emissions by approximately 22% because it did not count the weight of the non-carbon atoms and it ignores the relative sensitivity of the test method in measuring some specific VOC's.

4. Technical Discussion of the Shortcomings of Method 25A

Drying and pressing processes that meet the applicability requirements of this guidance document emit complex forms of volatile organic compounds (VOCs), which are difficult to quantify by any one testing method. The most common VOC testing methodology currently accepted by the Department to determine regulatory compliance is EPA Method 25A. Method 25A is very repeatable, relatively easy to perform, and is one of the least expensive VOC testing methodologies. However, Method 25A has multiple shortcomings that can significantly affect emission test results.

EPA Method 25A is applicable for the measurement of gaseous organic compounds that consist primarily as alkanes, alkenes, and aromatic compounds by use of a flame ionization detector (FID). The FID response is found to be roughly proportional to the rate of carbon molecules being introduced to the flame and is dependent on the FID calibration materials, flame environment, and the characteristics of the organic molecules being analyzed. Therefore, depending on the actual VOCs present in the exhaust gas, depressed or elevated responses from the analyzer are common.

Again, EPA Method 25A is applicable for the measurement of gaseous organic compounds that consist primarily as alkanes, alkenes, and aromatic compounds. Applying EPA Method 25A to sources that emit other complex strains of VOCs requires the use of empirical data to determine the molar response of each organic compound. This data reduction technique is beyond the scope of this guidance.

5. ODEQ's Approach for VOC testing

5.1. Wood Dryers

For wood dryers, the Department will require the use of EPA Method 25A for measuring the gaseous organic compounds that consist primarily as terpenes. Methanol and Formaldehyde are to be measured separately and concurrently at least once to verify their contribution to the total VOC emissions. If methanol and formaldehyde emissions are of significant consequence, it will be necessary to measure them concurrently with EPA Method 25A every time VOC emissions testing is performed. Significant consequences will be a case-by-case determination based on the potential of the methanol and formaldehyde emissions to cause an exceedance

of a regulatory threshold such as Title V permitting, major source determination, NSR/PSD, etc. Mass emissions results from EPA Method 25A (as propane), methanol, and formaldehyde will be summed to determine VOC mass emissions. Refer to Attachment 2 for more details on specific test methods.

For direct-fired dryers that combust natural gas, ethane and/or methane may significantly bias an EPA Method 25A test. Methane and ethane are deemed to have "negligible photochemical reactivity" and are not regulated VOCs. Therefore, methane and ethane may be measured independently and the analyzer response of EPA Method 25A may be corrected. The measurement of methane and ethane should be an available option but not a requirement. Refer to Attachment 1 and 2 for more details.

5.2. Press Vents

For press vents, the Department will require the use of EPA Method 25A for measuring the gaseous organic compounds that consist primarily as terpenes. Methanol and formaldehyde are to be measured separately and concurrently every time VOC emissions testing is performed. Mass emissions results from EPA Method 25A (as propane), methanol, and formaldehyde will be summed to determine VOC mass emissions. Refer to Attachment 2 for more details.

6. Implementation of this Guidance

Full implementation of this guidance will involve many parts. Ultimately all affected permits will have to be revised to reflect the new method for quantifying VOC emissions. Until that is accomplished, staff will be faced with determining compliance with VOC emission limits, approving source test protocols, and reviewing source test results. Because this guidance does not directly lead to any emission reductions and due to the significant workload of revising permits, it is not of the highest priority to revise all permits immediately. Permits should be revised to reflect this guidance upon renewal, during a major permit modification for other reasons, or at the request of the permittee. See Section 7 of this guidance for further details on permit revisions. What follows is guidance for issues staff will face **until all affected permits are revised.**

6.1 Approving source test protocols

With the effective date of this guidance, all source test protocols for VOC testing of processes described in the applicability section should follow the procedures in Section 5 of this guidance. Results should be reported consistent with this guidance to enable development of new VOC emission limits and consistent with the test methods used to establish the existing permit limits to enable a determination of compliance with the existing permit.

6.2 Reviewing source test results

Source test reports received after the effective date of this guidance, based on protocols approved prior to the effective date of this guidance, should be evaluated based on the approved protocol.

6.3 Determining compliance with permit conditions

Evaluation of source test results to determine compliance must be consistent with the test methods used to establish the emission limits.

7. Permit Revisions

As stated earlier, due to the significant workload for these permit revisions, ODEQ will implement the permit revisions during permit renewals, significant permit modifications, or at the request of a permittee. Emphasis should be placed on updating the permit to current allowable emissions using these new procedures for calculating VOC emissions. It is not high priority to go back and re-examine every physical change from the past, using this new method to calculate VOC emissions, to evaluate whether those changes may have triggered New Source Review or Prevention of Significant Deterioration. In the Wood Products Initiative, EPA already did this evaluation for most of the bigger facilities to which this new guidance will apply.

Permit revisions will involve establishing new emission factors for PSELs, baseline emission rates, and the netting basis. If source test results are available that follow this new guidance, calculation procedures are straightforward. If there are source tests available that follow the old guidance, the results of those tests should be recalculated using the guidance in Attachment 1.

7.1. Compliance issues discovered as a result of permit revision

As baseline emission rates, netting basis, and current PSELs are recalculated using this guidance, there may be instances where compliance issues are discovered such as the recalculated PSEL exceeds the netting basis by an amount greater than the SER. In general, formal enforcement is not warranted for compliance issues resulting solely from recalculation, provided that the source satisfies any subsequently triggered requirement. For instance, the source would have to either reduce previously approved emission increases to less than the SER or satisfy the requirements of New Source Review (NSR) or Prevention of Significant Deterioration (PSD), or other applicable state rules. The appropriate timeline would have to be determined on a case-by-case basis.

If a source could reasonably reduce permitted emission levels and stay below relevant thresholds, they should be required to do so. Failure to do so could be considered a willful continuing violation. In many cases this will not be possible because they have entered into contracts in good faith based on previously approved production increases that would not be allowed based on corrected emission rates. In such a case, it seems appropriate to allow the source a reasonable period of time to satisfy any subsequent requirements such as NSR, PSD, or TV permitting requirements.

Although it will not absolve them of potential enforcement from EPA, a Mutual Agreement and Order (MAO) or a compliance schedule in the permit will be necessary to enforce a scheduled return to compliance.

If the only compliance issue is an apparent exceedance of the PSEL without triggering any new applicable requirement, the permit writer should request the permittee modify the permit application in hand to request a higher PSEL.

Although it is not high priority to re-examine all past physical changes against this new guidance for calculating VOC emissions, there may be cases where a permittee had been granted an emissions increase from a physical change and the emissions increase was just below the SER, thereby avoiding NSR or PSD permitting requirements. In some of those cases, a permittee may have knowingly underestimated the VOC emissions increase by ignoring a great deal of available information from EPA's Wood Products Initiative that demonstrated DEQ's VOC calculation methodology underestimated actual VOC emissions. DEQ will have to review these on a case-by-case basis to determine whether a permittee willfully underestimated a VOC emissions increase. If so, DEQ should pursue a formal enforcement action using current enforcement rules.

This management directive is intended solely as guidance for employees of the Department of Environmental Quality (DEQ). It does not constitute rulemaking by the Environmental Quality Commission and may not be relied upon to create a right or benefit, substantive or procedural, enforceable by law or in equity, by any person. DEQ may take action at variance with this policy statement.

Attachment 1

CALCULATION OF VOC EMISSIONS FROM DRYING OR PRESSING OF WOOD

Calculating the VOC emissions on an "as VOC basis" will be performed as follows:

$$Evoc = E_{FID} + E_{FOR} + E_{MOH} + \sum_{i=1}^{n} Evoc_i \qquad \textit{(Equation A-1)}$$

WHERE:
Evoc = Total VOC emissions rate, lbs/hr as VOC basis
E_{FID} = Terpene emissions by Method 25A, lbs/hr as propane
E_{FOR} = Formaldehyde emissions rate, lbs/hr as formaldehyde
E_{MOH} = Methanol emissions rate, lbs/hr as methanol
$Evoc_i$ = VOC emissions rate of pollutant "i", lbs/hr as VOC, measured in conjunction with and quantified independently from terpene, formaldehyde and methanol emission measurements.
n = Number of additional VOC pollutants measured concurrently

Process based VOC emissions factor is to be calculated as follows:

$$EFvoc = Evoc/P \qquad \textit{(Equation A-2)}$$

Where:
EFvoc = Process based VOC emission factor, lbs VOCs/ # unit.
Evoc = VOC emissions rate, lbs/hr (from equation A-1)
P = Process rate, # units/hr

CALCULATION OF TERPENE EMISSIONS (E_{FID}) FROM UNREFINED METHOD 25A TEST DATA

At times, it will be necessary for the Source Test Coordinator (STC) to calculate terpene emissions from unrefined EPA Method 25A test data. Following is an overview of the calculations a STC will have to perform to accomplish such a task:

Overall correction of Method 25A data for methane, ethane, and methanol is to be performed as follows:

$$C_{FID}' = C_{FID} - \left[\frac{C_M}{3}\right] - \left[\frac{2 \times C_E}{3}\right] - \left[\frac{C_{MOH}}{6}\right] \qquad \textit{(Equation A-3)}$$

Where:
C_{FID}' = Corrected FID response, ppmv as propane (dry basis)
C_{FID} = Average FID response, ppmv as propane (dry basis)
C_M = Methane concentration, ppmv as methane (dry basis)
C_E = Ethane concentration, ppmv as ethane (dry basis)
C_{MOH} = Methanol concentration, ppmv as methanol (dry basis)

Note: C_M, C_E, and/or C_{MOH} are equal to "0" if measurements are below detection limit or if not measured simultaneously with EPA Method 25A

Terpene emissions measured by EPA Method 25A (as propane) are to be calculated as follows:

$$E_{FID} = (6.84 \times 10^{-6}) (C_{FID}') (Qs) \qquad \textit{(Equation A-4)}$$

Where:

E_{FID} = Terpene emissions measured by 25A, lbs/hr as propane

C_{FID}'= FID response, corrected for methane, ethane and/or methanol where applicable, ppmv (dry) as propane (Equation A-3)

Qs = Exhaust gas flow rate, dry standard cubic feet per minute (dry scfm)

CORRECTING VOC TEST RESULTS THAT ARE EXPRESSED AS CARBON OR AS METHANE

As permits are renewed, permit writers may need to adjust VOC Baseline emissions or VOC PSELs that were based on test results that were expressed "as carbon" or "as methane". A STC may be required to aid in evaluating how the VOCs were expressed and how to correct the results. Utilize the correction factors in Table I to adjust the emissions to an "as VOCs" basis.

TABLE I: CONVERSION FACTORS FOR CORRECTING VOC EMISSIONS DATA*

VOC PARAMETER	CONVERT FROM	CONVERT TO	MULTIPLY BY
EPA 25A (TERPENES)	AS CARBON	AS PROPANE	1.22
EPA 25A (TERPENES)	AS METHANE	AS PROPANE	0.92
FORMALDEHYDE	AS CARBON	AS FORMALDEHYDE	2.50
FORMALDEHYDE	AS METHANE	AS FORMALDEHYDE	1.88
METHANOL	AS CARBON	AS METHANOL	2.67
METHANOL	AS METHANE	AS METHANOL	2.00

Notes:

1. **Results for methanol and formaldehyde based on Method 25A are not valid and cannot be corrected using Table 1**
2. **These conversion factors are utilized to convert mass emission rates (lbs/hr) and production based emission rates (lb/# units), and are not applicable for correcting pollutant concentrations.**

EXAMPLE CALCULATIONS TO DEMONSTRATE USE OF TABLE I CONVERSION FACTORS:

Source: Steam-heated Veneer Dryer

Reported VOC Emissions Test Results:

Terpenes (EPA Method 25A) = 10.5 lbs/hr as carbon
Formaldehyde Testing Results = 2.3 lbs/hr as carbon
Methanol Testing Results = 1.7 lbs/hr as carbon
Total VOCs = 14.5 lbs/hr as carbon
Process Rate = 12,000 sq ft/hr 3/8" basis
Emission Factor = 1.21 lbs/Msf (3/8" basis) as carbon

Corrected Test Results as per Guideline:

Terpenes (EPA M25A)	**=**	**(10.5 lbC/hr) x 1.22**	**= 12.8 lbs/hr as propane**
Formaldehyde	**=**	**(2.3 lbC/hr) x 2.50**	**= 5.8 lbs/hr as formaldehyde**
Methanol	**=**	**(1.7 lbC/hr) x 2.67**	**= 4.5 lbs/hr as methanol**
Total VOCs	**=**	**(12.8+5.8+4.5)**	**= 23.1 lbs/hr (as VOC)**
Emission Factor	**=**	**23.1 lbs/hr / 12Msf (3/8")**	**= 1.93 lbs/Msf (3/8" basis) as VOCs**

A correction for methanol may be appropriate to avoid double-counting a portion (approximately 50%) of the measured methanol emissions. If these corrections were not applied to the response of the FID analyzer as demonstrated in *Equation A-3*, procedures for correcting the terpene emissions as measured by Method 25A for methane, ethane and methanol are demonstrated below. Note that these corrections are optional and are not required by the Department.

Correction of mass emission rate of terpenes as measured by EPA Method 25A:

$$E_{FID}' = E_{FID} - \left[\frac{E_M \times 44}{3 \times 16}\right] - \left[\frac{E_E \times 2 \times 44}{3 \times 30}\right] - \left[\frac{E_{MOH} \times 0.5 \times 44}{3 \times 32}\right] \qquad \textit{(Equation A-5)}$$

Where:
E_{FID}' = Corrected terpene emissions, lbs/hr as propane
E_{FID} = Terpene emissions by Method 25A (uncorrected), lbs/hr as propane
E_M=Methane emissions rate, lbs/hr as methane
E_E=Ethane emissions rate, lbs/hr as ethane
E_{MOH} = Methanol emissions rate, lbs/hr as methanol (response factor of 0.5)
Note: -E_M, E_E, and/or E_{MOH} are equal to "0" if measurements are below detection limits or if not measured simultaneously with EPA Method 25A.
-Methanol response factor set to a generic value of 0.5.

Attachment 2

Testing Methods

Acceptable testing Methods for measuring VOC emissions from sources applicable to this guideline are listed below. Note however, that since the drafting of this document, new methods may have been promulgated or a listed method may have been deemed non-representative.

EPA Method 25A for Terpene:

Calibration Materials: Calibrate the FID detector utilizing reference materials comprised of propane with a balance of nitrogen. If the oxygen concentration of the measured exhaust gas is greater or equal to 15 % by volume, then it is recommended, although not required, to use a reference material comprised of propane with a balance of air.
FID Fuel: It is recommended, although not required, that a FID fuel be used that is composed of 40% hydrogen and 60% helium. It is understood that some analyzers require a 100% hydrogen fuel and that a 40/60 fuel mixture may not be feasible.
Exhaust Moisture: It is recommended, although not required, to use a sample dilution system if the moisture content of the measured exhaust gas exceeds 20% by volume. The sample dilution system should be capable of reducing the moisture content of the sample gas to less than 10% by volume.
Response Corrections for Methane, Ethane & Methanol: Corrections to the FID response for the presence of methane, ethane & methanol are allowed, although not required. For a response correction to be considered valid, the concentration of ethane, methane, and/or methanol must be measured simultaneously with the Method 25A testing utilizing pre-approved testing methodology. A generic FID response factor of 0.5 shall be assumed for methanol. Refer to the calculation procedures of Attachment 1.
Results: Test results from Method 25A are to be reported as ppmv (dry basis as propane) and mass rate of VOCs (as propane).

Formaldehyde

EPA Method 0011 – DNPH Method.

EPA Method 0011 is an isokinetic sampling method that has inherent sample stability problems that should be addressed in the field.

NCASI Method CI/WP-98.01 – Chilled Impinger Method.

NCASI CI/WP-98.01 is a non-isokintic midget impinger method that utilizes a simple colorimetric analysis to measure formaldehyde emissions. Methanol and

phenol can also be measured from the same sample utilizing a Gas Chromatograph (GC/FID).

EPA Method 320 – Extractive Fourier Transform Infrared (FTIR)

EPA Method 320 is a difficult method but gives "real-time" data. It includes the use of a heated sample system and a FTIR analyzer. Due to the limitations of alternative methods, the use of Method 320 will become more prevalent as testers become familiar with the FTIR instrumentation.

To assure data quality, it is very important to follow QA/QC procedures of each method. Results are to be expressed as ppmv of formaldehyde and mass rate of formaldehyde emissions.

Methanol

EPA Method 308 – Chilled Midget Impingers

Non-isokinetic sample, methanol analyzed by GC/FID.

NCASI Method CI/WP-98.01 – Chilled Impinger Method.

NCASI CI/WP-98.01 is a non-isokinetic midget impinger method that utilizes a GC/FID to measure methanol. Formaldehyde and phenol may also be determined from the same sample.

EPA Method 320 – FTIR

EPA Method 320 is a difficult method but gives "real-time" data. It includes the use of a heated sample system and a FTIR analyzer. Due to the limitations of alternative methods, the use of Method 320 will become more prevalent as testers become familiar with the FTIR instrumentation.

To assure data quality, it is very important to follow QA/QC procedures of each method. Results are to be expressed as ppmv of methanol and mass rate of methanol emissions.

Methane and Ethane

EPA Method 18 (or equivalent) – Gas Chromatograph

This method is able to speciate gaseous organic compounds and provides a number of sampling options. Samples are generally extracted from the source and stored in tedlar bags or evacuated canisters. These samples are either analyzed on-site or shipped to a laboratory. Direct interface sampling and dilution

interface sampling are two techniques that are not as common, but acceptable. Results are to be expressed as ppmv of methane and ppmv of ethane. To allow correction of EPA Method 25A data, it is very important to report results on a ppmv “dry” basis.

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 00700019-003

This Technical Support Document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (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 preliminary determination to issue the draft permit.

1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 2493)
Norbord Minnesota 4409 Northwood Road Northwest Solway, MN 56678	4409 Northwood Road Northwest Solway Beltrami County
Contact: Philip Vortruba Phone: 218-444-0929	

1.2. Description of the Facililty

Norbord Minnesota (Norbord) owns and operates an Oriented Strandboard (OSB) manufacturing facility in Beltrami County, Minnesota (Facility). The Facility is located approximately 10 miles west of Bemidji, Minnesota. To produce OSB, logs are sliced into small strands, which are then dried, blended with a phenol-formaldehyde resin and wax mixture, formed into layers, and finally pressed into wood panels. The equipment used for the process consists of two rotary drum dryers with two wood-fired Lamb burners, one flatline conveyor dryer with a Wellons wood-fired burner, one multi-opening board press, two Konus wood-fired burners which are the heat source for the press, and various handling, finishing, and forming processes.

The pollution control equipment and main pollutants of concern from the emission units at the Facility are as follows: the two rotary dryers and Lamb burners are sources of Particulate Matter (PM) and particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), and Nitrogen Oxides (NO_x). The dryers/Lamb burners are currently controlled by an Electrified Filter Bed (EFB) which controls PM. The conveyor dryer and Wellons burner are also sources of PM, PM_{10}, VOC, CO and NO_x. The press is uncontrolled and is primarily a source of VOC. The Konus burners are sources of PM, PM_{10}, VOC, CO and NO_x and are each controlled by multiclones and an EFB. The in-plant particulate sources are generally controlled by baghouses. There are also fugitive particulate sources such as bark and fuel piles and paved and unpaved roads.

1.3 Description of the Activities Allowed by this Permit Action

This permit action was initiated by a request from Norbord for a 120-day extension of the performance testing due date for testing NOx emissions from the Konus Burners. This permit action authorizes the 120-day extension for this performance test in accordance with Minn. R. 7007.1400, subp. 1(H), moving the due date from October 29, 2006 to February 28, 2007.

On November 22, 2005, Norbord submitted a permit amendment application to relax the Konus Burner's NOx emission limit. Due to unforeseen delays, the permit amendment was not issued before the next Konus Burners NOx performance test deadline of October 29, 2006. Norbord proposed, and the Minnesota Pollution Control Agency (MPCA) agreed, to extend the testing deadline to accommodate the delays in processing the permit amendment.

The performance testing frequencies for PM, PM10 and CO on the Konus Burners (GP002) were also updated to reflect the new testing frequencies established in the March 2, 2006, letter from the MPCA to Norbord in accordance with Minn. R. 7007.1400, subp. 1(C). The new testing frequencies and test dates are shown in the table below:

Pollutant	New Testing Frequency	Next Test Date
Total Particulate Matter	Every 60 months from most recent test date	October 4, 2010
Particulate Matter < 10 microns	Every 60 months from most recent test date	October 4, 2010
Carbon Monoxide	Every 36 months from most recent test date	October 4, 2008

This permit action also removes all Clean Unit permit conditions in accordance with Minn. R. 7007.1400, subp. 1(I). The Clean Unit Designation is no longer available as of June 24, 2005.

1.4. Facility Emissions:

This permit action will not change Facility emissions.

1.5. Facility Classification:

The Facility is an existing major source.

3. Conclusion

Based on the information provided by Norbord Minnesota, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 00700019-003, and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

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AQ File No. 1750; DQ 1168, 1130