

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date: XX XX, 2011

Region: Raleigh Regional Office
County: Chatham
NC Facility ID: 1900015
Inspector's Name: Steven Carr
Date of Last Inspection: 04/15/2010
Compliance Code: B / Violation - emissions

<p align="center">Facility Data</p> <p>Applicant (Facility's Name): Uniboard USA LLC</p> <p>Facility Address: Uniboard USA LLC 985 Corinth Road Moncure, NC 27559</p> <p>SIC: 2436 / Softwood Veneer And Plywood NAICS: 321212 / Softwood Veneer and Plywood Manufacturing</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>			<p align="center">Permit Applicability (this application only)</p> <p>SIP: 2D .0521, 2D .0504 NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other: Remove NSPS Db and CEMS requirements</p>								
<p align="center">Contact Data</p> <table border="1"> <thead> <tr> <th align="center">Facility Contact</th> <th align="center">Authorized Contact</th> <th align="center">Technical Contact</th> </tr> </thead> <tbody> <tr> <td> Carolyn Underwood Environmental Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128 carolyn.underwood@ uniboard.com </td> <td> Joe Heard Site Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128 </td> <td> Carolyn Underwood Environmental Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128 carolyn.underwood@ uniboard.com </td> </tr> </tbody> </table>			Facility Contact	Authorized Contact	Technical Contact	Carolyn Underwood Environmental Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128 carolyn.underwood@ uniboard.com	Joe Heard Site Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128	Carolyn Underwood Environmental Manager (919) 542-2128 985 Corinth Road Moncure, NC 27559 919.542.2128 carolyn.underwood@ uniboard.com	<p align="center">Application Data</p> <p>Application Number: 1900015.11B Date Received: 04/18/2011 Application Type: Modification Application Schedule: TV-Significant</p> <p align="center">Existing Permit Data</p> <p>Existing Permit Number: 03449/T37 Existing Permit Issue Date: 05/20/2011 Existing Permit Expiration Date: 04/30/2016</p>		
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<p>Review Engineer: Charles F. Yirka</p> <p>Review Engineer's Signature: _____ Date: XX XX, 2011</p>			<p align="center">Comments / Recommendations:</p> <p>Issue 03449/T38 Permit Issue Date: XX XX, 2011 Permit Expiration Date: 04/30/2016</p>								

I. Introduction and Purpose of Application

Uniboard USA LLC (Uniboard) owns and operates a medium high-density fiberboard (MDF) plant in Moncure, NC. Uniboard recently installed new equipment at the MDF plant. A biomass-fired Energy System (ID No. ES-02A) provides direct heat to dry resinated fiber.

Uniboard is making a request to:

1. remove all conditions associated with the applicability of the New Source Performance Standard (NSPS) 40 CFR Subpart Db including the continuous opacity monitoring system (COMS and CEMS) requirements found therein; and
2. obtain DAQ concurrence that the biomass-fired MDF Energy System (ES-02A) at the Uniboard facility is defined as a *process heater* and not a *steam generating unit* as defined in

Subpart Db and therefore not subject to Subpart Db; and, the *primary function* of the Energy System is to produce a final product.

It will be shown in Section III that this modification meets the requirements to be processed as a significant modification under 15A NCAC 2Q .0501(d)(2).

II. Chronology

Date	Description
04/18/2011	An application was received and assigned app. No. 1900015.11B
04/25/2011	The application was declared complete for basic requirements and letter sent
05/03/2011	Request for additional information (re: request for permit shield and removal of CEMs signed by Responsible Official) via email
05/04/2011	Additional information received from applicant
05/05/2011	Additional information received from applicant (re: request for particulate allowable from Energy System as per 2D .0504)
05/06/2011	Raleigh Regional Office (RRO) was sent draft permit and review for comments
05/09/2011	First draft permit and review submitted to applicant and RCO supervisor
05/18/2011	RRO recommend issuance of draft permit from Mr. Charles McEachern- Permit Coordinator
05/20/2011	Permit 03449/T37 was issued.
05/20/2011	Draft permit and review comments received from the applicant. Permit required updating for changes considering permit T37 was issued.
05/24/2011	Proposed permit and review submitted to EPA for 45 day review and public notice for a 30 day review. These reviews are in parallel
XX/XX/2011	Emission Source Module changes approved
XX/XX/2011	Final permit and review (statement of basis) issued

III. Applicability Determination

The biomass-fired MDF Plant Energy System (ID No. ES-02A) at the Uniboard facility is a unique process whose primary function is the production of dried resinated fibers. A portion of the heat generated by the combustion of wood is used to indirectly heat oil that is used in the press. However, the primary function of the heat plant is to provide the necessary energy to catalyze the thermo-setting plastic resin while drying the complex mixture. In the current permit the NCDAQ erroneously concluded that the process heater was subject to NSPS Subpart Db.

The proposed permit corrects this error and removes NSPS Subpart Db provisions. There are two reasons the heat plant is not subject to Subpart Db; 1) the heating plant is a process heater, and 2) the primary purpose of the heat plant is to produce a final product.

First, Subpart Db specifically provides that process heaters are not considered steam generating units.

Steam generating unit means a device that combusts any fuel or byproduct/ waste to produce steam or to heat water or any other heat transfer medium. This term includes any municipal- type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.

Process Heater is defined as a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

In the case of Uniboard, the biomass-fired MDF plant Energy System (ID No. ES-02A) combustion exhaust provides direct heat to a blowline dryer where the chemical reaction takes place.¹ The chemical reactions in the blowline dryer require specific quantities of wood fiber and thermoplastic resins. The heat serves to catalyze the resin while at the same time providing heat and drying the complex mixture. The heat causes the pH of the resin to decrease and promotes the polymerization of the resin. The resin molecules cross link and begin to form more complex molecules which then bind the cellulose fibers together. Once the chemical reaction takes place, the entire process is time limited. If the reacted product is not pressed within 20-30 minutes the thermo-setting plastic resin is no longer of any value and the wood fiber must be rejected. It is important to note that the complex chemical reactions occurring in the process, in the case of Uniboard, is quite distinct from other more traditional processes like the manufacturing of plywood and/or oriented strand board.

A second reason the Uniboard Energy System is not subject to NSPS subpart Db is that the definition of heat input excludes heat derived from other sources, including but not limited to direct fired processes like kilns.

Heat Input means heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources (such as stationary gas turbines, internal combustion engines, and kilns).

Pursuant to this definition, not all heated exhaust gases are to be considered heat input for the purposes of determining NSPS applicability. The definition provides that heat derived from

¹ In recent discussions with EPA Region 4, Carol Kempker and staff provided their interpretation of the types of activities that should be considered as chemical process plants in the context of PSD applicability. NC did not agree with EPA's broad interpretation as it applied to PSD (noting that NC has an approved PSD program) but did find the interpretation enlightening as to NSPS (noting NC is only delegated for this program). According to EPA Region 4, chemical process plants were plants where chemical reactions took place. EPA Region 4 concluded that chemical reactions were taking place because the process involved very precise measuring of materials and mixing those materials to produce a final product. This is fully consistent with the Uniboard process in which resin is precisely mixed with wood. North Carolina does not rely on this broad interpretation to support its finding above, but it is clear that EPA's position that precise measurement of mixing of two materials to produce a product is a chemical reaction.

preheated combustion air, recirculated flue gases or exhaust gases from “other sources” are not to be included in determining heat input for the purposes of NSPS Subpart Db applicability. The definition provides a non-exhaustive list of “other sources” as including stationary gas combustion turbines, internal combustion engines, and kilns.

Because this is not an exhaustive list, the EPA has established a primary function test to determine whether a combustion process qualifies as an “other source” pursuant to the definition of heat input. This primary function test has been articulated and applied in several EPA applicability determinations.

In a recent NSPS applicability determination, the EPA applied the primary function test to a thermal oxidizer whose exhaust was being used to raise steam in a waste heat boiler.² In this determination, the EPA evaluated whether the heat derived from the oxidizer qualified under the definition of heat input. In making this determination, the EPA applied the primary function test to determine if the unit satisfied the definition of heat input. According to the EPA, if the primary function of the unit is to “produce a product (as in the case of a cement kiln or lime kiln)” then the unit qualifies as an “other source” and therefore does not meet the definition of heat input.

As described above, the Energy System uses direct heat to initiate the chemical process in the blowline dryers. Significantly more than 50 percent of the heat generated at the heat plant (approximately 70%) is used to make a product. Consistent with EPA precedent, the primary purpose of the Energy System is to promote the chemical reactions necessary to produce the resinated cellulosic fibers used in the final product. As such, similar to a cement kiln or lime kiln, the heat plant produces a product.

Application of the primary function test results in the conclusion that the ancillary heating of the thermal oil loop for the thermal oil system to produce steam does not meet the definition of heat input, and therefore the Uniboard Energy System is not subject to NSPS Subpart Db.

IV. Modification Description

NSPS Db COMS

As stated in a letter from Uniboard dated May 3, 2011:

1. “Uniboard requests and applicability shield be included in the permit to indicate the NSPS Db does not apply to the biomass-fired MDF plant Energy System (ES-02A)”.
2. “Uniboard requests the requirement to install and operate a COMS on the biomass-fired Energy System (ID No. ES-02A) and all other NSPS Db-related requirements be removed from the permit since NSPS Db does not apply. Uniboard will also cease operation of the PM CEMS approved by EPA Region IV as alternate monitoring under NSPS Subpart Db. Uniboard will conduct PM stack testing and monitor control device parameters for compliance with applicable PM and opacity regulations (the

² January 8, 2003 letter from Michael Alushin, EPA Office of Compliance, to George T. Czerniak, Chief, Air Enforcement and Compliance Assurance Branch, EPA Region 5, “Applicability of New Source Performance Standards at 40 CFR Subpart Db to a Thermal Oxidizer/Waste Heat Recovery Boiler at an Ethanol Production Facility (EPA Applicability Determination Control Number 0300032). In this determination the EPA clarified EPA Applicability Determination Number NA07 concerning NSPS Subpart Dc applicability and applied the primary function test.

Energy System is controlled by a wet scrubber and opacity monitoring is not applicable to wet stacks).”

Emissions

It appears there is no process, physical or changes in the method of operation that will cause or contribute to an associated emissions increase.

A review of the effect of removing the permit condition associated with NSPS Db would indicate the following limitations affecting the biomass-fired MDF plant Energy System (ES-02A) as now found in Section 2.1 C. of the permit 03449T37 will be removed:

NSPS Db Emissions Limitations to Be Removed:

The following table provides a summary of NSPS Db limits standards for the energy system described above:

Affected Facility	Pollutant	Emission Limit
ES-02-A	Particulate matter 40 CFR 60.43b(c)	0.030 pounds per million Btu heat input
	Opacity 40 CFR 60.43b(f)	20 percent opacity six minute average except for one six-minute period per hour of not more than 27% opacity

We concur that the removal of the above limitations are not considered a modification for PSD purposes as this does not constitute a physical change or a change in the method of operation of the heating plant. In addition, the heating plant at Uniboard is considered a process heater.

V. Regulatory Review

Energy System Description from Section 2.1 C. of the Permit:

One Energy System (ID No. ES-02-A) configured as follows in Table 2.1.C.1.

Table 2.1.C.1.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description	Configuration
ES-02-A	Energy System consisting of a dry/wet wood/wood waste-fired burner (205 million Btu per hour heat input)	CD02-A	Urea/water injection system	in series with CD02 and CD14
		CD02	Venturi and packed bed scrubber (35 gallons per minute minimum injection rate)	CD02 in parallel with CD14 with emission points EP02 and EP14
		CD14	Venturi and packed bed scrubber (35 gallons per minute minimum injection rate)	

The following table provides a summary of limits and standards for the energy system described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter¹	0.325 lb/million Btu (ID No. ES-02A)	15A NCAC 2D .0504
Sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
Volatile organic compounds	Work Practice Standards See Section 2.2 A.1.	15A NCAC 2D .0958
Visible emissions¹	20 percent opacity	15A NCAC 2D .0521(d)
Toxic air pollutants	See Section 2.2 A.2; State-enforceable only	15A NCAC 2D .1100
Odors	See Section 2.2 A.3; State-enforceable only	15A NCAC 2D .1806
Hazardous air pollutants	National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products See Section 2.2 A.4.	15A NCAC 2D .1111 (40 CFR 63, Subpart DDDD)
Volatile organic compounds, Nitrogen oxides, PM _{2.5} , PM ₁₀	See Section 2.2 B.1.	15A NCAC 2Q .0317 (PSD Avoidance)

1. The rules of 2D .0504 and .0521 and limitations and standards became applicable with removal of the rule, limitations and standards of NSPS Db.

15A NCAC 2D .0504: PARTICULATES FROM WOOD BURNING INDIRECT HEAT EXCHANGERS

The previously applicable NSPS Db rule included a (filterable) particulate emissions limit. The NSPS limitation for particulate matter (0.030 lb/MMBtu) no longer applies. The less stringent Rule 2D .0504, which includes a particulate emissions limit, was not in the permit and has now been added. Additional information was submitted by the applicant with calculations establishing the allowable emissions of particulate matter of 0.325 lb/MMBtu as per this Rule. For 2D .0504, the total heat inputs from facility-wide combustion of biomass are 40 million BTU/hr at particleboard from the Wellons burner and 205 million Btu/hr from the energy system at MDF, so 245 total. $E = 1.1698 Q^{-0.2330} = 0.325 \text{ lb/MMBtu}$. Testing is required. The testing is similar to the existing testing requirement to demonstrate compliance with 2D .0515 for the MDF. See 2.1 D.1.b. Compliance is indicated.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

This SIP rule will remain in the permit limiting the emissions of sulfur dioxide. SO₂ Emissions per the rule are limited to 2.3 lb/MMBtu or about 1.2% sulfur content. The heating plant will continue to fire only wood. Wood is inherently low in sulfur content and therefore sulfur dioxide emissions are substantially less than the allowable. The existing permit will remain unchanged in the permit with no monitoring, recordkeeping or reporting required.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

The previously applicable NSPS Db rule included an opacity standard. The NSPS opacity standard no longer applies. The Rule 2D .0521 which includes a similar opacity standard was not in the permit and has now been added. Note that the applicant was proposing to demonstrate compliance with NSPS Db with a particulate CEMS. EPA had approved of substituting the particulate CEMS for COMS as a means of demonstrating compliance due to the “wet stack

plume”. The CEMS requirements will be removed from the permit. The monitoring, recordkeeping and reporting associated with 2D .0521 was required. The facility is required to maintain the equipment as recommended by the manufacturer if there are any. Daily observations of stack emissions are now required. If visible emissions appear to be abnormal the facility shall conduct a Method 9 test. Semiannual reporting will be required. Compliance with this rule is expected as there is history of compliance.

15A NCAC 2D .0958: WORK PRACTICES FOR SOURCES OF VOLATILE ORGANIC COMPOUNDS

This rule remains applicable and the permit language remains unchanged.

STATE ENFORCEABLE ONLY

15A NCAC 2D .1100 and 2Q .0705 (c): EXISTING FACILITIES AND SIC CALLS

This rule remains applicable and the permit language remains unchanged. As of October 14, 2009 the Permittee demonstrated compliance with 15A NCAC 2D .1100 on a facility-wide basis.

STATE ENFORCEABLE ONLY

15A NCAC 2D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS

This rule remains applicable and the permit language remains unchanged. The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility’s boundary.

15A NCAC 2D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

This rule remains applicable and the permit language remains unchanged. This facility and the emissions source (biomass-fired MDF Energy System (ID No. ES-02-A) remains subject to 40 CFR 63, Subpart DDDD the National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products. Section 2.3 of the permit has a Schedule of Compliance which addresses ongoing compliance problems associated with this rule.

15A NCAC 2Q .0317: AVOIDANCE OF PREVENTION OF SIGNIFICANT DETERIORATION - AVOIDANCE CONDITION

This rule remains applicable and the permit language remains unchanged. This rule applies to the Medium Density Fiberboard Facilities which share the emissions controls with the biomass-fired MDF Energy System. See Table 2.1 C. 1. at the beginning of this section. This condition includes emissions limits and testing requirements for the Medium Density Fiberboard Facilities only, and not the biomass-fired MDF Energy System.

In conclusion the DAQ concurs with the removal of NSPS Db and associated pending CEMS requirements from the permit

VI. NSPS, NESHAP, PSD and CAM Applicability

NSPS (40 CFR Part 60)

NSPS Subpart Db was removed from the current permit.

NESHAP (40 CFR Part 63)

The facility is subject to MACT Subpart DDDD—National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products. This application did not affect applicability.

CAM (40 CFR Part 64)

This modification does not affect Compliance Assurance Monitoring CAM applicability. CAM will be addressed at renewal.

PSD (40 CFR Subpart 51.166)

Uniboard is a PSD major source. This modification does not appear to be a physical change or a change in the method of operation. There do not appear to be any increases in actual or potential emissions associated with this modification (removal of NSPS Db). PSD does not apply to this modification.

VII. Changes to Existing Title V Air Permit No. 08803T14**ATTACHMENT to cover letter to Air Quality Permit No. 03449T38**

Existing Condition No.	New Condition No.	Changes
Cover Letter	Same	<ul style="list-style-type: none"> Updated permit revision numbers, issue, effective dates, etc.
Attachment to Permit	Same	<ul style="list-style-type: none"> Update insignificant activities table to latest format
Page 1	Same	<ul style="list-style-type: none"> Updated permit revision numbers, issue, effective dates, etc.
Table of Contents	Same	<ul style="list-style-type: none"> Include Section 2 – 2.4 Permit Shield for Non-Applicable Requirements
Page 4 Section 1 Table Equipment List	Same	<ul style="list-style-type: none"> Removed NSPS Subpart Db designation from the descriptor for ES-02-A
Page 11 2.1 C	Same	<ul style="list-style-type: none"> Removed pollutants particulate matter limit, opacity standard and NSPS Db from table
NA	Page 12 2.1.C.1	<ul style="list-style-type: none"> Added condition for 2D .0504 Added testing condition for 2D .0504 (within 180 days of start-up) Insert pollutant particulate associated with 2D. 0504
Page 12 2.1.C.2	NA	<ul style="list-style-type: none"> Remove entire NSPS Db standard and condition including COMS/CEMS requirements
NA	Page 12 2.1C.3	<ul style="list-style-type: none"> Insert opacity standard and condition associated with 2D .0521 including daily monitoring and recordkeeping and reporting
Page 15 and 16 2.1.D.2.c. and D.3	Page 15 and 16 2.1.D.2	<ul style="list-style-type: none"> The 2D .0521 condition for the MDF Facilities operation excluding the MDF press had referred to the monitoring, recordkeeping and reporting associated with NSPS Db. The conditions were combined into one condition for 2D .0521
NA	Page 45 2.4	<ul style="list-style-type: none"> Added Permit Shield for Non-applicable Requirements
Page 48-56 General Conditions version 3.4	Page 46-54 General Conditions version 3.4	<ul style="list-style-type: none"> Renumber pages for General Conditions (version 3.4)

VIII. Compliance History (Following is an abbreviated compliance history):

February 7, 2011	Notice of Violation / Notice of Recommendation for Enforcement for Failure to Perform Multiple Emissions Tests by Established Deadlines; Failure to Operate Control Devices Concurrently with Emission Sources; Failure to Submit Startup Notification by Established Deadline from Mr. Carr with Raleigh Regional Office (RRO)
August 12, 2010	Compliance Additional Information Request from Mr. Butler with Raleigh Regional Office (RRO) for multiple violations. Notice given that an enforcement report is being prepared for the Director of DAQ
July 20, 2010	Memorandum to file from Mr. Bland of RRO through Regional Supervisor Mr. Butler. Decision was made to not pursue civil penalty assessment for May 4, 2010 Notice of Violation (NOV)/Notice of Referral to Enforcement
April 27, 2010	Stationary Source Compliance Branch (SSCB) approved the Emissions Testing on Core Layer Dryer #1
May 4, 2010	Notice of Violation/Notice of Recommendation for Enforcement Startup, Shutdown, and Malfunction Plan/NSPS Notification Violations from Mr. Butler of RRO
No Date	Civil Penalty Assessment
April 28, 2010	Mr. Carr inspected facility. Facility appeared to be in compliance with all requirements of their Title V permit except the MACT requirement to have an SSMP on site. An NOV/NRE was issued.
March 19, 2010	Special Order By Consent; facility was unable to meet compliance date for the MACT Subpart DDDD
September 9, 2008	Special Order By Consent; original agreement by the facility to come into compliance with MACT Subpart DDDD

IX. Public Notice

The permit and review are subject to a parallel 30 day public notice period and a 45 day EPA review period. The permit and review are posted on the NCDAQ website for review. The public notice and EPA review period began on XX XX, 2011 and was complete on XX XX, 2011.

X. Comments and Conclusions

The Raleigh Regional Office (RRO) recommended permit issuance on May 18, 2011.

The NSPS applicability and the issues raised were addressed in Section III above. The applicant and consultant provided comments on May 20, 2011. Comments and DAQ response follow:

- Please note the correction below noticed by Amy under 2.1.C.1.d. regarding the urea injection system-it does not control PM.
- Please be advised that Joe Voelker issued a T37 permit to us today that had some corrections and modifications that are NOT incorporated into the draft permit you sent. Can a comparison of the 2 be made to ensure that the “now issued T37” modifications

are incorporated into this permit? It included a back up generator for MDF and a new fire pump with some corrections to filter areas on 2 bagfilters.

- Additionally, T37 that issued today and the draft you sent incorrectly identifies the compliance date of **October 18, 2010** in condition no. Section 2, Condition 2.1.E.5.a. This date should be **October 18, 2013**.
- T36 and T37 that issued today also has an incorrect date of **October 18, 2010** in Section 2, Condition 2.1., G. 5.a. This date should also be **October 18, 2013**.

The DAQ concurs with all the above comments; corrections were made to the proposed permit.

XI. Recommendations

AFTER PUBLIC NOTICE AND EPA REVIEW INSERT COMMENTS FROM EPA, PUBLIC AND OTHERS HERE AND RESPONSES

The required public notice period and EPA review period were completed on XX XX, 2011. The issuance of permit no. 03449T38 is recommended.