



**TECHNICAL EVALUATION  
&  
PRELIMINARY DETERMINATION**

**APPLICANT**

Green Circle Bio Energy, Inc.  
2500 Green Circle Parkway  
Cottondale, Florida 32431

Cottondale Wood Pellet Plant  
Facility ID No. 0630058

**PROJECT**

Project No. 0630058-016-AC  
Application for Title V Source Air Construction Permit  
Modification to 014-AC and 011-AC  
Revoke Authorization for Third Dryer and update NSPS subpart Db specific conditions

**COUNTY**

Jackson County, Florida

**PERMITTING AUTHORITY**

Florida Department of Environmental Protection  
Waste Management/Air Resources Program  
Northwest District Office  
160 W. Government Street, Suite 308  
Pensacola, Florida 32502-5740

November 7, 2014

## 1. GENERAL PROJECT INFORMATION

### Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

### Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

### Facility Description and Location

Green Circle Bio Energy, Inc. is an existing Title V facility that processes wood chips into wood fuel pellets and is categorized under Standard Industrial Classification Code No. 2499, Wood Products, Not Elsewhere Classified. The facility is located in Jackson County at 2500 Green Circle Parkway in Cottondale, Florida. The UTM coordinates of the existing facility are Zone 16, 653.9 km East, and 3401.7 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

### Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

### Project Description

This project was submitted to modify permit 0630058-014-AC to address the results of the hourly VOC emissions measured during the compliance tests conducted in April of 2014 for the two RTOs (regenerative thermal oxidizer) servicing the dryers. Permit 0630058-014-AC authorized the routing of the hammer mill and pellet mill aspiration systems to the Dryer Line Furnaces (90% VOC destruction efficiency) and then to the WESPs (97% PM removal efficiency) and finally to the RTOs (95% VOC destruction efficiency.) This construction permit is being concurrently processed with Title V revision 0630058-017-AV to revoke the authorization to construct a third dryer, at the facility's request, and updates specific conditions from 40 CFR 60 subpart Db to the two existing dryer lines (emissions unit (EU) 002 and 003).

### Processing Schedule

July 2, 2014     Received the application for a Title V air pollution construction permit.  
July 21, 2014    Requested additional information.  
August 12, 2014   Received additional information; application complete.

## **2. PSD APPLICABILITY**

### **General PSD Applicability**

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO<sub>x</sub>); sulfur dioxide (SO<sub>2</sub>); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM<sub>10</sub>); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H<sub>2</sub>S); total reduced sulfur (TRS), including H<sub>2</sub>S; reduced sulfur compounds, including H<sub>2</sub>S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO<sub>2</sub> and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 µg/m<sup>3</sup>, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

### **PSD Applicability for Project**

Refer to the TEPDs for projects 0630058-011-AC and 0630058-014-AC for background information. Also see the discussion of emissions below. The facility was not considered an existing major stationary source with respect for PSD because based on the knowledge at the time, the existing potential emissions did not exceed the 250 tons per year threshold for this type of facility. The recent VOC and PM stack testing for hammer mill and pellet mill aspiration systems, and pellet mill 2 pellet cooler cyclone exhaust revealed very large amounts of VOC were being emitted from these emissions points. This is consistent with the knowledge recently gained by our sister agency, Georgia Department of Natural Resources Environmental Protection Division, where a similar

facility also tested at these process steps. The testing showed that Green Circle may have been a major stationary source with respect for PSD from its initial construction due to revised estimated emissions of VOC because of the uncontrolled emissions from the hammer mills and pellet mills. The Department issued Permit 0630058-014-AC because: (1) the original and subsequent applications were submitted in good faith based on emissions factors widely accepted at the time, (2) the applicant took the initiative to test upon learning of the Georgia facility's test results, and, (3) the control systems proposed; incineration by furnace followed by WESP and RTO, are considered BACT for the VOC and PM that will be collected from the hammer mill and pellet mill aspiration systems.

In project 0630058-011-AC and 0630058-014-AC, Source Obligation Rule 62-212.400(12)(b), FAC, was not deemed applicable in this case because, although a number of emissions units' emissions and operational limits were being increased, the resulting emissions increases can also be ascribed to increasing the facility annual production rate and not solely by relaxing any emissions and operational limits.

The emissions increases from Project 0630058-014-AC did not trigger a PSD preconstruction review because the potential emissions increases as they were known at the time from the proposed project were less than the PSD major stationary source threshold for this type of facility (not on the list of 28). Green Circle was to be categorized as a major stationary source for PSD with respect to NO<sub>x</sub> and VOC after the construction was complete for Project 0630058-014-AC.

As provided in the application, the following table summarizes potential emissions for the projects.

Table A. Potential Emissions (Tons/Year) and PSD Applicability

Pollutant (TPY)	Potential Emissions 010-AC	Potential Emissions 014-AC	Potential Emissions 016-AC
CO	22.2	33.3*	22.3
NO <sub>x</sub>	245.2	367.95*	245.3
PM/PM <sub>10</sub>	228.7	228.5	203.1**
SO <sub>2</sub>	0.34	0.51	0.34
VOC	243.10	439.72	496.5***

*\*NO<sub>x</sub> and CO emissions would have increased with proposed addition of Dryer Line 3 but Dryer Line 3 will not be installed.*

*\*\* PM/PM<sub>10</sub> does not include 20.3 tons per year fugitives from Wood Receiving and Storage Area (EU001).*

*\*\*\* based on VOC emissions after testing of pellet coolers per 014-AC*

### 3. APPLICATION REVIEW

#### Application Fee

Title V Facility - no permit processing fee.

#### Discussion of Emissions

As has been previously discussed, the wood fuel pellet manufacturing process was new to the Department and several other states' sister agencies when Green Circle was first permitted in 2007. More knowledge was acquired over the last few years as other similar facilities and Green Circle tested for VOC emissions at the different process steps. The table below is intended to be a rough estimate of what the VOC emissions at Green Circle may have been from project 010-AC through 014-AC. There is uncertainty as to how the VOC emissions may have changed as the years passed and changes such as installation of different dryer flights and routing the hammer mills and pellet mills aspiration systems to the furnaces were made to the process.

The VOC estimates in the table are presented per project. There are two rows per project; the first one gives the VOC estimates as presented at the time of the application based on the knowledge at the time. The second,



# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

## Green Circle 0630058 Permit and Emissions History:

Permit ID#	Comments	Date	Emissions (TPY)					
			PM/PM <sub>10</sub>	NO <sub>x</sub>	CO	VOC <sup>1</sup>		SO <sub>2</sub>
						Pre-Test Emissions Factors	Post-Test Emissions Factors	
001-AC	Each line < 30 TPH	7/13/07	220.78	247.96	25.61	49.06	-	0.32
002-AC	Couldn't reach prod rate; Add 7 vertical hammer mills	9/29/08	220.78	247.96	25.61	49.06	-	0.32
003-AC <sup>2</sup>	Process change and corrected VOCs in 001-AC from testing	7/13/09	220.30	245.30	22.30	226.2	-	0.34
004-AC	Horizontal hammer mill trial	6/14/10	229.45	245.30	22.30	226.2	-	0.34
005-AV	Initial Title V	3/16/11	-	-	-	-	-	-
006-AC	Prod limit of 554,304 TPY to maintain pelletizer VOC 177.1	1/4/11	229.45	245.30	22.30	226.2	-	0.34
007-AC	Change RTO media	Withdrawn	-	-	-	-	-	-
008-AC	Add 2 pellets mills and remove hammer mill op hours limit	4/12/11	226.54	245.20	22.20	225.3	-	0.34
009-AC	Increase max railcar loading rate for Bulk Loadout	7/14/11	230.14	245.20	22.20	225.3	-	0.34
010-AC	554,304 to 610,000 ton pellets per year and process changes	3/23/12	228.71	245.20	22.20	243.1	1089	0.34
011-AC <sup>3</sup>	Increase to 121 TPH and 827,000 tons pellets per year; add third dryer and remove pollutant limits as facility crossed PSD threshold	8/21/12	358.10	367.95	33.30	336.5	1416	0.51
012-AV	Revision incorporated 008-AC, 009-AC and 010-AC	11/11/12	-	-	-	-	-	-
013-AV	Revision to add fire pump RICE	7/8/13	-	-	-	-	-	-

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

014-AC	Hammer & pellet mill aspiration system to dryer furnaces (WESPs & RTO) no add hammer mill	8/27/13	228.51	367.95	33.30	439.72	564.6	0.51
011-AC <sup>4</sup>	Estimated post-011-AC and pre-014-AC VOC Emissions as revised by test results learned from testing required by 014-AC	-	-	-	-	-	1416	-
015-AC	40 CFR 63 DDDDD determination							
016-AC	Revision to 014-AC to revoke third dryer and update NSPS Db specific conditions for PM monitoring and reporting using predictive modeling instead of a COMS	Being processed	203.1 <sup>5</sup>	245.3	22.2		496.4	0.34

1 VOC Pre-Test Emissions Factors refers to VOC estimates based on known emissions factors before test results from testing required by 014-AC.

VOC Post-Test Emissions Factors refers to VOC estimates based on emissions factors as revised by test results testing required by 014-AC.

2 permit 0630058-001-AC VOC emissions corrected with permit 0630058-003-AC

3 0630058-011-AC NO<sub>x</sub> emissions increase with addition of Dryer Line 3.

4 permit 0630058-011-AC PM and VOC emissions adjusted based on recent VOC and PM stack testing for hammer mill and pellet mill aspiration systems, and pellet mill 2 pellet cooler cyclone exhaust. Revised estimated VOC emissions are only taken back to project 010-AC because of uncertainty as to how process changes affected emissions at and before the 010-AC permit.

5 does not include fugitive PM from woodyard operations

### **State Requirements**

Rules 62-4.070(3), 62-210.200(PTE), 62-296.320(4), 62-296.410 and 62-297.310, F.A.C.

### **Federal NSPS Provisions**

40 CFR 60 Subpart Db is applicable to the Dryer Line Furnaces (see attached determinations adi-nsps-0900069 and adi-nsps-0800089). Applicant elected to use an electrostatic precipitator predictive model as an alternative to installing a continuous opacity monitor. Applicant shall develop a site-specific monitoring plan that includes a description of the ESP predictive model used, the model input parameters, and the procedures and criteria for establishing monitoring parameter baseline levels indicative of compliance with the PM emissions limit. The site-specific monitoring plan must be submitted for approval by the permitting authority within 180 days of the issuance of this permit.

40 CFR 60 subpart IIII is applicable to the 110 hp emergency fire pump engine. Requirements were previously incorporated by revision 013-AV.

### **Federal NESHAP Provisions**

Because EPA determinations have stated that the EPA did not include dryer/steam generator systems similar to those at Green Circle in developing 40 CFR 63, Subpart DDDDD, the Department believes that 40 CFR 63, Subpart DDDDD and similarly 40 CFR 63, Subpart JJJJJ (Boiler MACT) were not intended to regulate, and are not applicable to, the dryer/steam generator systems at Green Circle.

The 110 hp emergency fire pump engine is subject to 40 CFR 63, NESHAP Subparts A and ZZZZ. By meeting the applicable requirements of 40 CFR 60 Subpart IIII, the engine meets the NESHAP requirements.

### **Other Draft Permit Requirements**

Stack testing for PM is to be conducted once every permit renewal for the Dryer Lines. VOC testing will be conducted for dryer lines and pellet cooler cyclones. As part of 40 CFR 60 subpart Db, VE testing will be performed at least annually on the Dryer Lines. A revised compliance monitoring plan (CMP) will update operating, monitoring and recordkeeping procedures for determining compliance with permit requirements for the Dryer Lines. Pellets production (121 tons per hour and 827,000 tons per year) as measured in the Bulk Load-out area will be used as a compliance determination measure.

## **4. PRELIMINARY DETERMINATION**

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Debbie Moore is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at 850.595.0624 or [Deborah.L.Moore@dep.state.fl.us](mailto:Deborah.L.Moore@dep.state.fl.us) and Armando I. Sarasua, P.E. at 850.595.0639 or [armando.sarasua@dep.state.fl.us](mailto:armando.sarasua@dep.state.fl.us).





# U.S. Environmental Protection Agency Applicability Determination Index

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Control Number: 0900069

Category: NSPS  
EPA Office: CAMPD  
Date: 12/20/2006  
Title: Bark Burners  
Recipient: Shoop, Geri  
Author: Alushin, Michael  
Comments:

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Part 60, Db	Indust.-Comm.-Inst. Steam Gen. Units
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References:	60.41b
	60.41c

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## Abstract:

Q1: Is a bark burner/rotary dryer/thermal oil system proposed for a Louisiana-Pacific oriented strand board (OSB) facility near Thomasville, Alabama, a "steam generating unit" subject to either 40 CFR Part 60, subpart Db, or subpart Dc? The unit consists of two wood waste-fired burner units of approximately 187 mmBtu/hour each, a secondary air chamber, two wood flake rotary dryers, and a thermal oil heater to which less than 16 percent of the bark burner exhaust gases from the secondary air chamber will be routed.

A1: Yes. The bark burners operate as a steam generating unit relative to the thermal oil heater in that they combust fuel to heat a heat transfer medium, which is used to transfer heat to the OSB manufacturing process. Because the two bark burner units each have a heat input capacity great than 100 mmBtu/hour, each burner is a separate affected facility subject to NSPS subpart Db.

Q2: Because only a small portion of the heat from the bark burners is being diverted to the thermal oil heater, does the system function primarily as a "process heater"?

A2: No. The fact that only a small portion of the heat is routed to the thermal oil heater is irrelevant given that the definition of "steam generating unit" does not require the bark burners to be used "primarily" to heat a heat transfer medium.

Q3: Do the dryers meet the "process heater" exclusion from the definition of steam generating unit?

A3: No. The wood flakes are not heated to initiate or promote a chemical reaction in which the wood flakes are participating as a reactant or catalyst.

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## Letter:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE

DEC 20 2006

Ms. Geri Shoop  
Senior Environmental Project Manager for Air Quality Louisiana Pacific  
414 Union Street, Suite 200  
Nashville, Tennessee 37219

Dear Ms. Shoop,

This letter is in response to the December 5, 2005, January 13, 2006, and March 14, 2006, letters and follow-up E-mail dated February 17, 2006, August 30, 2006, and September 20, 2006, from Louisiana-Pacific (LP) Corporation requesting an applicability determination regarding the Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Subpart Db) and the Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (NSPS Subpart Dc) as they apply to a proposed bark burner/rotary dryer/thermal oil system for a new oriented strand board (OSB) manufacturing mill located near Thomasville, Alabama. Based on a review of the information provided, we have determined that the bark burners are steam generating units subject to NSPS Subpart Db. The details of our applicability determination are provided below.

As described in the letters and E-mail provided by LP, the proposed bark burner system will consist of two burner units, each of which will have a heat input of approximately 187 mmBtu/hr. The burners will be fired with wood waste from debarking, green screening, and dry screening. Since the largest bark burner available from the vendor is not sufficient to provide the thermal energy necessary for the mill, the system will include a dual bark burner combustion system instead of a single burner combustion system. In addition, production can be maintained (at a reduced rate) when repairs or unscheduled maintenance is required on one of the burners.

Exhaust from each of the two bark burners will be combined in a secondary air chamber, which will primarily be used as an ash drop-out chamber. No additional combustion will take place in the secondary air chamber. From the secondary air chamber, the majority (approximately 84 percent) of the exhaust gases will be routed to two wood flake dryers for direct contact heating of the wood flakes. The dryers resemble rotary kilns, with green (wet) flakes entering one end and being tumbled as they move through the rotating dryer drum. In the rotary dryers, hot exhaust gases from the bark burners will pass above and around the wood flakes. Similar to the bark burners, there are two rotary dryers in part because the largest rotary dryer available would not be large enough to supply all of the wood flakes needed for the OSB presses at the mill, and in part because having two rotary dryers allows the mill to operate at a reduced rate with one rotary dryer while undertaking repairs or maintenance on the other.

In addition to the bark burners and rotary dryers, LP will also incorporate a thermal oil heater into the design of the system. According to LP, less than 16 percent of the bark burner exhaust gases will be routed from the secondary air chamber to the thermal oil heater before continuing on to the rotary dryers. After the dryers, the exhaust gases will be routed through a wet electrostatic precipitator for particulate control, and then to a regenerative thermal oxidizer for volatile organic compound (VOC) and hazardous air pollutant (HAP) reduction, as well as some particulate reduction.

NSPS Subparts Db and Dc apply to "steam generating units." NSPS Subpart Db applies to "steam generating units" with heat input capacities greater than 100 mmBtu/hr. NSPS Subpart Dc applies to "steam generating units" with heat input capacities of 100 mmBtu/hr or less, but greater than or equal to 10 mmBtu/hr. A "steam generating unit" is defined in both NSPS Subpart Db and Dc to mean:

... a device that combusts any fuel or byproduct/waste to produce steam or to heat water or any other heat transfer medium... This term does not include process heaters as they are defined in this subpart. (Emphasis added)

40 CFR Section 60.41b and 60.41c

In addition, both NSPS Subparts Db and Dc provide the following definitions for "heat transfer medium" and "process heater" which are relevant to this applicability determination:

Heat transfer medium means any material that is used to transfer heat from one point to another point.

Process heater means 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. (Emphasis added)

40 CFR Section 60.41b and 60.41c

LP argues that the proposed bark burner/rotary dryer/thermal oil system is not subject to NSPS Subpart Db or Dc because the system is not a "steam generating unit." LP maintains that the rotary dryer meets the definition of a "process heater" which is explicitly excluded from the "steam generating unit" definition cited above. LP alleges that the wood flakes in the rotary dryer are heated to initiate or promote a chemical

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reaction in which the flakes are participating as a reactant or catalyst in the OSB manufacturing process. Furthermore, LP argues that since only a small portion of the heat from the bark burners (less than 16%) is being diverted to the thermal oil heater, the bark burner/rotary dryer/thermal oil heater system functions "primarily" as a "process heater."

The Agency disagrees with the LP argument that the bark burner/rotary dryer/thermal oil heater system is not a "steam generating unit" because the rotary dryer is a "process heater." The Agency does not believe that the wood flakes are heated to initiate or promote a chemical reaction in which the flakes are participating as a reactant or catalyst. Instead, consistent with previous Agency applicability determinations, we believe that flake dryers are process dryers, and would not, in and of themselves be considered "steam generating units."<sup>1</sup> However, consistent with previous determinations, we find that the two bark burners operate as a "steam generating unit" relative to the thermal oil heater in that they combust fuel to heat a heat transfer medium (i.e., the oil), which is then used to transfer heat to the OSB manufacturing process.<sup>2</sup> The fact that only a small portion of the heat is routed to the thermal oil heater is irrelevant given that the definition of a "steam generating unit" does not require the bark burners to be used "primarily" to heat a "heat transfer medium."

Since NSPS Subparts Db and Dc do not provide exemptions for units designed with the dual purpose of heating a "heat transfer medium" and providing heat for other purposes, such as wood flake rotary drying, the Agency finds that the combination bark burner/rotary dryer/thermal oil heater system at LP meets the definition of a "steam generating unit." Furthermore, since the two bark burner units each have a heat input capacity greater than 100 mmBtu/hour, each burner will be a separate affected facility subject to the requirements of NSPS Subpart Db.

This response has been coordinated with the Office of Air Quality Planning and Standards and the Office of General Counsel. If you have any questions concerning this determination, please contact Gregory Fried at (202) 564-7016.

Very Truly Yours,

Michael S. Alushin, Director  
Compliance Assessment and Media Programs Division Office of Compliance

1 Memorandum from Bruce Jordan, Director, Emission Standards Division, Office of Air Quality Planning and Standards, to Regional Air Division Directors, November 17, 1992, ADI#PS36

2 Letter from John Rasnic, Director, Manufacturing, Energy and Transportation Division, Office of Compliance, to Elizabeth T. Smith, Director, Environmental Affairs, Louisiana Pacific Corporation, May 30, 1996, ADI# 9600071, gives a complete discussion of the issue.



# U.S. Environmental Protection Agency Applicability Determination Index

Control Number: 0800089

Category: NSPS  
EPA Office: CAMPD  
Date: 10/02/2008  
Title: Dryers at OSB Bark Burner System  
Recipient: Shoop, Geri  
Author: Gigliello, Ken  
Comments:

Part 60, A	General Provisions	
	Db	Indust.-Comm.-Inst. Steam Gen. Units

References: 60.41b

## Abstract:

Q: Are the dryers at a bark burner system at a Louisiana-Pacific OSB facility in Thomasville, Alabama, "process heaters" and thereby excluded from 40 CFR part 60, subpart Db?

A: No. The definition of steam generating unit under NSPS subpart Db excludes "process heaters," which are defined as devices used primarily to heat a material to initiate or promote a chemical reaction. The primary purpose of heating wood flakes in the dryers is to dry them, rather than to invoke a chemical reaction either within the dryers or downstream of the dryers. Therefore, the dryers do not qualify for the process heater exclusion.

## Letter:

Ms. Geri Shoop  
Senior Environmental Project Manager for Air Quality Louisiana-Pacific Corporation  
414 Union Street, Suite 200  
Nashville, Tennessee 37219

Re: Revised Determination of the Applicability of the New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units (40 CFR Subpart Db) to the Bark Burner/Rotary Dryer/Thermal Oil System at Louisiana-Pacific's New Thomasville, Alabama Oriented Strand Board (OSB) Manufacturing Facility

Dear Ms. Shoop:

As you are aware, the United States (U.S.) Environmental Protection Agency (EPA) issued a December 20, 2006, applicability determination to Louisiana-Pacific (LP) Corporation regarding the bark burner/rotary dryer/thermal oil system for a new oriented strand board (OSB) manufacturing facility located near Thomasville, Alabama. In that letter, EPA determined that the combination bark burner/rotary dryer/thermal oil heater system (the bark burner system) would be subject to the New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units (Subpart Db). The letter set forth EPA's conclusion, based on the available information, that the bark

burner system as a whole meets the definition of a "steam generating unit" in NSPS Subpart Db, and that the bark burner system is not a process heater and, therefore, is not excluded from Subpart Db applicability as a process heater. EPA further determined that since the bark burner system consists of two burner units, each with a heat input capacity greater than 100 MMBTU per hour, that each burner would be a separate affected facility under NSPS Subpart Db.

In a June 13, 2008, decision, the U.S. Court of Appeals for the Eleventh Circuit upheld the determination that the bark burner system as a whole was a steam generating unit as defined in NSPS Subpart Db. The court also concluded, however, that EPA had not adequately explained its rejection of two LP arguments that the system was a "process heater" and, therefore, excluded from NSPS Subpart Db. As a result, the court vacated that part of the determination and remanded it to EPA with instructions to address those two arguments. This letter responds to the court's instructions, and confirms the prior EPA determination that the bark burner system is subject to NSPS Subpart Db.

LP claims that the primary purpose of heating wet wafers and wood flakes is to promote or initiate chemical changes, and presents two arguments to support its contention that the bark burners are process heaters. LP first argues that chemical reactions occur in the wood flakes and wafers when they are heated in the dryers, and that this qualifies the bark burner system as a process heater. LP next argues that the wood flakes and wafers are dried to facilitate the later downstream chemical process of bonding with the resin to form OSB panels, and that this qualifies the bark burner system as a process heater. Today's letter: 1) fully explains our rationale for concluding that the bark burner system does not qualify for the process heater exemption; 2) addresses the two arguments LP made as identified by the court; and 3) reconfirms, with this additional rationale, our original determination that the units are subject to NSPS Subpart Db.

1. The Bark Burner System is not a "Process Heater"

The exemption for process heaters appeared in the originally promulgated NSPS Subpart Db, Standards of Performance for New Stationary Sources; Industrial-Commercial-Institutional Steam Generating Units, 51 Federal Register (Fed. Reg.) 42768 (November 25, 1986) and has remained substantively unchanged since that time.

"Process heater" means a device which is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst. 40 CFR 60.41b. (Emphasis added).

Based on this definition, to determine whether a particular unit is a process heater, it is necessary to identify: a) the material being heated; b) the primary purpose of heating that material; and c) whether this primary purpose is one in which the heated material initiates or promotes a chemical reaction in which it participates as a reactant or a catalyst.

a. The material being heated is wood flakes.

In the case of the bark burner system, there are two materials being heated: oil in a thermal oil heater, and wood flakes in the rotary dryers. The oil in the thermal oil system does not contact any other material used in the process, and, therefore, is not eligible for the process heater exclusion since it could not participate in a chemical reaction as a reactant or catalyst. Moreover, LP has made no claim that the heating of the oil qualifies the system as a process heater. Therefore, the focus of the inquiry is the rotary dryers. LP claims that the rotary dryers qualify for the process heater exclusion and has described this portion of the OSB manufacturing process, in pertinent part, as follows:

Wet wafers from the green end of the mill will be transferred to one of two single-pass rotary wafer dryers. The exhaust gases from the bark burner will be directly vented into each of the dryers. In the dryers, the wafer moisture content will be reduced to levels acceptable for OSB production.<sup>1</sup>

From the secondary air chamber, the majority of the exhaust gases are then directed to the two wood flake dryers for direct contact heating of the wood flakes.<sup>2</sup>

Based on these descriptions, the materials being heated are wet wafers and wood flakes (hereafter referred to collectively as wood flakes).

b. The primary purpose of heating the wood flakes is to dry them.

Literature on the OSB manufacturing process, including EPA documents, and LP's own statements, confirm that the purpose of heating the wood flakes is to reduce wood flake moisture content to levels acceptable for OSB production. For example; "First, logs are debarked, cut, and shredded into flakes. The flakes then are heated to remove moisture and conveyed to the next operation or to storage silos."<sup>3</sup> "In the fabrication of oriented strand board, the strands are first dried to remove water . . ."<sup>4</sup> . "The wafers are dried to a low moisture content (generally 4 to 10 percent, dry basis) to compensate for moisture gained by adding resins and other additives."<sup>5</sup> "The strands are dried to a low moisture content to allow for moisture gained by adding resins and other additives."<sup>6</sup> Also, the U.S. EPA Background Information Document for Proposed Plywood and Composite Wood Products NESHAP, Office of Air Quality Planning and Standards, EPA-453/R-01-004, September 2000, provides the following description on p. 2-16:

Most OSB plants in the United States use triple-pass rotary drum dryers. Rotary dryers are normally direct-fired with wood residue from the plant, but occasionally oil or natural gas also are used as fuels. The wood strands are generally dried from around 60 percent moisture (dry basis) to around 5 percent (dry basis). Most rotary dryers are dedicated to drying either core or surface material to allow independent adjustment of moisture content.

LP states that they are using two rotary dryers in this process, in part, because the wood flakes to be used on the surface of the board are dried to different specifications than those used in the core of the board.<sup>7</sup> This statement bears out the fact that the primary purpose of heating the wood flakes is to dry them so that they meet appropriate specifications.

Based on the above descriptions of the OSB manufacturing process, including LP's own description of the function of the two rotary dryers, the primary purpose of the dryers to is reduce the moisture content (dry) the wood flakes to make them suitable for use in the OSB manufacturing process.

c. The primary purpose of the dryers, to dry the wood flakes, is a physical process, not a chemical reaction in which the wood flakes participate as a reactant or catalyst.

Drying the wood flakes drives off wood surface moisture and moisture bound within the cellular structure of the wood.<sup>8</sup> This drying process entails heat and moisture transfer, which are physical, not chemical processes. As stated in the "Handbook of Separation Techniques for Chemical Engineers," Second Edition, McGraw-Hill (1988) by Philip A. Schweitzer, p. 4-161:

Drying is a physical separation process that has as its objective the removal of a liquid phase from a solid phase by means of thermal energy. (Emphasis added).

By contrast, a chemical reaction is a process in which one or more substances, the reactants, are converted to one or more different substances, the products. "Substances" are either chemical elements or compounds. A chemical reaction rearranges the constituent atoms of the reactants to create different substances as products.<sup>9</sup>

Consistent with these definitions, EPA concludes that the drying of the wood flakes is a physical process, not a chemical reaction. Since the terms "reactant" and "catalyst" are terms specific to chemical reactions, and since we have determined that the primary purpose of the dryers is to promote a physical process, not a chemical reaction, the wood flakes do not serve as a reactant or catalyst in achieving the primary purpose of the dryers. Based on the above factors, and consistent with the definition of process heater, EPA has determined that the dryers do not qualify as process heaters.

2. LP Arguments

Having concluded that the primary purpose of the dryers is to dry the wood flakes, which is a physical process, not a chemical reaction, the analysis is complete and wholly supports the EPA determination that the bark burner system is not a process heater. Consistent with the court's decision, however, EPA hereafter individually addresses the two arguments identified by the court.

a. LP first argues that chemical reactions occur in the wood flakes during drying and that the wood flakes serve as either a reactant or catalyst in these reactions.

While chemical changes may occur within the wood flakes when they are heated and dried at the temperatures in the dryers, promoting these chemical changes is not the primary purpose of the dryers. Rather, as stated above, the primary purpose of the dryers is to dry the wood flakes, which is a

physical process, not a chemical reaction. The conclusion that the primary purpose of the dryers is to dry the wood flakes is supported by our understanding of the OSB manufacturing process as reflected in all the materials cited above, which includes EPA publications, general descriptions of the industry, and descriptions by LP of their bark burner system.<sup>10</sup> Therefore, the chemical reactions which occur in the wood flakes while they are in the dryers do not qualify the dryers, nor the overall bark burner system, as process heaters.

b. LP next argues that the purpose of the system is to heat wood flakes to initiate or promote a downstream chemical reaction in which the wood flakes participate as a reactant or catalyst.

LP also argues that the purpose of the bark burner system is to heat the wood flakes to initiate or promote a downstream chemical reaction in which the wood flakes participate as a reactant or catalyst in bonding with the resin in the press to form OSB panels, and that this downstream chemical reaction qualifies the system as a process heater. Since we have already established that the dryers themselves are not process heaters, the question becomes whether the overall bark burner system, inclusive of the dryers and thermal oil system, functions as a process heater for a downstream chemical reaction. As discussed in detail below, EPA concludes that it does not.

Chemical reactions that occur downstream of the bark burner system are not the direct result of the heat energy imparted by the rotary dryers. It is not necessary that wood flakes be preheated to a particular temperature by the dryers immediately prior to entering the downstream processes. If cooled, dried wood flakes are available from storage or by purchase, those flakes can be mixed directly with resin and wax for successful bonding in the OSB press without need of a dryer upstream or onsite. In point of fact, in some OSB operations, after exiting the dryer, wood flakes are screened to remove fines, separated by surface area and weight, and then stored in dry bins; the wood flakes are transferred to the blender for mixing with resins, wax and other additives at a later time.<sup>11</sup> While LP indicates that there is limited capacity to store dried wood flakes in their operation,<sup>12</sup> this does not change the fact that it is not necessary for the wood flakes to be preheated to a particular temperature before being mixed, formed and pressed. Therefore, the primary purpose of heating the flakes in the dryers is not to initiate or promote a chemical reaction downstream, but to dry the wood flakes.

Further, while chemical reactions that occur downstream of the bark burner system in the forming press are aided by the application of heat from the thermal oil system, the thermal oil system is not a process heater because the material heated in the system, the oil, does not participate in those reactions as a reactant or a catalyst. The oil merely acts as a heat transfer medium. The oil does not come into contact with the materials in the forming press and, therefore, cannot participate in any chemical reactions which take place in the forming press as a reactant or a catalyst. Finally, it is not the primary purpose of the thermal oil system to heat the wood flakes so that they can participate in a chemical reaction because, as discussed above, the wood flakes do not need to be preheated.

In summary, the primary purpose of heating the wood flakes in the bark burner system is to dry them. The primary purpose of heating the wood flakes is, therefore, not to initiate or promote a downstream chemical reaction in which the wood flakes participate as a reactant or catalyst.

3. Conclusion

Consistent with our December 20, 2006 determination and as explained in detail above, EPA concludes that the bark burner system is not a process heater. We are, therefore, confirming that the two bark burner units at the Louisiana-Pacific Thomasville, Alabama OSB manufacturing facility are subject to NSPS Subpart Db. This response has been coordinated with the appropriate offices within EPA. If you have questions regarding this letter, you may contact Sally Harmon-Semple of my staff at (202) 564-7012.

Sincerely yours,

Ken Gigliello, Acting Director  
Compliance Assessment and Media Programs Division  
Office of Compliance

cc: Phillip E. Cobbs, Louisiana-Pacific Corporation Lester Meredith, Alabama Department of Environmental Quality Russell S. Frye, FryeLaw PLLC

- 1 Letter from Phillip Cobbs, Louisiana-Pacific Corporation, to Keith Goff, U.S. EPA Region 4, December 5, 2005.
- 2 Letter from Phillip Cobbs, Louisiana-Pacific Corporation, to Keith Goff, U.S. EPA Region 4, January 13, 2006.
- 3 Alan Hitchcox, A Safety Boost in OSB Manufacturing, Hydraulics & Pneumatics, September 2006, Vol. 59, No.9, p. 14.
- 4 Barker et al., Integrated process for simultaneous manufacture of oriented strand lumber and board products, U.S. Patent 20070151662, Publication Date July 5, 2007, Background, 2. Discussion of the Related Art.
- 5 AP 42, Volume I, Fifth Edition, January 1995, Chapter 10, Wood Products Industry, 10.6.1.2, Process Description.
- 6 EPA Office of Compliance Sector Notebook Project; Profile of the Lumber and Wood Products Industry, EPA/310-R-95-006, September 1995, Industrial Process Description, p. 23.
- 7 Brief for Petitioner Louisiana-Pacific Corporation; Russell S. Frye, June 18, 2007 No. 07-10693-JJ; Statement of Facts, p. 8.
- 8 Water molecules bind to each other by intermolecular hydrogen bonds. Similarly, water molecules in the cellular structure bind to hydroxyl groups in wood by intermolecular hydrogen bonds. Neither the removal of free water (i.e. breaking of hydrogen bonds between water molecules by drying) or the removal of bound, hygroscopic water (i.e., breaking of hydrogen bonds between water molecules and free hydroxyl groups in wood by drying) creates a new substance from other substances. Accordingly, neither of these are chemical reactions within the meaning of the NSPS.
- 9Britannica Online Encyclopedia, [www.britannica.com/EBchecked/topic/108802/chemical-reaction](http://www.britannica.com/EBchecked/topic/108802/chemical-reaction).
- 10 See also: U.S. Department of Energy, Office of Industrial Technologies, Forest Products Project Fact Sheet, DOE/GO-10099-709, January 1999, Project Overview, regarding dryers at a Louisiana-Pacific plant in Colorado.
- 11 U.S. EPA Background Information Document for Proposed Plywood and Composite Wood Products NESHAP, Office of Air Quality Planning and Standards, EPA-453/R-01-004, September 2000, Section 2.3.1.
- 12 Letter from Geri Shoop, Louisiana-Pacific Corporation, to Greg Fried, U.S. EPA Office of Compliance, March 14, 2006.