STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Hancock Lumber Company, Inc. **Cumberland County** **Casco, Maine** **A-629-71-O-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #1**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Hancock Lumber Company, Inc. (Hancock) was issued Air Emission License A-629-71-N-R/A on October 25, 2017, for the operation of emission sources associated with their lumber mill.

Hancock has requested an amendment to their license in order to add one new drying kiln (Kiln #8) and to add a new coating operation to produce pre-primed and pre-stained lumber.

The equipment addressed in this license amendment is located at 1260 Poland Spring Road in Casco, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Equipment	Description	Pollution Control Equipment
Finishing Line	Surface treatment using vacuum coater and UV curing oven	None
	Sanding/Denibbing	Fabric filter
	Surface treatment using spray machine	Enclosed machine with filters
Kiln #8	Batch drying of eastern white pine lumber	None

C. Definitions

Records or *Logs* mean either hardcopy or electronic records.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (tpy)	Future License (tpy)	Net Change (tpy)	Significant Emission Levels
PM	14.9	14.9	–	100
PM_{10}	14.9	14.9	–	100
SO_2	1.2	1.2	–	100
NO_x	10.9	10.9	–	100
CO	29.7	29.7	–	100
VOC	37.0	49.6	+12.6	50

This modification is determined to be a minor modification and has been processed as such.

E. Facility Classification

With the annual fuel limit on Boilers #3 and #4, the throughput limit for the drying kilns, and the volatile organic compound (VOC) limit for the finishing lines, the facility is licensed as follows:

- As a synthetic minor source of air emissions for VOC, because Hancock is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

Emissions of VOC are licensed above 80% of the major source threshold. Therefore, this facility is classified as an "80% Synthetic Minor" for the purpose of determining the minimum required compliance inspection frequency in accordance with Maine's Compliance Monitoring Strategy.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Kiln #8

Hancock proposes the installation of Kiln #8, a batch kiln capable of drying 4.5 million board feet per year (MMBF/year). The kiln will have multiple exhaust vents, and the exhaust from these vents will have a high moisture content and low concentrations of various organic compounds released from the wood as it dries.

Best Available Control Technology (BACT)

The only criteria pollutant expected to be emitted from Kiln #8 is VOC. Potential control technologies considered for VOC emissions from lumber kilns included thermal and catalytic oxidation, adsorption, absorption/scrubbing systems, and condensation.

1. Thermal Oxidation

A thermal oxidizer raises the temperature of the exhaust stream to oxidize (burn) or pyrolyze (thermally break down) the constituents. In the case of hydrocarbons (including VOC), complete combustion produces carbon dioxide and water. Regenerative thermal oxidizers (RTOs) use heat exchangers to preheat the exhaust and/or recover waste heat from the treated air stream. Both RTOs and non-regenerative thermal oxidizers operate in a range of 1,500 – 1,800 °F. A regenerative catalytic oxidizer (RCO) operates similarly to an RTO with the addition of a catalyst which allows the unit to operate at a lower temperature (500 – 1,000 °F).

RCOs typically require a clean gas stream to operate efficiently. The catalyst is prone to being blinded or masked by moisture and condensates found in the kiln exhaust. Additionally, thermal oxidizers would require the burning of significant amounts of fuel to destroy the VOC, leading to emissions of other pollutants such as NO_x and CO. And lastly, based on the relatively small amount of VOC to be controlled (5.3 tpy), any additional add-on control technology would cost well in excess of $10,000 per ton of pollutant controlled. Therefore, thermal oxidation, including the use of an RTO or

RCO, is not considered environmentally or economically feasible for control of VOC from Kiln #8.

2. Adsorption

Adsorption is the process by which molecules collect on and adhere to the surface of an adsorbent solid due to physical and/or chemical forces. Activated carbon is typically used as an adsorbent because of its large surface area which is a critical factor in the adsorption process although other materials, such as zeolite and polymers, may also be used.

Adsorption media, such as activated carbon or zeolite, are hygroscopic which is problematic for controlling VOC from wood products applications. The moisture in the exhaust competes for active adsorptive sites in the media and decreases the VOC control efficiency. Dehumidification can help this problem but is impractical at high flow rates. Additionally, the terpenes from wood present in the exhaust will tend to condense and foul the media, reducing efficiency and increasing needed maintenance. Therefore, an adsorption system is determined to not be technically feasible for control of VOC from Kiln #8.

3. Absorption/Wet Scrubbers

In absorption systems, constituents of a gas stream are selectively removed by a liquid solvent. The control of gas-phase VOC using an absorption scrubber system relies on contact between the gas stream and a liquid in which the contaminants are soluble or with which it will chemically react. The degree of control depends upon the solubility of the gas, gas/liquid throughput rates, contact time, and the mechanism of the scrubber. Gas absorption is commonly used to recover product or to purify gas streams with high concentrations of water-soluble compounds. They are most effective for gas streams with pollutant concentrations between 250 and 10,000 ppmv. Low concentrations of organics in an exhaust stream require long contact times and large quantities of absorbent for effective removal.

VOC emissions from Kiln #8 include compounds which are water soluble. However, the kiln exhaust has expected low VOC concentrations. In addition, use of an absorption system would result in large volumes of wastewater that would need to be stored, treated, and discharged. Therefore, the use of an absorption system is determined to not be technically or environmentally feasible for control of VOC from Kiln #8.

4. Condensation

A condenser cools the exhaust stream, changing the organic compounds from a vapor to a liquid phase using a heat exchange surface maintained at a temperature low enough to cause the VOC to condense on its surface.

The nature of the condensable portion of the organic compounds in the kiln exhaust will result in fouling of a heat exchanger system which will prevent efficient and effective operation. Also, the high moisture content of the kiln exhaust would result in large volumes of wastewater to be stored, treated, and discharged. For these reasons, condensation is determined to not be technically feasible for control of VOC from Kiln #8.

5. Determination

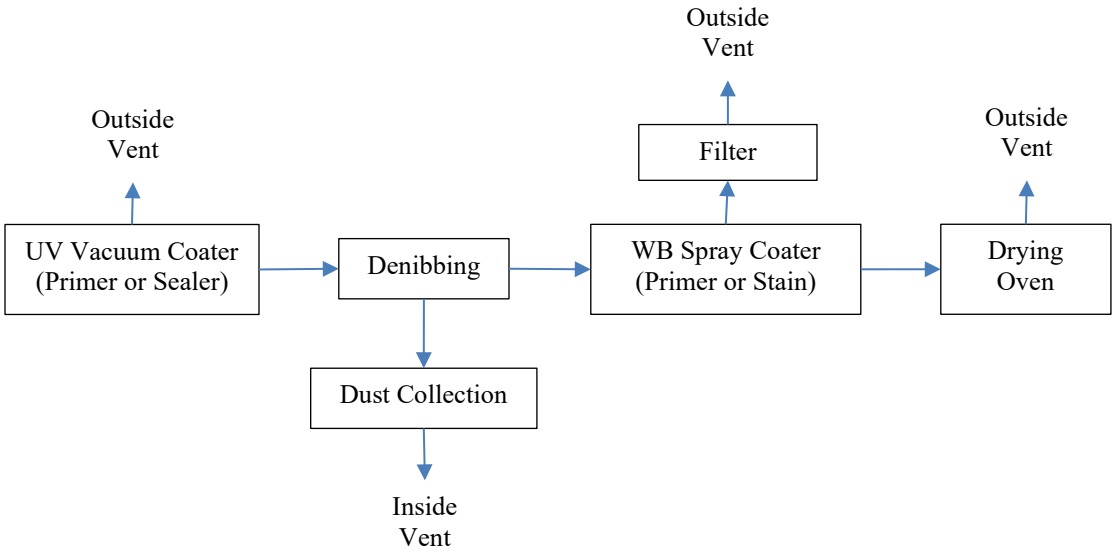
Given the number and nature of the kiln exhaust points, high moisture content of the exhaust stream, and the variety and low concentration of VOC expected in the exhaust stream, all of the control technologies considered are technically infeasible and/or have significant environmental trade-offs.

Therefore, the Department finds that BACT for Kiln #8 shall consist of compliance with a facility-wide kiln throughput limit of 36.5 MMBF/year on 12-month rolling total basis. Compliance shall be demonstrated through records of kiln throughput kept on a monthly and 12-month rolling total basis.

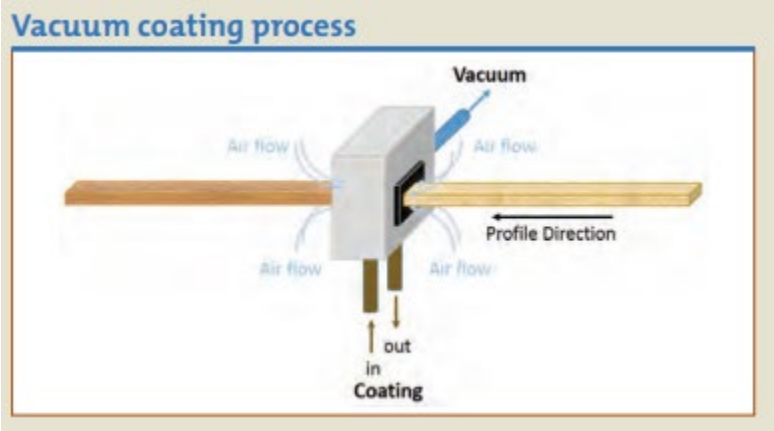
The kiln throughput limit is equivalent to 41.2 tpy of VOC based on an emission factor of 2.26 pounds of VOC for every 1,000 board feet dried. This emission factor was developed by the National Council for Air and Stream Improvement (NCASI) and published in Technical Bulletin No. 718 dated July 1996. NCASI is a research organization for the pulp and paper industry of the United States and Canada.

C. Finishing Line

Hancock proposes to install a Finishing Line for producing pre-primed or pre-stained boards. As shown in the diagram below, the Finishing Line will consist of one line with two separate coating units, an ultraviolet (UV) vacuum coater and a water-based (WB) profile spray machine, as well as a “denibbing” process and a drying oven.



A vacuum coater consists of a box with a lineal profile entry and exit hole cut (in the shape of the profile) on opposite sides. A vacuum pump pulls a considerable volume of air through the gap existing between the profile and the holes cut in the box. The air volume drawn into the gap effectively meters (or doctors) off excess coating, leaving a film layer on the wood as it exits the coater. The thickness of the coating is dependent on the speed the material is sent through the coater and the vacuum pressure applied.



Immediately after the vacuum coater, the board passes through a UV curing oven which sets the UV primer or UV sealer.

After application of the UV primer or UV sealer, the product may be unloaded as a finished product or it may continue to denibbing and the WB spray coater.

Denibbing involves lightly sanding all four sides of the board to prepare the board for the waterborne primer or stain.

After denibbing, a water-based primer or stain is applied using a fully enclosed profile spray machine. The profile spray machine coats the top and two edges of the board at the same time. The boards are then transferred to a drying oven. Heat for the drying ovens will be provided by two small pellet boilers, each with a heat input of approximately 0.4 MMBtu/hr. The pellet boilers are considered insignificant activities and mentioned for completeness only. Some boards may pass through the profile spray machines twice to coat both sides.

Both the UV vacuum coater and the profile spray machine are each capable of being run independently but not at the same time, i.e., Hancock can run product through both the UV vacuum coater and then the profile spray machine, or it can run just the UV vacuum coater or just the profile spray machine.

1. BACT Findings

   a. Particulate Matter (PM and PM_{10})

      The vacuum coater uses an enclosed metal box to transfer primer or sealer to the product being coated. This coating process does not generate emissions of particulate matter.

      Primer and stain will also be applied using a profile spray machine. The profile spray machine will be enclosed and equipped with particulate filters. This is a highly effective control method for particulate matter from spray painting operations.

      The denibbing process will have dust collection ports at each of the abrasive tools or sanding brushes to capture the dust generated. Hancock has proposed controlling emissions of particulate matter from this operation through use of a fabric filter and exhausting the filtered air back inside the building. The combination of a fabric filter and not exhausting outside the building effectively eliminates emissions of particulate matter from this process.

      The Department finds the use of particulate filters on the profile spray machine, the use of fabric filters that exhaust inside the building for the denibbing process, and the visible emission limit listed below to represent BACT for particulate matter emissions (PM and PM_{10}) from the facility's Finishing Line.

      Visible emissions from any UV vacuum coater, profile spray machine, or drying oven which vents outside shall not exceed 10% opacity on a 6-minute block average basis. Hancock shall demonstrate compliance with the visible emission limit through performance testing upon request of the Department.

Hancock shall conduct monthly inspections of the particulate filters associated with the profile spray machine and monthly inspections of the denibbing process fabric filter and keep records of the dates of the inspections and the dates the filters are replaced.

b. Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP)

Emissions of VOC and HAP from the Finishing Line is directly proportional to the VOC/HAP content of the products applied. In this case, HAP emission will be a subset of VOC emissions.

All of the products that will be used are considered to have a low VOC content. The UV-cured primer and sealer each have a VOC content less than 0.5% by weight. The water-based primer has a VOC content less than 1.3% by weight, and the water-based stain has a VOC content less than 7.8% by weight. Although not subject to *Surface Coating Facilities*, 06-096 C.M.R. ch. 129 (as explained later in this license), all proposed coatings meet the standard contained in that rule for exterior siding (250 grams of VOC per liter, less water and exempt solvents).

Hancock has proposed a combined annual VOC limit for the Finishing Line of 7.6 tpy on a 12-month rolling total basis. Based on this low annual emission limit, any additional add-on control technology would cost well in excess of $10,000 per ton of pollutant controlled and therefore, is not economically feasible.

The Department finds an annual VOC limit of 7.6 tpy on a 12-month rolling total basis for the Finishing Line to represent BACT for VOC and HAP emissions. With this annual VOC limit, facility-wide emissions of HAP will remain below the major source threshold of 10 tpy for any single HAP and 25 tpy for all HAP combined.

2. Periodic Monitoring

Periodic monitoring for the Finishing Line shall include recordkeeping of the amount and VOC and HAP content of all coatings used in order to demonstrate compliance with the annual (12-month rolling total) VOC emission limit and facility-wide HAP emission limits. Calculations to demonstrate compliance with these limits shall be performed monthly.

3. *Surface Coating Facilities*, 06-096 C.M.R. ch. 129

Hancock is not subject to *Surface Coating Facilities*, 06-096 C.M.R. ch. 129, which establishes requirements for testing, evaluating, and limiting the emissions of VOC and HAP from selected surface coating operations. Surface coating activities as defined under this regulation include surface coating of flatwood panel products. The definition of flatwood paneling coating line includes exterior siding. However, the term “exterior siding” is not specifically defined by 06-096 C.M.R. ch. 129. Since exterior siding is

included in a definition that refers to panels and sheets, such as plywood and hardboard panels, it is the Department's interpretation that the flatwood paneling coating line definition is not intended to apply to boards. Therefore, the exterior siding boards produced at the Hancock facility are not covered by this definition and are not subject to 06-096 C.M.R. ch. 129.

4. *National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products*, 40 C.F.R. Part 63, Subpart QQQQ

   National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products, 40 C.F.R. Part 63, Subpart QQQQ, is not applicable to the Finishing Line. This regulation applies to facilities which are categorized as a major source of HAP emissions. [40 C.F.R. § 63.4681(b)] Hancock is an area source of HAP emissions. An annual (12-month rolling total) emission limit for HAP has been added to this license to ensure major source thresholds aren't exceeded.

D. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee. Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included. Maximum potential emissions were calculated based on the following assumptions:

- Firing 11,000 tons/year of biomass in Boilers #3 and #4 (combined);
- A throughput limit of 36.5 MMBF/year for the eight lumber drying kilns combined; and
- A limit of 7.6 tpy of VOC from the Finishing Line.

Please note, this information provides the basis for fee calculation only and should not be construed to represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Boilers #3 and #4	14.9	14.9	1.2	10.9	29.7	0.8
Drying Kilns (8)	–	–	–	–	–	41.2
Finishing Line	–	–	–	–	–	7.6
Total TPY	**14.9**	**14.9**	**1.2**	**10.9**	**29.7**	**49.6**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM_{10}	25
SO_2	50
NO_x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license amendment.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-629-71-O-A subject to the conditions found in Air Emission License A-629-71-N-R/A and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Condition (17) of Air Emission License A-629-71-N-R/A:

(17) **Drying Kilns**

A. Hancock is licensed to operate up to eight (8) lumber drying kilns. [06-096 C.M.R. ch. 115, BACT]

B. Hancock shall be limited to drying a total of 36.5 MMBF/year on a 12-month rolling total basis. [06-096 C.M.R. ch. 115, BACT]

C. Hancock shall keep monthly and 12-month rolling total records of the quantity of lumber, in board feet, processed in the drying kilns. [06-096 C.M.R. ch. 115, BACT]

The following are New Conditions:

(25) **Finishing Line**

A. Emissions of VOC from the Finishing Line shall not exceed 7.6 tpy (12-month rolling total basis). Compliance shall be demonstrated by calculations performed monthly. [06-096 C.M.R. ch. 115, BACT]

B. Hancock shall maintain records of the amount and VOC and HAP content of all coatings used in order to demonstrate compliance with the annual (12-month rolling total) VOC emission limit and facility-wide HAP emission limits. [06-096 C.M.R. ch. 115, BACT]

C. Emissions of particulate matter from the profile spray machine shall be controlled by the use and maintenance of particulate filters. [06-096 C.M.R. ch. 115, BACT]

D. Emissions of particulate matter from the denibbing process shall be controlled by the use and maintenance of a fabric filter and exhausting the filtered air back inside the building. [06-096 C.M.R. ch. 115, BACT]

E. Visible emissions from any UV vacuum coater, profile spray machine, or drying oven which vents outside shall not exceed 10% opacity on a 6-minute block average basis. Hancock shall demonstrate compliance with the visible emission limit through performance testing upon request of the Department. [06-096 C.M.R. ch. 115, BACT]

F. Hancock shall conduct monthly inspections of the particulate filters associated with the profile spray machines and monthly inspections of the denibbing process fabric filter and maintain records of the following:

1. Dates of each monthly inspection of the particulate filters associated with the profile spray machine;
2. Dates of each monthly inspection of the denibbing process fabric filter; and
3. Dates filters on either unit are replaced.

[06-096 C.M.R. ch. 115, BACT]

(26) **Facility-Wide HAP Limits**

Facility-wide annual emissions of HAP shall not exceed 9.9 tpy on a 12-month rolling total basis for any single HAP and 24.9 tpy on a 12-month rolling total basis for all HAP combined. Compliance shall be demonstrated by calculations performed monthly.
[06-096 C.M.R. ch. 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 25th DAY OF OCTOBER, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for ____
MELANIE LOYZIM, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-629-71-N-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 9/24/2021
Date of application acceptance: 9/27/2021

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

FILED

OCT 25, 2021

State of Maine
Board of Environmental Protection