



DEPARTMENT ORDER

**GO Lab Madison, LLC
Somerset County
Madison, Maine
A-1151-71-D-A**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #3**

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

GO Lab Madison, LLC (GO Lab) was issued Air Emission License A-1151-71-A-N on May 7, 2020, for the operation of emission sources associated with their wood fiber insulation manufacturing facility. The license was subsequently amended on November 18, 2021 (A-1151-71-B-A), and on November 3, 2022 (A-1151-71-C-A).

GO Lab has requested an amendment to their license for the following changes:

- To allow the use of pine as a source material for the manufacturing process;
- To increase the annual VOC limit to 75.2 tons/year to accommodate the addition of pine as a process material;
- To delay the performance testing of Flash Tube Dryer #1 to account for construction delays and delays in getting the Batt Line up and running, which is necessary for Flash Tube Dryer #1 to operate near its maximum production capacity; and
- To correct the reporting requirements of Boiler #1 under 40 C.F.R. Part 60, Subpart Dc.

The equipment addressed in this license amendment is located at 1 Main St., Madison, Maine.

B. Emission Equipment

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

Fuel Burning Equipment

| Equipment | Max. Capacity (MMBtu/hr) | Maximum Firing Rate | Fuel Type | Date of Manuf. | Date of Install | Stack # |
|---------------------------|--------------------------|---------------------|-------------|----------------|-----------------|---------------------------|
| Flash Tube Dryer Heater#1 | 25.6 | 25,100 scf/hr | natural gas | 2020 | 2020 | Flash Tube Dryer #1 Stack |
| Flash Tube Dryer Heater#2 | 25.6 | 25,100 scf/hr | natural gas | 2020 | 2020 | Flash Tube Dryer #2 Stack |
| Boiler #1 | 48.9 | 47,941 | natural gas | 1995 | 2020 | Boiler #1 Stack |

Process Equipment

| Equipment | Production Rate | Pollution Control Equipment | Stack # |
|---------------------|----------------------|-----------------------------|---------------------------|
| Flash Tube Dryer #1 | 8.3 oven dry tons/hr | High Efficiency Cyclone | Flash Tube Dryer #1 Stack |
| Flash Tube Dryer #2 | 8.3 oven dry tons/hr | High Efficiency Cyclone | Flash Tube Dryer #2 Stack |

C. 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 | 20.0 | 20.0 | 0.0 | 100 |
| PM ₁₀ | 15.4 | 15.4 | 0.0 | 100 |

| Pollutant | Current License (tpy) | Future License (tpy) | Net Change (tpy) | Significant Emission Levels |
|-----------------|-----------------------|----------------------|------------------|-----------------------------|
| SO ₂ | 0.3 | 0.3 | 0.0 | 100 |
| NO _x | 46.5 | 47.7 | 1.2* | 100 |
| CO | 62.9 | 55.5 | -7.4* | 100 |
| VOC | 49.9 | 75.2 | 25.3 | 100 |

* Reflects the correction of a previous miscalculation.

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

D. Facility Classification

With the annual VOC limits associated with Flash Tube Dryers #1 and #2, the facility is licensed as follows:

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

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. Process Source Material Change

On February 3, 2022, the US Environmental Protection Agency (EPA) granted a petition from the State of Maine requesting removal of a portion of the state from the Ozone Transport Region (OTR). This approval was published in the Federal Register on February 10, 2022, and became effective on March 14, 2022. As of the effective date, GO Lab is no longer in the OTR; therefore; the major source threshold for VOC emissions has changed from 50 tons/year to 100 tons/year.

Because of this change in the major source threshold, GO Lab has requested to maintain the annual cap on tons of material processed but to include as part of that total a limited amount of pine to mix in with spruce/fir for processing through Flash Tube Dryers #1 and #2. GO Lab also requests that the VOC limit of 49.9 tons/year established in Air Emission License A-1151-71-B-A (issued November 18, 2021) be increased to 75.2 tons/year to accommodate the addition of pine to the process material.

1. BACT Findings Update

As demonstrated in the BACT analyses performed for Air Emission Licenses A-1151-71-A-N and A-1151-71-B-A, the findings remain valid that a Regenerative Thermal Oxidizer, A Wet Electrostatic Precipitator, and a Condenser Control System all remain as technically feasible control technologies. The increase of VOC emissions proposed in this amendment, totaling 75.2 tons/year, would not reduce the cost per ton basis of any of the above control technologies to below \$15,000 per ton of controlled VOC emissions. As such, all of the above remain as economically unfeasible emissions control options.

2. BACT Emission Limits

With the addition of pine as a process material, the emissions of VOC become highly variable and dependent on which type of material is being processed. To accommodate for the variable emissions from the source material change, the short-term VOC emission limit (lb/hr limit) is being removed in this license amendment and replaced with an emission calculation method based on the type and quantity of materials input to the Flash Tube Dryers, as follows:

- The VOC emission factor for processing of spruce/fir was established as 1.5 pounds per oven dried tons (lb/ODT) in Air Emission License A-1151-71-A-N (issued May 7, 2020) and shall remain the same.
- The VOC emission factor for processing pine shall be 8.1 lb/ODT based on AP-42 Table 10.6.1-3 dated March 2002.
- The VOC emission limit from combustion in Flash Tube Dryer Heaters #1 and #2 will remain as 0.28 lb/hr as established in Air Emission License Amendment A-1151-71-B-A (issued November 18, 2021).

GO Lab is not proposing to change emission limits for any other pollutants as a result of the change in process materials.

As explained in Air Emission License Amendment A-1151-71-B-A, because this is a new process and actual VOC emissions have not yet been confirmed through stack emissions testing, the option to include a Condenser Control System has been included in case results of stack emissions testing without condenser controls indicate annual

VOC emissions could be at levels greater than major source thresholds or greater than limits established in the license.

If GO Lab installs and operates the Condenser Control System as described in Air Emission License Amendment A-1151-71-B-A, calculated VOC emissions will be correspondingly reduced to 5% of the uncontrolled emissions because the Condenser Control System has an estimated 95% VOC control efficiency.

Compliance with the facility-wide annual VOC emission limit shall be demonstrated using the following formulas for the two possible operational scenarios to calculate VOC emissions on both a monthly and 12-month rolling total basis:

- Oven dried tons shall be calculated as the tons of material delivered to the facility minus the moisture removed in the drying process using the following formulas:

Moisture removed = (average of raw material moisture percentage over the preceding calendar month) - (average of finished product moisture percentage over the preceding calendar month)

ODT = (Tonnage of raw material delivered over the previous calendar month) x (1 - Moisture removed)

- Without the Condenser Control System in Operation:

$$\begin{aligned} & [(\text{ODT of spruce/fir}) \times (1.5 \text{ lb VOC/ODT}) / 2000] \\ & + [(\text{ODT of pine}) \times (8.1 \text{ lb VOC/ODT}) / 2000] \\ & + [(*\text{natural gas fired, MMscf}) \times (11 \text{ lb VOC/MMscf})] \end{aligned}$$

* The natural gas fired is the total amount fired in Boiler #1, the Flash Tube Dryer Heaters #1 and #2, the Batt Line Heater, all Space Heaters, and the Water Heater.

- With the Condenser Control System in Operation:

$$\begin{aligned} & [(\text{ODT of spruce/fir}) \times (1.5 \text{ lb VOC/ODT}) / 2000 \times (0.05)] \\ & + [(\text{ODT of pine}) \times (8.1 \text{ lb VOC/ODT}) / 2000 \times (0.05)] \\ & + [(*\text{natural gas fired, MMscf}) \times (11 \text{ lb VOC/MMscf})] \end{aligned}$$

* The natural gas fired is the total amount fired in Boiler #1, the Flash Tube Dryer Heaters #1 and #2, the Batt Line Heater, all Space Heaters, and the Water Heater.

3. Material Throughput Limits for Flash Tube Dryers #1 and #2

GO Lab has proposed to limit the processing of pine to 15,000 tons/year, to be included in the existing annual limit of 120,000 tons of total raw material, both on a 12-month

rolling total basis. Both tonnage figures are based on the wet material weight as material delivered.

4. Periodic Monitoring and Recordkeeping

- a. In order to track VOC emissions from the processing of both spruce/fir and pine, GO Lab shall weigh, measure, and calculate the unprocessed tons of spruce/fir and the unprocessed tons of pine introduced into the system on a monthly basis.
 - b. Previously, the moisture content of the process material was required to be determined and recorded on a monthly basis. With the addition of pine as a raw material, the moisture content of the raw process material shall be determined and recorded on a weekly basis.
5. In order to verify the emission factors (lb VOC per ODT of material processed through the Flash Tube Dryers) used to calculate the annual emission of VOC from the facility, performance testing of Flash Tube Dryers #1 and #2 will be performed with separate test runs while processing exclusively spruce/fir as well as exclusively pine.
6. In the event the measured VOC process emissions are notably different than emissions calculated using actual material throughput and the emission factors listed above, GO Lab may choose to amend these emission factors, facility-wide annual VOC emission limit, and/or their total production limit based on the stack testing results. The Department may require more than one set of testing results upon which to base such a change.

C. Performance Testing Schedule

GO Lab was required to conduct stack testing within 270 days of each flash tube dryer process starting up (see Condition (18)B of Air Emission License A-1151-71-A-N and Condition (18)B of Air Emission License A-1151-71-B-A). With the construction delays and commissioning setbacks that have taken place with the startup of Flash Tube Dryer #1 as noted in a request letter sent to the Department on November 8, 2023, GO Lab has requested an additional 180 days to perform the required stack testing. The Department will amend the conditions of this license to allow up to an additional 180 days from the initial startup date of May 8, 2023, to conduct the stack testing on Flash Tube Dryer #1, or within 90 days of the point when Flash Tube Dryer #1 achieves a weekly average production rate of equal to or greater than 90% of the rated maximum production rate of 8.3 oven dry tons per hour, whichever comes first.

D. Boiler #1 Reporting Requirements

In Air Emission License A-1151-71-A-N (issued May 7, 2020) the requirements of 40 C.F.R. Part 60, Subpart Dc were listed for Boiler #1 including a requirement for semi-annual reporting. In a guidance email sent to the Department from the United States

Environmental Protection Agency dated May 11, 2020, it clarifies that semi-annual reports are not required for gas-fired boilers under Subpart Dc, and as such the semi-annual reporting requirements will be removed from this air emission license.

E. 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 and establishing the facility’s potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- A facility-wide limit of 1,000,000 MMBtu/yr of natural gas based on a heat content of 1030 BTU/scf;
- A process rate not to exceed 120,000 wet tons/year of wood (spruce/fir/pine) with a maximum of 15,000 tons of the 120,000 tons being pine; and
- A facility-wide VOC limit of 75.2 tpy.

This information does not 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 |
|-----------------------------|-------------|------------------|-----------------|-----------------|-------------|-------------|
| Fuel Burning Equipment | 5.0 | 4.1 | 0.3 | 47.7 | 55.5 | 5.4 |
| Flash Tube Dryers #1 and #2 | 15.0 | 11.3 | -- | -- | -- | 69.8 |
| Total TPY | 20.0 | 15.4 | 0.3 | 47.7 | 55.5 | 75.2 |

| 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.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require GO Lab to submit additional information and may require an ambient air quality impact analysis at that time.

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-1151-71-D-A subject to the conditions found in Air Emission License A-1151-71-A-N, in amendments A-1151-71-B-A and A-1151-71-C-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 Specific Condition (17)(F)(2) of Air Emission License A-1151-71-A-N.

(17) Boiler #1

F. Requirements for NSPS Subpart Dc

2. Reporting and Recordkeeping

GO Lab shall maintain records of the amounts of natural gas combusted during each month [40 C.F.R. § 60.48c(g)(2)]

The following shall replace Specific Condition (18) A, B, C, and D of Air Emission License A-1151-71-B-A.

(18) Flash Tube Dryers and Heaters #1 and #2

A. Annual Limits, Recordkeeping Requirements, and Compliance Methods
[06-096 C.M.R. ch. 115, BACT]

1. GO Lab shall be limited to processing 120,000 tons/year of unprocessed wood chips. A maximum of 15,000 of the 120,000 tons is allowed to be pine unless Condenser Control System(s) are installed and operated on one or both dryers and emissions testing confirms compliance with the annual VOC emission limit at higher processing rates.

GO Lab shall maintain records of the following:

- tons of spruce/fir and pine processed on a monthly basis; and
 - the moisture content of the spruce/fir wood and of the pine wood on a weekly basis.
2. GO Lab shall not exceed a facility-wide annual VOC emission limit of 75.2 tons.

Compliance with the facility-wide annual VOC emission limit shall be demonstrated using the following formulas for the two possible operational scenarios to calculate VOC emissions on both a monthly and 12-month rolling total basis:

a. Oven Dried Tonnage

Oven dried tons shall be calculated as the tons of material delivered to the facility minus the moisture removed in the drying process using the following formulas:

Moisture Removed = (average of raw material moisture percentage over the preceding calendar month) - (average of finished product moisture percentage over the preceding calendar month)

ODT = (Tonnage of raw material delivered over the previous calendar month) x (1 - Moisture Removed)

b. Without the Condenser Control System(s) in Operation:

$$\begin{aligned} & [(ODT \text{ of spruce/fir}) \times (1.5 \text{ lb VOC/ODT})] / 2000 \\ & + [(ODT \text{ of pine}) \times (8.1 \text{ lb VOC/ODT})] / 2000 \\ & + [(*\text{natural gas fired, MMscf}) \times (11 \text{ lb VOC/MMscf})] \end{aligned}$$

* The natural gas fired is the total amount fired in Boiler #1, the Flash Tube Dryer Heaters #1 and #2, the Batt Line Heater, all Space Heaters, and the Water Heater.

c. With the Condenser Control System(s) in Operation:

Note: The Condenser Control System(s) has an estimated 95% VOC control efficiency.

$$\begin{aligned} & [(ODT \text{ of spruce/fir}) \times (1.5 \text{ lb VOC/ODT})] / 2000 \times (0.05) \\ & + [(ODT \text{ of pine}) \times (8.1 \text{ lb VOC/ODT})] / 2000 \times (0.05) \\ & + [(*\text{natural gas fired, MMscf}) \times (11 \text{ lb VOC/MMscf})] \end{aligned}$$

* The natural gas fired is the total amount fired in Boiler #1, the Flash Tube Dryer Heaters #1 and #2, the Batt Line Heater, all Space Heaters, and the Water Heater.

B. Emissions Testing Requirements [06-096 C.M.R. ch. 115, BACT]

1. Within 90 days of reaching 90% of its maximum production rate on a weekly average basis, but not later than July 31, 2024 (450 days after initial start of Flash Tube Dryer #1), GO Lab shall conduct stack testing to demonstrate compliance with the lb/hr emission limits for PM and PM₁₀ listed below as well as demonstrate that emission factors for VOC are appropriate. Separate compliance demonstrations will be required for processing pine and for processing spruce/fir.

2. Within 270 days of Flash Tube Dryer #2 starting up, GO Lab shall conduct stack testing to demonstrate compliance with the lb/hr emission limits for PM and PM₁₀ listed below as well as demonstrate that emission factors for VOC are appropriate. Separate compliance demonstrations will be required for processing pine and for processing spruce/fir.
3. Within 270 days of installation of each Condenser Control System, GO Lab shall conduct stack testing to demonstrate the level of VOC, PM, and PM₁₀ control efficiency achieved as well as to demonstrate compliance with the lb/hr emission limits for PM and PM₁₀, and to demonstrate that the VOC lb/ODT emission factors listed below are appropriate. Separate compliance demonstrations will be required for processing pine and for processing spruce/fir.
4. Each Flash Tube Dryer and Heater stack or Condenser Control System exhaust shall be tested to demonstrate compliance with the emission limits for PM and PM₁₀, and demonstrate that the factors for VOC are appropriate. Testing shall be performed in accordance with the test methods listed below:

| Pollutant | Without Condenser Control System | With Condenser Control System | Compliance Method |
|------------------|--------------------------------------|---------------------------------------|---|
| PM | 4.5 lb/hr | 0.23 lb/hr | 40 C.F.R. Part 60, App. A, Method 5 |
| PM ₁₀ | 3.4 lb/hr (filterable + condensable) | 0.17 lb/hr (filterable + condensable) | 40 C.F.R. Part 60, App. A, Method 5 or EPA Test Method 201 or 201A and Method 202 |
| VOC (spruce/fir) | 1.5 lb/ODT | 0.08 lb/ODT | 40 C.F.R. Part 60, App. A, Method 25 or 25A |
| VOC (pine) | 8.1 lb/ODT | 0.40 lb/ODT | |

- C. The emission limits and VOC emission factors for Flash Tube Dryers and Heaters #1 and #2 without Condenser Control Systems are as follows:

| Unit | PM (lb/hr) | PM ₁₀ (lb/hr) | SO ₂ (lb/hr) | NO _x (lb/hr) | CO (lb/hr) | VOC from combustion (lb/hr) |
|---------------------------------|------------|--------------------------|-------------------------|-------------------------|------------|-----------------------------|
| Flash Tube Dryer #1 + Heater #1 | 4.5 | 3.4 | 0.02 | 2.5 | 2.1 | 0.28 |
| Flash Tube Dryer #2 + Heater #2 | 4.5 | 3.4 | 0.02 | 2.5 | 2.1 | 0.28 |

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

D. The combined (process and combustion) emission limits and VOC emission factors for the Flash Tube Dryers and Heaters #1 and #2 with the Condenser Control System are as follows:

| Unit | PM (lb/hr) | PM ₁₀ (lb/hr) | SO ₂ (lb/hr) | NO _x (lb/hr) | CO (lb/hr) | VOC from combustion (lb/hr) |
|---------------------------------|------------|--------------------------|-------------------------|-------------------------|------------|-----------------------------|
| Flash Tube Dryer #1 + Heater #1 | 0.23 | 0.17 | 0.02 | 2.5 | 2.1 | 0.27 |
| Flash Tube Dryer #2 + Heater #2 | 0.23 | 0.17 | 0.02 | 2.5 | 2.1 | 0.27 |

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

DONE AND DATED IN AUGUSTA, MAINE THIS 5th DAY OF DECEMBER, 2023.

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-1151-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 2/8/23

Date of application acceptance: 2/9/23

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

FILED
DEC 05, 2023
State of Maine
Board of Environmental Protection