



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE
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Tate & Lyle Ingredients Americas LLC
Aroostook County
Houlton, Maine
A-64-71-M-M (SM)

Departmental
Findings of Fact and Order
Air Emission License
Amendment #2

FINDINGS OF FACT

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

I. REGISTRATION

A. Introduction

Tate & Lyle Ingredients Americas LLC (Tate & Lyle) was issued Air Emission License A-64-71-K-R/A on August 18, 2010, permitting the operation of emission sources associated with their starch manufacturing facility.

Tate & Lyle has requested a minor revision to their license in order to have the capability to burn natural gas in Boilers #2 and #3 as well as the currently licensed fuels. The equipment addressed in this license is located at 48 Morningstar Road, Houlton, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Fuel Burning Equipment

Equipment	Mfg. Date	Maximum Capacity (MMBtu/hr)	Fuel Type, %Sulfur	Max Firing Rate	Control Equipment	Stack #
Boiler #2	1967	22.5	#6 oil, 2.0% Waste oil, 0.7% Propane, Natural gas	154 (gal/hr) 22,060 (scf/hr)	None	1
Boiler #3	1978	29	#6 oil, 2.0% Waste oil, 0.7% Propane, Natural gas	204 (gal/hr) 28,430 (scf/hr)	None	1

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C. Application Classification

This amendment will not increase facility-wide licensed allowed ton per year emissions for any criteria pollutant. Therefore, this modification is determined to be a minor revision and has been processed as such.

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 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

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 CMR 100 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Amendment Description

Tate & Lyle has requested to install burners on Boilers #2 and #3 in order for the boilers to be capable of firing natural gas or the currently licensed fuel oils. Natural gas inherently emits fewer emissions and is generally accepted as a cleaner fuel in comparison to #6 fuel oil. The licensed allowed ton per year emissions for all criteria pollutants will not increase as a result of this amendment.

The following describes the BACT findings for Boilers #2 and #3 when firing natural gas.

1. BACT Findings

The BACT/BPT emission limits for the boiler were based on the following:

Natural Gas

- PM/PM₁₀ – 0.05 lb/MMBtu based on 06-096 CMR 115, BPT
- SO₂ – 0.6 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
- NO_x – 100 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
- CO – 84 lb/MMscf based on AP-42, Table 1.4-1, dated 7/98
- VOC – 5.5 lb/MMscf based on AP-42, Table 1.4-2, dated 7/98
- Opacity – 06-096 CMR 101 or previous BACT

The BACT emission limits for the boiler are the following:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #2 (22.5 MMBtu/hr) natural gas	1.1	1.1	0.1	2.2	1.9	0.2
Boiler #3 (29 MMBtu/hr) natural gas	1.4	1.4	0.1	2.9	2.4	0.2

When firing natural gas, visible emissions from the combined stack of Boilers #2 and #3 shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period.

2. Periodic Monitoring

Periodic monitoring for the boilers shall include recordkeeping to document fuel use both on a monthly and 12 month rolling total basis. Documentation shall include the type of fuel used.

3. 40 CFR Part 63 Subpart JJJJJ

Gas-fired boilers are exempt from 40 CFR Part 63, Subpart JJJJJ. However, boilers which fire #2 or #6 fuel oil are not. Since Tate & Lyle can burn fuel oil in both boilers, Boiler #2 and #3 are both subject to 40 CFR Part 63, Subpart JJJJJ (Boiler MACT).

For informational purposes, a summary of the currently applicable federal 40 CFR Part 63 Subpart JJJJJ requirements is listed below. At this time, the Department has not taken delegation of this area source MACT (Maximum Achievable Control Technology) rule promulgated by EPA; however Tate &

Lyle is still subject to the requirements. Notification forms and additional rule information can be found on the following website:

<http://www.epa.gov/ttn/atw/boiler/boilerpg.html>.

a. Compliance Dates, Notifications, and Work Practice Requirements

i. Initial Notification of Compliance

An Initial Notification submittal to EPA is due no later than January 20, 2014. [40 CFR Part 63.11225(a)(2)]

ii. Boiler Tune-Up Program

(a) A boiler tune-up program shall be implemented to include the initial tune-up of applicable boilers no later than March 21, 2014. [40 CFR Part 63.11196(a)(1)]

(b) The boiler tune-up program, conducted to demonstrate continuous compliance, shall be performed as specified below:

1. As applicable, inspect the burner, and clean or replace any component of the burner as necessary. Delay of the burner inspection until the next scheduled shutdown is permitted; not to exceed 36 months from the previous inspection for boilers greater than 5 MMBtu/hr or 72 months from the previous inspection for oil fired boilers less than 5 MMBtu/hr, boilers with oxygen trim system, seasonal boilers, and limited use boilers. [40 CFR Part 63.11223(b)(1)]
2. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 CFR Part 63.11223(b)(2)]
3. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure it is correctly calibrated and functioning properly. Delay of the inspection until the next scheduled shutdown is permitted; not to exceed 36 months from the previous inspection for boilers greater than 5 MMBtu/hr or 72 months from the previous inspection for oil fired boilers less than 5 MMBtu/hr, boilers with oxygen trim system, seasonal boilers, and limited use boilers. [40 CFR Part 63.11223(b)(3)]
4. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 CFR Part 63.11223(b)(4)]
5. Measure the concentration in the effluent stream of CO in parts per million by volume (ppmv), and oxygen in volume percent, before and after adjustments are made (measurements may be

either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. [40 CFR Part 63.11223(b)(5)]

6. If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of start-up. [40 CFR Part 63.11223(b)(7)]

- (c) After conducting the initial boiler tune-up, a Notification of Compliance Status shall be submitted to EPA no later than July 19, 2014. [40 CFR Part 63.11225(a)(4) and 40 CFR Part 63.11214(b)]

- (d) The facility shall implement a boiler tune-up program after the initial tune-up and initial compliance report (called a Notification of Compliance Status) has been submitted.
 1. Each tune-up shall be conducted at a frequency specified by the rule and based on the size, age, and operations of the boiler.

Boiler Category	Tune-Up Frequency
New or Existing Oil, Biomass and Coal fired boilers that are not designated as "Boilers with less frequent tune up requirements" listed below	Every 2 years
New and Existing Oil, Biomass, and Coal fired Boilers with less frequent tune up requirements	
Seasonal (see definition §63.11237)	Every 5 years
Limited use (see definition §63.11237)	Every 5 years
With a heat input capacity of <5MMBtu/hr	Every 5 years
Boiler with oxygen trim system which maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune up	Every 5 years

[40 CFR Part 63.11223(a) and Table 2]

2. The tune-up compliance report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the concentration of CO in the effluent stream (ppmv) and oxygen in volume percent, measured at high fire or typical operating load, before and after the boiler tune-up, a description of any corrective actions taken as part of the tune-up of the boiler, and the types and amounts of fuels used over the 12 months prior to the tune-up of the boiler. [40 CFR Part 63.11223(b)(6)] The

compliance report shall also include the company name and address; a compliance statement signed by a responsible official certifying truth, accuracy, and completeness; and a description of any deviations and corrective actions. [40 CFR Part 63.11225(b)]

iii. Energy Assessment

Boilers #2 and #3 may be subject to the energy assessment requirement as follows:

- (a) A one-time energy assessment shall be performed by a qualified energy assessor on the applicable boilers no later than March 21, 2014. [40 CFR Part 63.11196(a)(3)]
- (b) The energy assessment shall include a visual inspection of the boiler system; an evaluation of operating characteristics of the affected boiler systems, specifications of energy use systems, operating and maintenance procedures, and unusual operating constraints; an inventory of major energy use systems consuming energy from affected boiler(s) and which are under control of the boiler owner or operator; a review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage; a list of major energy conservation measures that are within the facility's control; a list of the energy savings potential of the energy conservation measures identified; and a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.
[40 CFR Part 63, Table 2(4)]
- (c) A Notification of Compliance Status shall be submitted to EPA no later than July 19, 2014. [40 CFR Part 63.11225(a)(4) and 40 CFR Part 63.11214(c)]

b. Recordkeeping

Records shall be maintained consistent with the requirements of 40 CFR Part 63 Subpart JJJJJ including the following [40 CFR Part 63.11225(c)]: copies of notifications and reports with supporting compliance documentation; identification of each boiler, the date of tune-up, procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned; documentation of fuel type(s) used monthly by each boiler; the occurrence and duration of each malfunction of the boiler; and actions taken during periods of malfunction to minimize

emissions and actions taken to restore the malfunctioning boiler to its usual manner of operation. Records shall be in a form suitable and readily available for expeditious review.

Note: EPA will require submission of Notification of Compliance Status reports for tune-ups and energy assessments through their electronic reporting system. However, the system will not be in place until October 2013, so sources may submit the written NOCS to the EPA Administrator. [63.1125(a)(4)(vi)]

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source shall be determined by the Department on a case-by case basis. In accordance with 06-096 CMR 115, an ambient air quality impact analysis is not required for a minor source if the total 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 facility licensed emissions are above at least one of the emission levels contained in the table above; however, after taking into consideration the following factors:

- similarity with other licensed sources based on size, emissions, and local topography;
- location, including proximity to other sources, complex terrain and Class I areas; and
- background air quality data available in or representative of the local area,

The Department has determined that an ambient air quality impact analysis is not required for the facility and that Ambient Air Quality Standards (AAQS) will not be exceeded.

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 A-64-71-M-M subject to the conditions found in Air Emission License A-64-71-K-R/A, in amendment A-64-71-L-A, and in the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License 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 condition shall replace Condition (16) of Air Emission License, A-64-71-K-R/A:

(16) Boilers #2 and #3

A. Boilers #2 and #3 are licensed to fire #6 fuel oil with a maximum sulfur content not to exceed 2.0% by weight, specification waste oil, with a maximum sulfur content not to exceed 0.7% by weight, ASTM D396 compliant #2 oil, propane, and natural gas. Fuel oil (#6 and specification waste oil) use in the boilers is limited to a quantity on a 12-month rolling total that meets compliance with the SO₂ limit per Condition (19). Compliance shall be demonstrated through fuel use records, purchase receipts showing the sulfur content of the fuel, and annual testing of facility generated waste oil.

[06-096 CMR 115, BPT]

1. Prior to January 1, 2016 or on the date specified in 38 MRSA §603-A(2)(A)(3), the #2 fuel oil fired in the boilers shall be ASTM D396 compliant (max. sulfur content of 0.5% by weight). [06-096 CMR 115, BPT]
2. Beginning January 1, 2016 or on the date specified in 38 MRSA §603-A(2)(A)(3), the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm). [38 MRSA §603-A(2)(A)(3)]
3. Beginning January 1, 2018 or on the date specified in 38 MRSA §603-A(2)(A)(3), the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm). [38 MRSA §603-A(2)(A)(3)]
4. Prior to January 1, 2018, or by the date otherwise stated in 38 MRSA §603-A(2)(A)(1) and (2), the #6 fuel oil fired at the facility shall be #6 fuel oil (maximum sulfur content of 2.0% by weight). Per 38 MRSA §603-A(2)(A)(1) and (2), beginning January 1, 2018, or on the date specified in the statute, the facility shall fire #6 fuel oil with a maximum sulfur content

limit of 0.5% by weight. The specific dates contained in this paragraph reflect the current dates in the statute as of the effective date of this license; however, if the statute is revised, the facility shall comply with the revised dates upon promulgation of the statute revision.

- B. Tate & Lyle shall meet the characteristics of “specification waste oil” as found in the Department’s Bureau of Air Quality Waste Oil Guidance effective March 11, 1994. The annual test for the sulfur content of the waste oil generated on-site shall consist of a grab sample analysis from the waste oil tank. [06-096 CMR 115, BPT]
- C. Boilers #2 and #3 shall not exceed the following emission limits:

Boiler #2 and #3 Emission Limits when firing fuel oil:

Equipment		PM	PM10	SO2	NOx	CO	VOC
Boiler #2	lb/MMBtu	0.15	--	--	--	--	--
	lb/hour	3.38	3.38	47.3	11.3	0.75	0.05
Boiler #3	lb/MMBtu	0.12	--	--	--	--	--
	lb/hour	3.48	3.48	60.9	14.5	1.0	0.06

Compliance shall be demonstrated on request of the Department through stack testing in accordance with the appropriate method found in 40 CFR Part 60, Appendix A. [06-096 CMR 115, BPT]

Boiler #2 and #3 Emission Limits when firing natural gas:

Equipment	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #2	1.1	1.1	0.1	2.2	1.9	0.2
Boiler #3	1.4	1.4	0.1	2.9	2.4	0.2

Compliance shall be demonstrated on request of the Department through stack testing in accordance with the appropriate method found in 40 CFR Part 60, Appendix A. [06-096 CMR 115, BACT]

- D. When firing fuel oil in either boiler, visible emissions from Boilers #2 and #3 (combined stack #1) shall not exceed 30% opacity recorded as 6-minute block averages, except for no more than two 6-minute block averages in a 3-hour period. [06-096 CMR 101]

- E. When firing natural gas in both boilers, visible emissions from Boilers #2 and #3 (combined stack) shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period. [06-096 CMR 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 10 DAY OF October, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-64-71-K-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: August 16, 2013

Date of application acceptance: August 26, 2013

Date filed with the Board of Environmental Protection:

This Order prepared by Edwin Cousins, Bureau of Air Quality

