



DEPARTMENT ORDER

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

Departmental
Findings of Fact and Order
Air Emission License
Renewal with Minor Revision

FINDINGS OF FACT

After review of the air emission license renewal 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

Tate & Lyle Ingredients Americas LLC (Tate & Lyle) has applied to renew their Air Emission License for the operation of emission sources associated with their modified starch manufacturing facility.

Tate & Lyle has requested a minor revision to their license in order to replace the starch dryer cyclone, explosion venting, and associated auxiliary equipment. The proposed project will change the Flash Dryer from a forced draft to an induced draft design and adds explosion venting. A new stack will be constructed, but retain the same designation (Stack #7) as the current stack.

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:

<u>Equipment</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>	<u>Stack #</u>
Boiler #2	22.5	160.7 gal/hr	Distillate fuel, 0.5%	1967	Before 1972	1
		150.0 gal/hr	#6 fuel oil, 2.0% Waste oil, 0.7%			
		248.6 gal/hr	Propane			
		22,060 scf/hr	Natural gas			
Boiler #3	29	207.1 gal/hr	Distillate fuel, 0.5%	1978	June 1985	
		193.3 gal/hr	#6 fuel oil, 2.0% Waste oil, 0.7%			
		320.4 gal/hr	Propane			
		28,430 scf/hr	Natural gas			

Generator

<u>Equipment</u>	<u>Rated Output Capacity</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Dates of...</u>	<u>Stack #</u>
Emergency Generator	60 kW	4.3	Distillate fuel, 0.0015%	Manufacture: 1947 Installation: 1964	G

Process Equipment

<u>Unit</u>	<u>Equipment</u>	<u>Production Rate</u>	<u>Date of Installation</u>	<u>Pollution Control Equipment</u>	<u>Stack #</u>
3	Pneumatic Conveying (#1, #2, #3, and #4 Starch Drum Dryers)	3200 lb/hr starch	#1-#3: pre-1972 #4: 1977	Baghouse	2
4	Pneumatic Conveying (2 nd Drums and Drum Grinder)	2000 lb/hr starch	1992	Baghouse	3
5	Pneumatic Conveying (Drum Grinder)	1600 lb/hr starch	#1-#3: pre-1972 #4: 1977	Baghouse	4
6	Pneumatic Conveying (Drum Grinder)	1600 lb/hr starch	#1-#3: pre-1972 #4: 1977	Baghouse	5
7	Pneumatic Conveying (Flash Packer)	3000 lb/hr starch	Unavailable	Baghouse	6
8	Flash Dryer Air Transport	4400 lb/hr starch	2017	Cyclone	7
10	Starch Bag Dump/ Railcar Unloading Dust Removal	300 lb/hr starch	Pre-1972	Cyclone/ wet scrubber	9
11	Starch Bag Dump/ Railcar Unloading Dust Removal	300 lb/hr starch	Pre-1972	Cyclone/ wet scrubber	10

<u>Unit</u>	<u>Equipment</u>	<u>Production Rate</u>	<u>Date of Installation</u>	<u>Pollution Control Equipment</u>	<u>Stack #</u>
12	Pneumatic Conveying (Dextrin Packer)	4000 lb/hr starch-dextrin	Pre-1972	Baghouse	11
13	Dextrin Fluidizing Air Separation	2000 lb/hr starch-dextrin	2013	Baghouse	12
15	Bag Blow Off	Out of service	Unavailable	Out of service	14
16	Reactor A	800 propylated starch batches per 12 months	Unavailable	None	15
17	Reactor B				16
18	Reactor C				17
19	Reactor D				18
20	Reactor E				19
21	Starch Modification	800 propylated starch batches per 12 months	Unavailable	None	Fugitive
22	Tapioca Storage Bin Silo	60,000 lb/hr tapioca starch	2008	Baghouse	20
23	Dextrin Starch Conveying System	2,000 lb/hr starch-dextrin	2013	KICE Baghouse	21

C. Definitions

Distillate Fuel. For the purposes of this license, *distillate fuel* means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

D. Application Classification

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

This renewal does include the installation of new equipment and the modification of existing equipment. However, the modification of equipment will not result in the increase of any licensed emissions. Therefore, the license is considered to be a renewal with a minor revision and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 Code of Maine Rules (C.M.R.) ch. 115.

With the annual heat content limit on the boilers, the VOC limit associated with the process equipment, and the facility-wide SO₂ emissions cap, Tate & Lyle is licensed as follows:

- As a synthetic minor source of air emissions, because licensed emissions are limited to below the major source threshold for criteria pollutants; and

- As an area source of hazardous air pollutants (HAP), because licensed emissions are limited to 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.

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. Boilers #2 and #3

Tate & Lyle operate Boilers #2 and #3 for facility heat and process steam. Boiler #2 is a Keeler fire-tube boiler manufactured in 1967 and installed prior to 1972. Boiler #3 is a Johnson water-tube boiler manufactured in 1978 and installed in June 1985. The boilers are rated at 22.5 MMBtu/hr and 29.0 MMBtu/hr respectively and exhaust through a common stack (Stack #1). Boilers #2 and #3 are each licensed to fire distillate fuel, #6 fuel oil, specification waste oil, propane, and natural gas.

1. BPT Findings

The BPT emission limits for the boilers were based on the following:

Distillate Fuel

- | | |
|---------------------|---|
| PM/PM ₁₀ | – 0.12 lb/MMBtu based on 06-096 C.M.R. ch. 103, § (2)(B)(1)(a) |
| SO ₂ | – based on firing distillate fuel with a maximum sulfur content of 0.5% by weight |
| NO _x | – 20 lb/1000 gal based on AP-42 Table 1.3-1 dated 5/10 |
| CO | – 5 lb/1000 gal based on AP-42 Table 1.3-1 dated 5/10 |
| VOC | – 0.2 lb/1000 gal based on AP-42 Table 1.3-3 dated 5/10 |

#6 Fuel Oil

- PM/PM₁₀ – 0.12 lb/MMBtu based on 06-096 C.M.R. ch. 103, §(2)(B)(1)(a)
- SO₂ – based on firing #6 fuel oil with a maximum sulfur content of 2.0% by weight
- NO_x – 55 lb/1000 gal based on AP-42 Table 1.3-1 dated 5/10
- CO – 5 lb/1000 gal based on AP-42 Table 1.3-1 dated 5/10
- VOC – 0.28 lb/1000 gal based on AP-42 Table 1.3-3 dated 5/10

Propane

- PM/PM₁₀ – 0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BPT
- SO₂ – 0.018 lb/1000 gal based on AP-42 Table 1.5-1 dated 7/08
- NO_x – 13 lb/1000 gal based on AP-42 Table 1.5-1 dated 7/08
- CO – 7.5 lb/1000 gal based on AP-42 Table 1.5-1 dated 7/08
- VOC – 1 lb/1000 gal based on AP-42 Table 1.5-1 dated 7/08

Natural Gas

- PM/PM₁₀ – 0.05 lb/MMBtu based on 06-096 C.M.R. ch. 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

The BPT emission limits for the boilers are the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>
Boiler #2 <i>distillate fuel, #6 fuel oil, waste oil</i>	PM	0.12
Boiler #2 <i>propane, natural gas</i>	PM	0.05
Boiler #3 <i>distillate fuel, #6 fuel oil, waste oil</i>	PM	0.12
Boiler #3 <i>propane, natural gas</i>	PM	0.05

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #2 <i>distillate fuel</i>	2.70	2.70	11.33	3.21	0.80	0.03
Boiler #2 <i>#6 fuel oil, waste oil</i>	2.70	2.70	47.28	8.25	0.75	0.04
Boiler #2 <i>propane</i>	1.13	1.13	0.01	3.23	1.86	0.25
Boiler #2 <i>natural gas</i>	1.13	1.13	0.01	2.21	1.85	0.12
Boiler #3 <i>distillate fuel</i>	3.48	3.48	14.60	4.14	1.04	0.04
Boiler #3 <i>#6 fuel oil, waste oil</i>	3.48	3.48	60.94	10.63	0.97	0.05
Boiler #3 <i>propane</i>	1.45	1.45	0.01	4.17	2.40	0.32
Boiler #3 <i>natural gas</i>	1.45	1.45	0.02	2.84	2.39	0.16

When firing #6 fuel oil or waste oil in either boiler, visible emissions from Stack #1 shall not exceed 30% opacity on a six-minute block average basis.

When distillate fuel is being fired in either boiler and #6 fuel oil or waste oil is not being fired in the other boiler, visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average basis.

When only propane or natural gas is being fired in the boilers, visible emissions from Stack #1 shall not exceed 10% opacity on a six-minute block average basis.

2. Fuel Sulfur Content Requirements

Boilers #2 and #3 are licensed to fire distillate fuel which, by definition, has a sulfur content of 0.5% or less by weight. Per 38 M.R.S. § 603-A(2)(A)(3), as of July 1, 2018, no person shall import, distribute, or offer for sale any distillate fuel with a sulfur content greater than 0.0015% by weight (15 ppm). Therefore, beginning July 1, 2018, the distillate fuel purchased or otherwise obtained for use in Boilers #2 and #3 shall not exceed 0.0015% by weight (15 ppm).

Boilers #2 and #3 are licensed to fire residual fuel (i.e. #6 fuel oil). The sulfur content of the residual fuel fired is currently limited to 2.0% by weight per *Low Sulfur Fuel*, 06-096 C.M.R. ch. 106. Per 38 M.R.S. §§ 603-A(2)(A)(1) and (2), as of July 1, 2018, no person shall import, distribute, or offer for sale any residual fuel oil with a sulfur content greater than 0.5% by weight. Therefore, beginning July 1, 2018, the residual

fuel purchased or otherwise obtained for use in Boilers #2 and #3 shall not exceed 0.5% by weight.

3. Boiler Annual Emission Limits

There are no throughput (i.e. fuel use) limits imposed on the boilers. However, additional limits are necessary in order to limit emissions of PM/PM₁₀, NO_x, and SO₂ to below major source thresholds and below the levels of the facility's last Ambient Air Quality Analysis. Therefore, Tate & Lyle is restricted to the following annual emissions cap from Boilers #2 and #3 combined:

Pollutant	Limit (ton/year)
PM	18.4
PM ₁₀	18.4
SO ₂	99.9
NO _x	53.5

Compliance with these limits shall be documented through fuel use and sulfur content records and calculation of emissions on both a monthly and a 12-month rolling total basis.

Tate & Lyle shall maintain monthly records of fuel use for all fuel fired in the boilers, including #6 fuel oil, distillate fuel, specification waste oil, propane, and natural gas. Monthly records shall include the quantity and type of fuel consumed per month and (for #6 fuel oil, distillate fuel, and specification waste oil) the fuel sulfur content of each in percent by weight as demonstrated by purchase records from the supplier.

Tate & Lyle shall calculate and record the 12-month rolling total tons of PM/PM₁₀, NO_x, and SO₂ emitted from the boilers on a monthly basis.

Emissions of PM and PM₁₀ shall be calculated using the following equation:

$$PM/PM_{10} \left(\frac{ton}{year} \right) = \frac{[(0.12)(0.137)(a) + (0.12)(0.15)(b) + (0.05)(0.0905)(c) + (0.05)(1020)(d)]}{2000}$$

Where

a = 12-month rolling total of distillate fuel combusted in the boilers (gallons)

b = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)

c = 12-month rolling total of propane combusted in the boilers (gallons)

d = 12-month rolling total of natural gas combusted in the boilers (million scf)

Emissions of NO_x shall be calculated using the following equation:

$$NO_x \left(\frac{\text{ton}}{\text{year}} \right) = \frac{[(0.02)(a) + (0.055)(b) + (0.013)(c) + (100)(d)]}{2000}$$

Where

- a* = 12-month rolling total of distillate fuel combusted in the boilers (gallons)
- b* = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)
- c* = 12-month rolling total of propane combusted in the boilers (gallons)
- d* = 12-month rolling total of natural gas combusted in the boilers (million scf)

SO₂ emissions shall be calculated using the following equation:

$$SO_2 \left(\frac{\text{ton}}{\text{year}} \right) = \frac{[(0.142)(a)(s_2) + (0.158)(b)(s_6)]}{2000}$$

Where

- a* = 12-month rolling total of distillate fuel combusted in the boilers (gallons)
- s*₂ = weighted average sulfur content of the distillate fuel (percent by weight)
- b* = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)
- s*₆ = weighted average sulfur content of the #6 fuel oil and waste oil (percent by weight)

The total SO₂ emissions from the firing of propane and natural gas are assumed to be negligible for the purposes of this calculation.

4. 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 and the sulfur content of the fuel (if applicable).

5. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

Due to their years of manufacture, neither Boilers #2 or #3 are subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

6. National Emission Standards for Hazardous Air Pollutants (NESHAP):
40 C.F.R. Part 63, Subpart JJJJJ

Boilers #2 and #3 are subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJ. The units are considered existing oil-fired boilers. [40 C.F.R. §§63.11193 and 63.11195]

Gas-fired boilers are exempt from 40 C.F.R. Part 63, Subpart JJJJJ. However, boilers which fire fuel oil are not. A “gas-fired boiler” is defined as any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. [40 C.F.R. § 63.11237] Since Tate & Lyle is licensed to burn fuel oil in both boilers in excess of 48 hours per year, Boilers #2 and #3 are both subject to the applicable requirements for oil-fired boilers.

A summary of the currently applicable federal 40 C.F.R. 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

(1) Initial Notification of Compliance

Tate & Lyle has stated that they submitted an Initial Notification to EPA prior to the due date of January 20, 2014. [40 C.F.R. § 63.11225(a)(2)]

(2) Boiler Tune-Up Program

(i) A boiler tune-up program shall be implemented. [40 C.F.R. § 63.11223]

(ii) Each tune-up shall be conducted at a frequency specified by the rule and based on the size, age, and operations of the boiler. See chart below:

<u>Boiler Category</u>	<u>Required Tune-Up Frequency</u>
Boiler #2: Existing oil-fired boiler which is not designated as a boiler with a less frequent tune-up requirement as listed in the subpart	Every 2 years
Boiler #3: Existing oil-fired boiler with an 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 C.F.R. § 63.11223(a) and Table 2]

(iii) 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 Boiler #2. Delay of the burner inspection until the next scheduled shutdown is permitted for up to 72 months from the previous inspection for Boiler #3. [40 C.F.R. § 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 C.F.R. § 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 Boiler #2. Delay of the inspection until the next scheduled shutdown is permitted for up to 72 months from the previous inspection for Boiler #3. [40 C.F.R. § 63.11223(b)(3)]
4. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 63.11223(b)(7)]

(iv) Tune-Up Report: A tune-up report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the following information:

1. The concentration of CO in the effluent stream (ppmv) and oxygen (volume percent) measured at high fire or typical operating load both **before** and **after** the boiler tune-up;
 2. A description of any corrective actions taken as part of the tune-up of the boiler; and
 3. The types and amounts of fuels used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.
- [40 C.F.R. § 63.11223(b)(6)]

(v) Tate & Lyle has stated that they submitted a Notification of Compliance Status to EPA prior to the due date of July 19, 2014.
[40 C.F.R. § 63.11225(a)(4) and 40 C.F.R. § 63.11214(b)]

(3) Compliance Report

A compliance report shall be prepared by March 1st biennially (for Boiler #2) or every five years (for Boiler #3) which covers the previous two/five calendar years. The report shall be maintained by the source and submitted to the Department and to the EPA upon request. The report must include the items contained in §§ 63.11225(b)(1) and (2), including the following:
[40 C.F.R. § 63.11225(b)]

- (i) Company name and address;
- (ii) A statement of whether the source has complied with all the relevant requirements of this Subpart;
- (iii) A statement certifying truth, accuracy, and completeness of the notification and signed by a responsible official and containing the official's name, title, phone number, email address, and signature;
- (iv) The following certifications, as applicable:
 1. "This facility complies with the requirements in 40 C.F.R. § 63.11223 to conduct tune-ups of each boiler in accordance with the frequency specified in this Subpart."
 2. "No secondary materials that are solid waste were combusted in any affected unit."
 3. "This facility complies with the requirement in §§ 63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the

manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available."

(4) Energy Assessment

Boilers #2 and #3 are subject to the energy assessment requirements of 40 C.F.R. Part 63, Subpart JJJJJ.

Tate & Lyle has stated a one-time energy assessment was performed by a qualified energy assessor on Boilers #2 and #3 prior to March 21, 2014, in accordance with 40 C.F.R. § 63.11196(a)(3).

Tate & Lyle has stated that they submitted a Notification of Compliance Status to EPA prior to the due date of July 19, 2014, in accordance with 40 C.F.R. §§ 63.1125(a)(4) and 63.11214(c).

b. Recordkeeping

Records shall be maintained consistent with the requirements of 40 C.F.R. Part 63, Subpart JJJJJ including the following [40 C.F.R. § 63.11225(c)]:

- (1) Copies of notifications and reports with supporting compliance documentation;
- (2) 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;
- (3) Records of the occurrence and duration of each malfunction of each applicable boiler; and
- (4) Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler.

Records shall be in a form suitable and readily available for expeditious review.

C. Emergency Generator

Tate & Lyle operates one Emergency Generator, which is a generator set consisting of an engine and an electrical generator. The unit has an engine rated at 0.6 MMBtu/hr and fires distillate fuel with a maximum sulfur content of 0.0015% by weight. The Emergency Generator was manufactured in 1947 and installed at the Tate & Lyle facility in 1964.

1. BPT Findings

The BPT emission limits for the Emergency Generator are based on the following:

- PM/PM₁₀ - 0.31 lb/MMBtu from AP-42 Table 3.3-1 dated 10/96
- SO₂ - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO_x - 4.41 lb/MMBtu from AP-42 dated 10/96
- CO - 0.95 lb/MMBtu from AP-42 dated 10/96
- VOC - 0.36 lb/MMBtu from AP-42 dated 10/96

The BPT emission limits for the Emergency Generator are the following:

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Emergency Generator	0.19	0.19	–	2.65	0.57	0.22

Visible emissions from the Emergency Generator shall not exceed 20% opacity on a six-minute block average basis.

2. National Emission Standards for Hazardous Air Pollutants (NESHAP):
40 C.F.R. Part 63, Subpart ZZZZ

National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 C.F.R. Part 63, Subpart ZZZZ is applicable to the Emergency Generator listed above. The Emergency Generator is considered an existing, emergency stationary reciprocating internal combustion engine at an area HAP source and is not subject to New Source Performance Standards regulations. EPA's August 9, 2010 memo (*Guidance Regarding Definition of Residential, Commercial, and Institutional Emergency Stationary RICE in the NESHAP for Stationary RICE*) specifically does not exempt these units from the federal requirements. [40 C.F.R. § 63.6585]

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 63, Subpart ZZZZ, a stationary reciprocating internal combustion engine (RICE) is considered an **emergency** stationary RICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under 40 C.F.R. Part 63, Subpart ZZZZ, resulting in the engine being subject to requirements applicable to **non-emergency** engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster or equipment failure;
- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for Maintenance Checks, Readiness Testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. **However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.**

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

The Emergency Generator shall be limited to the usage outlined in 40 C.F.R. § 63.6640(f) and therefore may be classified as an existing emergency stationary

RICE as defined in 40 C.F.R. Part 63, Subpart ZZZZ. Failure to comply with all of the requirements listed in 40 C.F.R. § 63.6640(f) may cause this engine to not be considered an emergency engine and therefore subject to all applicable requirements for non-emergency engines.

b. 40 C.F.R. Part 63, Subpart ZZZZ Requirements

(1) Operation and Maintenance Requirements

[40 C.F.R. § 63.6603(a) and Table 2(d)]

	Operating Limitations
Compression ignition (distillate fuel) units:	<ul style="list-style-type: none">- Change oil and filter every 500 hours of operation or annually, whichever comes first;- Inspect the air cleaner every 1000 hours of operation or annually, whichever comes first, and replace as necessary; and- Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

The Emergency Generator shall be operated and maintained according to the manufacturer's emission-related written instructions, or Tate & Lyle shall develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the Emergency Generator in a manner consistent with good air pollution control practice for minimizing emissions.

[40 C.F.R. § 63.6625(e)]

(2) Optional Oil Analysis Program

Tate & Lyle has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, Tate & Lyle must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the Emergency Generator. The analysis program must be part of the maintenance plan for the Emergency Generator.

[40 C.F.R. § 63.6625(i)]

(3) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on the Emergency Generator. [40 C.F.R. § 63.6625(f)]

(4) Startup Idle and Startup Time Minimization Requirements

During periods of startup the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 C.F.R. § 63.6625(h) and 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]

(5) Annual Time Limit for Maintenance and Testing

As an emergency engine, the Emergency Generator shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). [40 C.F.R. § 63.6640(f)]

(6) Recordkeeping

Tate & Lyle shall keep records that include maintenance conducted on the Emergency Generator and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 63.6655(f)]

D. Reactors and Starch Modification Processes

Possible emissions from Tate & Lyle's reactors and starch modification processes include VOC and HAP. These activities are conducted using Reactors A, B, C, D, and E and the process identified as Starch Modification.

1. Propylene Oxide (PO, CAS # 75-56-9)

Modified starches manufactured at the facility include those that are propylated through the use of propylene oxide, a VOC and HAP. Starch and propylene oxide are mixed and allowed to react for several hours. The pH is adjusted to terminate the reaction and scavenge unreacted PO prior to venting to minimize the amount of unreacted PO remaining in the propylated starch slurry. Then, the reactors are actively vented prior to the pumping of product out of the reactors for drying.

Tate & Lyle developed emission factors for propylene oxide emissions based on in-house emission testing. Emission factors were identified at 9 lb/batch from the reactors and an additional 15.5 lbs/batch of fugitive emissions, for a total of 24.5 lbs of propylene oxide released per propylated starch batch.

Emissions of propylene oxide from this facility shall not exceed 9.9 tons per year, on a 12-month rolling total basis. Compliance shall be demonstrated through 1) documentation of PO usage through monthly reconciliation of bulk storage tank inventory and monthly purchases; and 2) monthly production records of all starch products, including products from the propylated batches, and the multiplication of 24.5 lb PO per propylated starch batch by the number of batches. Monthly, Tate & Lyle shall calculate and record the 12-month rolling total tons of PO emitted.

2. Acetic Anhydride (CAS # 108-24-7)
 Acetic anhydride is used as a starch slurry reactant to produce acetylated starch. Reaction efficiency is 50%; however, the remaining acetic anhydride reacts with water to form acetic acid. Thus, less than one percent of acetic acid used is lost to atmosphere as VOC. Neither acetic anhydride nor acetic acid is a HAP.
3. Hydrogen Chloride (CAS # 7647-01-0)
 Anhydrous hydrogen chloride, stored in a pressurized cylinder, is used in a dry starch reaction system to produce dextrans. Reaction efficiency is estimated at 90%; therefore, 10% of the hydrogen chloride used is potentially lost to atmosphere. However, no hydrogen chloride has been detected from the exhaust of the dextrin fluidizer in tests performed at the facility.
4. Hydrochloric Acid (CAS #7647-01-0)
 Muriatic Acid (32 weight percent hydrochloric acid) is stored in a 275 gallon tank and is used in starch slurry modification reactions for pH adjustment. Based on EPA's *Estimating Toxic Release Inventory Air Emissions from Chemical Distribution Facilities*, the estimated hydrochloric acid emission rate for a storage tank with a volume smaller than 5,000 gallons is 17 pounds/year.

E. Pneumatic Conveying of Materials

1. The pneumatic conveying of materials at this facility may result in particulate matter emissions. These emissions are controlled with baghouses, cyclones, and wet scrubbers. BPT for PM emissions from each identified process source is the following:

Unit #	Equipment	BPT Control Equipment
3	Pneumatic Conveying (#1, #2, #3, and #4 Starch Drum Dryers)	Baghouse
4	Pneumatic Conveying (2 nd Drums and Drum Grinder)	Baghouse
5	Pneumatic Conveying (Drum Grinder)	Baghouse
6	Pneumatic Conveying (Drum Grinder)	Baghouse
7	Pneumatic Conveying (Flash Packer)	Baghouse
8	Flash Dryer Air Transport	Cyclone
10	Starch Bag Dump/ Railcar Unloading Dust Removal	Cyclone/ wet scrubber
11	Starch Bag Dump/ Railcar Unloading Dust Removal	Cyclone/ wet scrubber
12	Pneumatic Conveying (Dextrin Packer)	Baghouse
13	Dextrin Fluidizing Air Separation	Baghouse
22	Tapioca Storage Bin Silo	Baghouse
23	Dextrin Starch Conveying System	KICE Baghouse

2. Tate & Lyle has proposed the replacement of the starch dryer cyclone, explosion venting, and associated auxiliary equipment. This project will change the Flash Dryer from a forced draft to an induced draft design and adds explosion venting. A new stack will be constructed, but retain the same designation (Stack #7) as the current

stack. After this work is complete, the instantaneous production rate of the Flash Dryer Air Transport will increase from 3,000 lb/hr to 4,400 lb/hr. Use of a cyclone is determined to meet BACT for control of particulate matter from this process.

3. Visible emissions from each baghouse shall not exceed 10% opacity on a six-minute block average basis. Tate & Lyle shall take corrective action if visible emissions from any baghouse exceed 5% opacity.
4. Visible emissions from each cyclone and wet scrubber shall not exceed 20% opacity on a six-minute block average basis.
5. Tate & Lyle shall maintain records of all routine and non-routine maintenance on each wet scrubber, cyclone, fabric filter, and baghouse. Such records shall contain the location, date, nature of maintenance or failure, and maintenance action taken or action taken to correct the failure.

F. Storage Tanks

Tate & Lyle utilizes the following storage tanks:

Tank ID / Material Stored	Capacity (gallons)	Vapor Pressure (psia @ 68 °F)	Tank Type	Year of Installation
Propylene Oxide	20,725	8.55	Horizontal, Pressurized	1993
#6 Fuel Oil (2 identical tanks)	12,000 (each)	<0.1	Horizontal, Fixed Roof	1989
Acetic Anhydride	900	0.08	Vertical, Fixed Roof	Unavailable
Diesel Fuel	275	<0.01	Fixed Roof	Unavailable
#2 Fuel Oil (2 tanks)	275 (each)	<0.01	Horizontal, Fixed Roof	1985 and 1994

1. NSPS: 40 CFR Part 60, Subpart Kb

Tate & Lyle's storage tanks are not subject to *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*, 40 C.F.R. Part 60, Subpart Kb. This regulation is applicable to storage vessels with a capacity greater than or equal to 75 cubic meters (19,812.9 gallons) that are used to store volatile organic liquids and which are constructed, reconstructed, or modified after July 23, 1984. Tate & Lyle's Propylene Oxide Tank falls within those criteria. However, 40 C.F.R. § 60.110(d)(2) exempts pressure vessels designed to operate in excess of 204.9 kilopascals (kPa) and without emissions to the atmosphere. The propylene oxide storage tank is designed to operate in excess of 204.9 kPa. Also, since 2009, Tate and Lyle's transfer system procedures do not release excess pressures from the storage tank. Therefore, the propylene oxide storage tank is not subject to 40 C.F.R. Part 60, Subpart Kb. All other tanks at this facility do not fall within the applicability criteria of this Subpart due to their individual capacities.

2. BPT

Tate & Lyle shall conduct routine inspections of the tanks and seals and perform maintenance as necessary so as to prevent vapor leakage. If any holes, tears, or other openings are detected which are not part of the design for minimizing vapor leakage, the facility shall make repairs as soon as practicable, but no later than 15 calendar days from the initial detection of the leak.

Tate & Lyle shall maintain records of all fuel fillings from which to calculate VOC emissions associated with the process.

G. Parts Washers

Tate & Lyle utilize two parts washers, each with a design capacity of 30 gallons. The parts washers are subject to *Solvent Cleaners*, 06-096 C.M.R. ch. 130 and records shall be kept documenting compliance.

H. Fugitive Emissions

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity.

I. General Process Emissions

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis.

J. Annual Emissions

1. Total Annual Emissions

Tate & Lyle shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on the following:

- CO and VOC from the boilers based on unlimited use of the fuel with the highest emission factor, in this case propane;
- Annual emissions cap on the boilers for PM, PM₁₀, SO₂, and NO_x;
- Operating the Emergency Generator for 100 hr/year; and
- Annual VOC cap for process equipment.

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

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Boiler#2	–	–	–	–	8.2	1.1
Boiler #3	–	–	–	–	10.5	1.4
Boiler Annual Limit	18.4	18.4	99.9	53.5	–	–
Emergency Generator	–	–	–	0.1	–	–
Process Equipment	–	–	–	–	–	9.9
Total TPY	18.4	18.4	99.9	53.6	18.7	12.4

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through ‘Tailoring’ revisions made to EPA’s *Approval and Promulgation of Implementation Plans*, 40 C.F.R. Part 52, Subpart A, § 52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100, are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO₂e).

The quantity of CO₂e emissions from this facility is less than 100,000 tons per year, based on the following:

- the facility’s fuel use;
- worst case emission factors from the following sources: U.S. EPA’s AP-42, the Intergovernmental Panel on Climate Change (IPCC), and *Mandatory Greenhouse Gas Reporting*, 40 C.F.R. Part 98; and
- global warming potentials contained in 40 C.F.R. Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AMBIENT AIR QUALITY ANALYSIS

Tate & Lyle previously submitted an ambient air quality impact analysis for air emission license A-64-72-C-A/R (October 4, 1993) demonstrating that emissions from the facility, in conjunction with all other sources, do not violate Ambient Air Quality Standards (AAQS). An additional air quality impact analysis is not required for this renewal.

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-N-R/M subject to the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof 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.

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S. § 347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 C.M.R. ch. 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 C.M.R. ch. 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S. § 353-A. [06-096 C.M.R. ch. 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 C.M.R. ch. 115]

- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch. 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 C.M.R. ch. 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 C.M.R. ch. 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 C.M.R. ch. 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department, the licensee shall:
 - A. Perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. Within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 2. Pursuant to any other requirement of this license to perform stack testing.
 - B. Install or make provisions to install test ports that meet the criteria of 40 C.F.R. Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. Submit a written report to the Department within thirty (30) days from date of test completion.
[06-096 C.M.R. ch. 115]

- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. Within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department; and
 - B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[06-096 C.M.R. ch. 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 C.M.R. ch. 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 C.M.R. ch. 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.
[06-096 C.M.R. ch. 115]

SPECIFIC CONDITIONS

(16) Boilers #2 & #3

A. Fuel

1. Tate & Lyle is licensed to fire #6 fuel oil, distillate fuel, specification waste oil, propane, and natural gas in Boilers #2 and #3. [06-096 C.M.R. ch. 115, BPT]
2. Prior to July 1, 2018, Tate & Lyle shall fire distillate fuel in the boilers with a maximum sulfur content not to exceed 0.5% by weight. [06-096 C.M.R. ch. 115, BPT]
3. Beginning July 1, 2018, Tate & Lyle shall not purchase or otherwise obtain distillate fuel with a maximum sulfur content that exceeds 0.0015% by weight (15 ppm). [38 M.R.S. § 603-A(2)(A)(3)]
4. Prior to July 1, 2018, Tate & Lyle shall fire residual fuel (i.e. #6 fuel oil) in the boilers with a maximum sulfur content not to exceed 2.0% by weight. [06-096 C.M.R. ch. 115, BPT]
5. Beginning July 1, 2018, Tate & Lyle shall not purchase or otherwise obtain residual fuel with a maximum sulfur content that exceeds 0.5% by weight. [38 M.R.S. §§ 603-A(2)(A)(1) and (2)]
6. Compliance shall be demonstrated by recordkeeping to document the type of fuel used and sulfur content of the fuel (if applicable). [06-096 C.M.R. ch. 115, BPT]

B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #2 <i>distillate fuel, #6 fuel oil, waste oil</i>	PM	0.12	06-096 C.M.R. ch. 103(2)(B)(1)(a)
Boiler #2 <i>propane, natural gas</i>	PM	0.05	06-096 C.M.R. ch. 115, BPT
Boiler #3 <i>distillate fuel, #6 fuel oil, waste oil</i>	PM	0.12	06-096 C.M.R. ch. 103(2)(B)(1)(a)
Boiler #3 <i>propane, natural gas</i>	PM	0.05	06-096 C.M.R. ch. 115, BPT

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Emission Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #2 <i>distillate fuel</i>	2.70	2.70	11.33	3.21	0.80	0.03
Boiler #2 <i>#6 fuel oil, waste oil</i>	2.70	2.70	47.28	8.25	0.75	0.04
Boiler #2 <i>propane</i>	1.13	1.13	0.01	3.23	1.86	0.25
Boiler #2 <i>natural gas</i>	1.13	1.13	0.01	2.21	1.85	0.12
Boiler #3 <i>distillate fuel</i>	3.48	3.48	14.60	4.14	1.04	0.04
Boiler #3 <i>#6 fuel oil, waste oil</i>	3.48	3.48	60.94	10.63	0.97	0.05
Boiler #3 <i>propane</i>	1.45	1.45	0.01	4.17	2.40	0.32
Boiler #3 <i>natural gas</i>	1.45	1.45	0.02	2.84	2.39	0.16

D. Annual Emissions Limits

- Total emissions of the following pollutants from Boilers #2 and #3 shall not exceed the following:

Pollutant	Limit (ton/year)
PM	18.4
PM ₁₀	18.4
SO ₂	99.9
NO _x	53.5

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

- Compliance with the annual limits for Boilers #2 and #3 shall be demonstrated by fuel use and sulfur content records and calculation of emissions on both a monthly and a 12-month rolling total basis. [06-096 C.M.R. ch. 115, BPT]

3. Emissions of PM and PM₁₀ shall be calculated using the following equation:

$$PM/PM_{10} \left(\frac{\text{ton}}{\text{year}} \right) = \frac{[(0.12)(0.137)(a) + (0.12)(0.15)(b) + (0.05)(0.0905)(c) + (0.05)(1020)(d)]}{2000}$$

Where

- a* = 12-month rolling total of distillate fuel combusted in the boilers (gallons)
- b* = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)
- c* = 12-month rolling total of propane combusted in the boilers (gallons)
- d* = 12-month rolling total of natural gas combusted in the boilers (million scf)

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

4. Emissions of NO_x shall be calculated using the following equation:

$$NO_x \left(\frac{\text{ton}}{\text{year}} \right) = \frac{[(0.02)(a) + (0.055)(b) + (0.013)(c) + (100)(d)]}{2000}$$

Where

- a* = 12-month rolling total of distillate fuel combusted in the boilers (gallons)
- b* = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)
- c* = 12-month rolling total of propane combusted in the boilers (gallons)
- d* = 12-month rolling total of natural gas combusted in the boilers (million scf)

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

5. SO₂ emissions shall be calculated using the following equation:

$$SO_2 \left(\frac{\text{ton}}{\text{year}} \right) = \frac{[(0.142)(a)(s_2) + (0.158)(b)(s_6)]}{2000}$$

Where

- a* = 12-month rolling total of distillate fuel combusted in the boilers (gallons)
- s*₂ = weighted average sulfur content of the distillate fuel (percent by weight)
- b* = 12-month rolling total of #6 fuel oil and waste oil (combined) combusted in the boilers (gallons)
- s*₆ = weighted average sulfur content of the #6 fuel oil and waste oil (percent by weight)

The total SO₂ emissions from the firing of propane and natural gas are assumed to be negligible for the purposes of this calculation. [06-096 C.M.R. ch. 115, BPT]

E. Visible Emissions

1. When firing #6 fuel oil or waste oil in either boiler, visible emissions from Stack #1 shall not exceed 30% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
2. When distillate fuel is being fired in either boiler and #6 fuel oil or waste oil is not being fired in the other boiler, visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
3. When only propane or natural gas is being fired in the boilers, visible emissions from Stack #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

F. Boiler MACT (40 C.F.R. Part 63, Subpart JJJJJ) Requirements for Boilers #2 and #3 [incorporated under 06-096 C.M.R. ch. 115, BPT]

1. The facility shall implement a boiler tune-up program. [40 C.F.R. § 63.11223]
 - a. Each tune-up shall be conducted at a frequency specified by the rule and based on the size, age, and operations of the boiler. See chart below:

<u>Boiler Category</u>	<u>Required Tune-Up Frequency</u>
Boiler #2: Existing oil-fired boiler which is not designated as a boiler with a less frequent tune-up requirement as listed in the subpart	Every 2 years
Boiler #3: Existing oil-fired boiler with an 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 C.F.R. § 63.11223(a) and Table 2]

- 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 Boiler #2. Delay of the burner inspection until the next scheduled shutdown is permitted for up to 72 months from the previous inspection for Boiler #3. [40 C.F.R. § 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 C.F.R. § 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 Boiler #2. Delay of the inspection until the next scheduled shutdown is permitted for up to 72 months from the previous inspection for Boiler #3.
[40 C.F.R. § 63.11223(b)(3)]
- (4) Optimize total emissions of CO, consistent with manufacturer's specifications. [40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 63.11223(b)(7)]

c. Tune-Up Report: A tune-up report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the following information:

- (1) The concentration of CO in the effluent stream (ppmv) and oxygen (volume percent) measured at high fire or typical operating load both **before** and **after** the boiler tune-up;
- (2) A description of any corrective actions taken as part of the tune-up of the boiler; and
- (3) The types and amounts of fuels used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. [40 C.F.R. § 63.11223(b)(6)]

2. Compliance Report

A compliance report shall be prepared by March 1st biennially for Boiler #2 and every five years for Boiler #3 which covers the previous two or five calendar years, as applicable. The report shall be maintained by the source and submitted to the Department and to the EPA upon request. The report must include the items contained in §§ 63.11225(b)(1) and (2), including the following:

[40 C.F.R. § 63.11225(b)]

- a. Company name and address;
- b. A statement of whether the source has complied with all the relevant requirements of this Subpart;

- c. A statement certifying truth, accuracy, and completeness of the notification and signed by a responsible official and containing the official's name, title, phone number, email address, and signature;
 - d. The following certifications, as applicable:
 - (1) "This facility complies with the requirements in 40 C.F.R. § 63.11223 to conduct tune-ups of each boiler in accordance with the frequency specified in this Subpart."
 - (2) "No secondary materials that are solid waste were combusted in any affected unit."
 - (3) "This facility complies with the requirement in §§ 63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available."
3. Records shall be maintained consistent with the requirements of 40 C.F.R. Part 63, Subpart JJJJJ including the following [40 C.F.R. § 63.11225(c)]:
- a. Copies of notifications and reports with supporting compliance documentation;
 - b. 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;
 - c. Records of the occurrence and duration of each malfunction of each applicable boiler; and
 - d. Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler.

Records shall be in a form suitable and readily available for expeditious review.

(17) Emergency Generator

- A. The Emergency Generator shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations.
[06-096 C.M.R. ch. 115, BPT]
- B. The fuel sulfur content for the Emergency Generator shall be limited to 0.0015% sulfur by weight. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel.
[06-096 C.M.R. ch. 115, BPT]
- C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator	0.19	0.19	–	2.65	0.57	0.22

- D. Visible emissions from the Emergency Generator shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
- E. The Emergency Generator shall only to be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. The Emergency Generator is not to be used for prime power when reliable offsite power is available; nor to operate or to be contractually obligated to be available in a demand response program, during a period of deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity. [06-096 C.M.R. ch. 115, BPT]
- F. The Emergency Generator shall meet the applicable requirements of 40 C.F.R. Part 63, Subpart ZZZZ, including the following:
1. Tate & Lyle shall meet the following operational limitations for the Emergency Generator:
 - a. Change the oil and filter annually,
 - b. Inspect the air cleaner annually and replace as necessary, and
 - c. Inspect the hoses and belts annually and replace as necessary.

Records shall be maintained documenting compliance with the operational limitations.

[40 C.F.R. § 63.6603(a) and Table 2(d) and 06-096 C.M.R. ch. 115, BPT]

2. Oil Analysis Program Option
Tate & Lyle has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, Tate & Lyle must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for each engine. [40 C.F.R. § 63.6625(i)]
3. Non-Resettable Hour Meter
A non-resettable hour meter shall be installed and operated on the Emergency Generator. [40 C.F.R. § 63.6625(f)]
4. Maintenance, Testing, and Non-Emergency Operating Situations
 - a. As an emergency engine, the Emergency Generator shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations.

(This does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise to supply power as part of a financial arrangement with another entity). These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written logs) of all engine operating hours. [40 C.F.R. § 63.6640(f) and 06-096 C.M.R. ch. 115, BPT]

- b. Tate & Lyle shall keep records that include maintenance conducted on the Emergency Generator and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. §§ 63.6655(e) and (f)]

5. Operation and Maintenance

The Emergency Generator shall be operated and maintained according to the manufacturer's emission-related written instructions, or Tate & Lyle shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]

6. Startup Idle and Startup Time Minimization

During periods of startup, the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 C.F.R. § 63.6625(h) & 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]

(18) **Facility-Wide Emissions Limits**

Facility-wide emissions of HAP shall not exceed 9.9 ton/year for any single HAP and 24.9 ton/year for all HAPs combined, based on a 12-month rolling total. Compliance shall be demonstrated by monthly records of propylene oxide emissions from the reactors. [06-096 C.M.R. ch. 115, BPT]

(19) **Process Equipment**

- A. Total emissions of VOC and HAP (as propylene oxide, PO) from Tate & Lyle's process sources shall each not exceed 9.9 tons/year on a 12-month rolling total basis.

Tate & Lyle shall document the following:

- 1. Monthly PO usage through monthly reconciliation of bulk storage tank inventory and monthly purchases.
- 2. Monthly production records of all starch products, including products from the propylated batches.

3. Calculation and recording of monthly and 12-month rolling total of tons of PO emitted, by multiplying 24.5 lb PO per propylated starch batch by the number of batches.

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

B. Pneumatic Conveying of Materials

1. PM emissions from each identified process source shall be controlled as identified in the following table [06-096 C.M.R. ch. 115, BPT]:

Unit #	Equipment	BPT Control Equipment
3	Pneumatic Conveying (#1, #2, #3, and #4 Starch Drum Dryers)	Baghouse
4	Pneumatic Conveying (2 nd Drums and Drum Grinder)	Baghouse
5	Pneumatic Conveying (Drum Grinder)	Baghouse
6	Pneumatic Conveying (Drum Grinder)	Baghouse
7	Pneumatic Conveying (Flash Packer)	Baghouse
8	Flash Dryer Air Transport	Cyclone
10	Starch Bag Dump/ Railcar Unloading Dust Removal	Cyclone/ wet scrubber
11	Starch Bag Dump/ Railcar Unloading Dust Removal	Cyclone/ wet scrubber
12	Pneumatic Conveying (Dextrin Packer)	Baghouse
13	Dextrin Fluidizing Air Separation	Baghouse
22	Tapioca Storage Bin Silo	Baghouse
23	Dextrin Starch Conveying System	KICE Baghouse

2. Visible emissions from each baghouse shall not exceed 10% opacity on a six-minute block average basis. Tate & Lyle shall take corrective action if visible emissions from any baghouse exceed 5% opacity.

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

3. Visible emissions from each cyclone and wet scrubber shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT/BPT]

4. Tate & Lyle shall maintain records of all routine and non-routine maintenance on each wet scrubber, cyclone, fabric filter, and baghouse. Such records shall contain the location, date, nature of maintenance or failure, and maintenance action taken or action taken to correct the failure. [06-096 C.M.R. ch. 115, BACT/BPT]

(20) Storage Tanks

1. Tate & Lyle shall conduct routine inspections of the tanks and seals and perform maintenance as necessary so as to prevent vapor leakage. If any holes, tears, or other openings are detected which are not part of the design for minimizing vapor leakage, the facility shall make repairs as soon as practicable, but no later than 15 calendar days from the initial detection of the leak. [06-096 C.M.R. ch. 115, BPT]

2. Tate & Lyle shall maintain records of all fuel fillings from which to calculate VOC and HAP emissions associated with the process. [06-096 C.M.R. ch. 115, BPT]

(21) **Parts Washers**

Parts washers at Tate & Lyle are subject to *Solvent Cleaners*, 06-096 C.M.R. ch. 130.

- A. Tate & Lyle shall keep records of the amount of solvent added to each parts washer. [06-096 C.M.R. ch. 115, BPT]
- B. The following are exempt from the requirements of 06-096 C.M.R. ch. 130 [06-096 C.M.R. ch. 130]:
 1. Solvent cleaners using less than two liters (68 oz.) of cleaning solvent with a vapor pressure of 1.00 mmHg, or less, at 20° C (68° F);
 2. Wipe cleaning; and,
 3. Cold cleaning machines using solvents containing less than or equal to 5% VOC by weight.
- C. The following standards apply to cold cleaning machines that are applicable sources under 06-096 C.M.R. ch. 130.
 1. Tate & Lyle shall attach a permanent conspicuous label to each unit summarizing the following operational standards [06-096 C.M.R. ch. 130]:
 - a. Waste solvent shall be collected and stored in closed containers.
 - b. Cleaned parts shall be drained of solvent directly back to the cold cleaning machine by tipping or rotating the part for at least 15 seconds or until dripping ceases, whichever is longer.
 - c. Flushing of parts shall be performed with a solid solvent spray that is a solid fluid stream (not a fine, atomized or shower type spray) at a pressure that does not exceed 10 psig. Flushing shall be performed only within the freeboard area of the cold cleaning machine.
 - d. The cold cleaning machine shall not be exposed to drafts greater than 40 meters per minute when the cover is open.
 - e. Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the parts washer.
 - f. When a pump-agitated solvent bath is used, the agitator shall be operated to produce no observable splashing of the solvent against the tank walls or the parts being cleaned. Air agitated solvent baths may not be used.
 - g. Spills during solvent transfer shall be cleaned immediately. Sorbent material used to clean spills shall then be immediately stored in covered containers.
 - h. Work area fans shall not blow across the opening of the parts washer unit.
 - i. The solvent level shall not exceed the fill line.

2. The remote reservoir cold cleaning machine shall be equipped with a perforated drain with a diameter of not more than six inches. [06-096 C.M.R. ch. 130]

(22) **Fugitive Emissions**

Visible emissions from any fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity. [06-096 C.M.R. ch. 115, BPT]

(23) **General Process Sources**

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

(24) **Annual Emission Statement**

In accordance with *Emission Statements*, 06-096 C.M.R. ch. 137, the licensee shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted as specified by the date in 06-096 C.M.R. ch. 137.

- (25) Tate & Lyle shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S. § 605).

DONE AND DATED IN AUGUSTA, MAINE THIS 17 DAY OF February, 2017.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Carr for
PAUL MERCER, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 5/15/15

Date of application acceptance: 5/21/15

Date filed with the Board of Environmental Protection:

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

