



PUBLIC COPY

June 30, 2023

Mr. Alan Frazier, P.E.
Permitting Manager
Chattanooga-Hamilton County Air Pollution Control Bureau
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3740

**RE: Air Pollution Permit to Install Application (BSGM-2, Energy Center, and Ancillary Equipment)
McKee Foods Corporation – Apison Plant**

Dear Mr. Frazier:

McKee Foods Corporation (McKee) operates a snack food production facility (the Facility) located at 10638 Apison Pike, Collegedale, Hamilton County, Tennessee 37315. The Facility is a synthetic minor source with respect to the federal Title V Operating Permit Program. McKee operates several production lines at the Apison Plant for various sweet/treats products under minor source certificates of operation (COO) issued by the Chattanooga/Hamilton County Air Pollution Control Bureau (APCB). Permitted operations at the Facility include two frying production lines (HBLSF, HBLDF) for yeast products, yeast production line (BSGS), FFP1 (no yeast products) and FFP1 flour coating system, BSGC rotoclones, process boilers, and bulk materials handling.

McKee is submitting this air permit application for the addition of one new production line (BSGM-2), installation of ancillary burners, and natural gas boilers (Energy Center) associated with the plant expansion. McKee is also requesting that the facility-wide operating hours be limited to 7,500 hr/rolling 12-month period, as the Facility does not operate on Saturdays.

As detailed in this letter and attachments, the Facility will remain a synthetic minor source following the addition of BSGM-2 and other equipment. This application includes the project description, emissions calculations methodology, detailed regulatory review, process flow diagram, emissions calculations, applicable Chattanooga/Hamilton County APCB forms, emission unit specifications, and proposed permit conditions.

If you have any questions/concerns or require any additional information, please contact Erin Schumann at (423) 646-0817 or Erin.Schumann@mckee.com.

Sincerely,

John Sullivan
Engineering Group Manager; Architectural, Industrial & Environmental

RECEIVED

JUN 30 2023

**CHATTANOOGA-HAMILTON
COUNTY AIR POLLUTION
CONTROL BUREAU**

PROJECT DESCRIPTION

McKee is proposing to permit the installation of BSGM-2, which will consist of one dry ingredient mixer (including dust collector), flavorings usage, and natural gas-fired baking oven burners (four burners). Additionally, several natural gas units as part of the new energy center for the plant expansion are proposed to be permitted.

The BSGM-2 production line will include an additional four burners for the ovens with a maximum heat input capacity of 1.02 MMBtu/hr, each (4.08 MMBtu/hr heat input capacity total).

As part of the proposed expansion, the Facility is planning to install five (5) 6.0 MMBtu/hr hot water boilers (HHGB-1 through HHGB-5), two (2) 11 MMBtu/hr process water heaters (PWH-1, PWH-2), and four (4) 10 MMBtu/hr steam boilers (SB-1 through SB-4). All units will be exclusively natural gas fired.

Process flow diagram for BSGM-2 is included in Attachment 1.

EMISSIONS CALCULATIONS

This section identifies the methodologies used to quantify emissions from BSGM-2, the natural gas boilers, and the incorporation of the 7,500 hr/yr operating limit for the facility. Emissions from the production lines include carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO₂), VOC, particulate matter (PM), PM with an aerodynamic diameter of 10 microns (PM₁₀), PM with an aerodynamic diameter of 2.5 microns (PM_{2.5}), greenhouse gases (GHG) in the form of carbon dioxide equivalent (CO_{2e}), and hazardous air pollutants (HAP). These emissions occur as a result of natural gas combustion in the nine (9) oven burners, energy center units, and from the flavorings usage. Additionally, PM emissions occur from dry mixing operations. Detailed Facility-wide emission calculations are included in Attachment 2.

Oven Burners, Boilers – Natural Gas Combustion

Emissions from fuel combustion in the oven burners (nine total), and boilers are based on maximum hourly rated heat input capacities and a natural gas heat content of 1,020 Btu/scf. Emission factors from natural gas combustion are obtained from AP-42, Section 1.4, *Natural Gas Combustion* (07/98).

CO_{2e} potential emissions are calculated using the global warming potentials (GWP) for each GHG pollutant emitted from 40 CFR 98, Subpart A, Table A-1.¹ Each oven burner and boiler is presumed to operate at the requested facility operating limit (7,500 hr/rolling 12-month period) for potential emissions determination.

Product Flavorings

Several different flavorings will be used in the proposed BSGM-2 products. In certain previous permitting efforts, an overly conservative approach assumed for purposes of the emissions estimates that all VOC content in the flavorings was released in the baking process (despite the primary purpose of the flavoring addition to remain in the final baked products). As part of a thorough internal evaluation to more accurately account for VOC emissions in connection with the current permitting, a comprehensive voluntary audit of the Apison Plant sources was conducted by Trinity Consultants (Trinity), the VOC content in the flavorings was reviewed, and actual air emissions sampling was performed by ATI Testing with Trinity oversight. Specifically, the VOC emissions sampling at the Facility has confirmed that a significant portion of the flavorings (and associated VOC content) remains in the final baked products and is not emitted. Therefore,

¹ Rule effective January 1, 2014.

the VOC emissions are now estimated by multiplying the flavoring VOC content identified by internal sampling results and the product formulation throughput. Annual VOC emissions are based on 7,500 hr/rolling 12-month period.

The flavorings used in the products include no HAP content.

Dry Ingredients Mixing

The mixing process associated with BSGM-2 includes a dust collector for control of PM emissions. The controlled PM emissions are estimated from the processes based on the exhaust flow rate of the dust collector and an exit grain loading rate (gr./dscf). Annual PM emissions are based on 7,500 hr/rolling 12-month period.

REGULATORY APPLICABILITY

This section includes a review of potentially applicable federal and local air rules. Specifically, applicability of Prevention of Significant Deterioration (PSD), Title V of the 1990 Clean Air Act Amendments, New Source Performance Standards (NSPS), the National Emissions Standards for Hazardous Air Pollutants (NESHAP), and Hamilton County State Implementation Plan (SIP) regulations are addressed. Applicability to certain general provisions is not detailed in this narrative summary.

Federal air quality control regulations of potential relevance for Title V purposes are those found in Title 40 of the Code of Federal Regulations (CFR), Chapter I, Subchapter C (Air Programs). Potentially applicable requirements for individual emission sources at the facility and a further explanation of applicability or inapplicability are provided below in addition to a discussion of applicability to New Source Review (NSR), NESHAP, NSPS, and other federal requirements.

New Source Review

The NSR permitting program generally requires that a source obtain a permit and undertake other obligations prior to commencement of any project at an industrial facility if the proposed project results in the potential to emit air pollution in excess of certain threshold levels. The NSR program is comprised of two elements: nonattainment NSR (NNSR) and PSD.

The Apison Plant is located in Hamilton County, Tennessee, which is presently designated as "attainment," or "unclassifiable". As such, PSD permitting is potentially applicable to the proposed project.

The PSD Program only regulates emissions from "major" stationary sources. A stationary source is considered PSD major if potential emissions of any regulated pollutant exceed the major source thresholds. The PSD major source emission threshold is 250 tons per year (tpy) of a criteria pollutant unless the source belongs to one of 28 specifically defined industrial source categories for which the major source threshold is 100 tpy.

As the Apison Plant is not classified as a major source for NSR, then PSD permitting is only required if the related emission increase of any PSD-regulated pollutant exceeds the major source threshold. The installation of BSGM-2 does not exceed the major source threshold for any PSD-regulated pollutants. As identified in Attachment 2, the proposed additions do not trigger PSD, and the site remains a PSD minor source.

New Source Performance Standards

NSPS, located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. No NSPS are applicable for the emission sources included with the BSGM-2 production line, as the oven burners are not considered steam generating units, and therefore not subject to NSPS Subpart Dc (in addition to maximum heat input capacity less than 10 MMBtu/hr applicability threshold). The two (2) 11 MMBtu/hr process water heaters (PWH-1, PWH-2), and four (4) steam boilers 10 MMBtu/hr steam boilers (SB-1 through SB-5) hot water boilers are subject are considered steam generating units and exceed or equal 10 MMBtu/hr heat input. Therefore, the units are subject to the requirements of NSPS Subpart Dc. McKee will meet the requirements of this subpart by burning exclusively natural gas in the units.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

NESHAP, located in 40 CFR 61 and 40 CFR 63, have been promulgated for source categories that emit HAP to the atmosphere. A facility that is a major source of HAP is defined as having potential emissions of greater than 25 tpy of total HAP and/or 10 tpy of individual HAP. Facilities with a potential to emit HAP at an amount less than that which is defined as a major source are otherwise considered an area source. The NESHAP allowable emissions limits are most often established on the basis of a maximum achievable control technology (MACT) determination for the particular major source. The NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The Apison Plant is classified as an area source of HAP emissions and remains an area source based upon the proposed operation updates. No NESHAPs are applicable for the emission sources included with the BSGM-2 production line, ancillary equipment to be added for the process, or the proposed energy center boilers.

Title V Operating Permit Program

40 CFR Part 70 establishes the federal Title V operating permit program. The provisions of this federal program are incorporated under the Chattanooga City Code, Chapter 4, Article III, Part 70 Source Regulation and Permits.

The Title V major source emission threshold is 100 tpy of a criteria pollutant and 25 tpy (total) or 10 tpy (individual) for HAP. The Facility operates as a synthetic minor source with respect to the Title V permitting program. The source classification remains unchanged with the addition of BSGM-2, ancillary equipment, and energy center boilers. McKee is further requesting an operation limitation for remaining a synthetic minor source, limiting Facility-wide operating hours to 7,500 hr/rolling 12-month period. This includes no alterations to the current limit for BSGS, which has an operating limit of 4,500 hr/rolling 12-month period. Compliance with the requested operation limitation will be demonstrated by tracking monthly and rolling 12-month operations.

Tennessee State Rules

As the Facility is located in Hamilton County, Tennessee, the APCB Chattanooga Air Ordinance applies to the Facility rather than the state regulations specified in Tennessee Code Title 68, Chapter 201, Chapter 1200-03.

Hamilton County APCB Air Pollution Control Rules and Regulations

The Facility is permitted under the regulations contained in Chapter 4 of the Chattanooga City Code. APCB establishes regulations applicable at the emission unit level (source specific) and at the facility level (generally applicable). The following subsections provide further information on specific regulations pertinent to the Facility and the proposed project.

§4-41 Rule 2-1 – NO_x Emissions from Fuel Burning Equipment with Heat Input Greater than 250 MMBtu/hr

This regulation limits NO_x emissions from fuel-burning equipment with a design capacity of greater than 250 million British Thermal Units per hour (MMBtu/hr). Each oven burner has an equivalent heat input of 1.02 MMBtu/hr, which is less than 250 MMBtu/hr. Additionally, each boiler associated with the plant energy center has a heat input less than 250 MMBtu/hr. Therefore, this rule does not apply to the oven burners or energy center boilers.

§4-41 Rule 2-4 – NO_x Emissions from Any Source not Regulated by Other Rules

This rule limits NO_x emissions from all sources that are not regulated by Rule 2-1, 2-2, 2-3, 2-6, or 2-7. NO_x emissions from the oven burners and energy center boilers will be subject to Rule 2-4.

§4-41 Rule 3-1 – General Facility Visible Emissions

Rule 3-1 limits opacity from any air contaminant source to less than twenty percent (20%) for an aggregate of more than five (5) minutes in any one (1) hour or more than twenty (20) minutes in any 24-hour period. Visible emissions from BSGM-2 will be subject to this rule.

§4-41 Rule 4-8 – Installation Permit and Certificate of Operation

Rule 4-8 establishes requirements for sources to submit an application for a certificate to install or operate unless otherwise exempted under Rule 4-56(c)(12). The proposed oven burners are categorically exempt from permitting per Rule 4-56(c)(12)(vi) as the total heat input capacity for the burners is less than 5 MMBtu/hr (4.08 MMBtu/hr total).

§4-41 Rule 8-2 – PM Emissions from Fuel Burning Equipment

Rule 8-2 of the Chattanooga City Code limits PM emissions from fuel burning equipment installed on or after January 1, 1973. Per Section 4-2, the definition of fuel burning equipment is as follows:

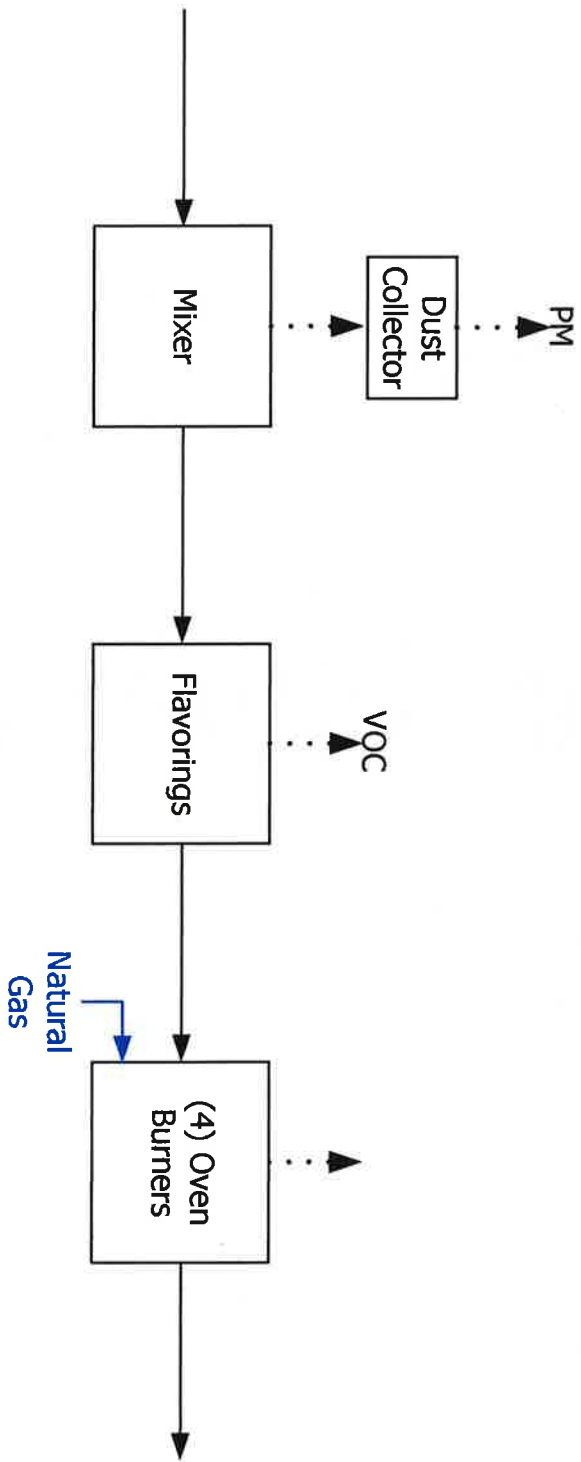
Any equipment, device or contrivance used for the burning of any fuel, except refuse and all appurtenances thereto, including ducts, breechings, fly ash collecting equipment, fuel feeding equipment, ash removal equipment, combustion controls, stacks, chimneys, etc., used for indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion. Such equipment includes, but is not limited to, that used for heating water to boiling; raising steam or superheating steam; heating air as in warm air furnaces; furnishing process heat that is conducted through process vessel walls; and furnishing process heat indirectly through its transfer by fluids.

The oven burners do not provide indirect heating and therefore do not meet the definition of fuel burning equipment. Therefore, this rule does not apply to the units. However, the energy center boilers meet the definition of fuel burning equipment as they provide indirect heating. Therefore, HHGB-1 through HHGB-5, PWH-1 and PWH-2, and SB-1 through SB-4, will be subject to Rule 8-2.

§4-41 Rule 10-1 – PM Emissions from Process Equipment

Rule 10-1 establishes PM limits for process equipment that are not regulated by the fuel burning equipment rule (Rule 8). As BSGM-2 is not subject to Rule 8, the operation will be subject to this rule as units installed after January 1, 1973.

BSGM-2



Legend



Process/Process Equipment



Material Flow



Natural Gas



Air Emissions

McKee Foods Corporation
Collegedale, TN

Attachment 2. BSGM-2
Process Flow Diagram



224301.0066
June 2023

PROCESS EQUIPMENT APPLICATION

**FORM E010
07/2000**

1. **Name of Company** (as shown on Line 1, Form E001): McKee Foods Corporation
2. **Equipment Name** (as shown on Line 10, Form E001): BSGM-2 Production Line
3. **Installation Date:** 2023 4. **Type of Process:** Flavorings
5. **Major Raw Materials Used:** Vanillin, Chocolate Vanilla, Butter, Butter Vanilla, Blueberry, Honey Bun, Yeast, Strawberry Vanilla

6. **Process Weight:** Pounds per hour
This is the total weight of all materials introduced into the process.

7. Control Equipment

<input checked="" type="checkbox"/> Emissions Uncontrolled	<input type="checkbox"/> Baghouse (File Form E102)
<input type="checkbox"/> Wet Collecting Device (File Form E103)	<input type="checkbox"/> Inertial Separators (File Form E105)
<input type="checkbox"/> Electrostatic Precipitator (File Form E104)	<input type="checkbox"/> Other – Specify: _____

8. Control Efficiency

Enter the control efficiency for each pollutant emitted by this equipment (for appropriate Forms E102, E103, E104, E105, E107, or enter zeros if the emissions are uncontrolled as noted in Item 7.

Pollutant	% Efficiency
Particulates	NA
SO _x	NA
NO _x	NA
CO	NA
Hydrocarbons	NA
Other:	NA

9. Emissions Summary

Enter the amount of each pollutant listed in pounds per hour. **See Attachment 2 in application**

Pollutant	Uncontrolled Emissions (File Form E106)	Actual Emissions (Stack Test Report)	Estimated Emissions (See Formula A)
Total Suspended Particulate			
PM10			
Sulfur Oxides			
Nitrogen Oxides (as NO ₂)			
Other (specify)			
VOC			
Total HAPs			

OR

Formula A: Estimated Emissions = $\frac{(100\% - \text{Control Efficiency (\%)})}{100\%}$ X Uncontrolled Emissions

10. **Environmental Impact**

Those emissions indicated in Item 9 may at times under normal operating conditions cause (check all that apply):

- Odors Eye Irritations Property Damage Health Effects
 Other nuisances outside of plant property No environmental damage .

11. **Emission Point Data**

Stack Height (emission point) above ground: _____ Ft. Volume of gas discharged into atmosphere: _____ cfm
Ground Elevation above sea level at stack base: _____ Ft. Gas exit temperature: _____ °F
Stack Diameter: _____ Ft.

12. **Ave. Operating Time**

Daily: 12 hours Weekly: 6 Days Yearly: 52 Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge.



Company Official

Engineering Group Manager - AI&E

Title



Date

CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3740

AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE

**FORM E102
01/2001**

1. **Name of Company:** McKee Foods Corporation
As shown on Line 1 of Form E001

2. **Name of Equipment:** BSGM-2 Dust Collector
As shown on Line 9 of Form E001

3. **Equipment Data:**
 Manufacturer of Baghouse: Schenck Process
 Model Number: 39CSER6 Cost of Baghouse: _____
 Date of Manufacture: 2022 Date of Installation: 2023
 Pre-cleaning Equipment No Yes _____
If yes, what type (File appropriate form for control equipment)
 Volume of gas discharged from baghouse at dry standard conditions: 900 dscfm
 Total cloth area of baghouse: _____ ft²
 Air to cloth ratio: _____ $\frac{\text{Ft}}{\text{Min}}$ *(Divide volume of gas discharged by total cloth area)*

4. **Pressure Drop Across Baghouse:**
 Stated by manufacturer: 15.18 Inches of H₂O
 Measured (actual): _____ Inches of H₂O
 Calculated: _____ X _____ = _____ Inches of H₂O
(K Factor) Air to cloth ratio in ft/min
 The recommended pressure drop range in inches of H₂O is 1.5 (minimum) to 8.0 (maximum).
If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

5. **Filter Data:**
 Type of fabric filters used in baghouse: Polyester
 Operating temperature: 80 °F 80 °F 80 °F
Manufacturer's Recommended Normal Maximum
If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.

6. **Baghouse Components:**
Check all that apply.
 Flow rate instrumentation Inlet gas temperature instrumentation Evaporative Cooler
 Dew point indicator Differential pressure instrumentation Other (Describe) _____
 Heat Exchanger Transmissometer _____

7. **Baghouse Operation:**
 Continuous Intermittent

8. **Baghouse Description:**
 Baghouse Inlet (dirty gas): Bottom Feed Top Feed
 Exterior Filtration Tangential
 Other (Describe): _____
 Does the baghouse have a wear-resistant plate? yes no
 Baghouse shape: Rectangular Cubical Cylindrical
 Other (Describe): _____
 Baghouse volume: _____ Ft³
 Baghouse dimensions: _____ Ft _____ Ft _____ Ft
Length *Width* *height*
 Baghouse shell material: _____

8. **Bag Cleaning:** *(check one)*
Fabric Flexing Reverse Air Cleaning
 Mechanical Shaking & Rapping Reverse Jet
 Sonic Cleaning Reverse Flow
 Collapse Cleaning Manual Cleaning
 Pulse (pressure) – Jet Cleaning

9. **Filter Configuration:**
 Panels Multiple Tube Bag
 Circular Cross-Section Tube Other (Describe): _____
 Filter Fabric: Felted Woven Number of Compartments: 1
 Filter Area: _____ Ft² Number of Filters per Compartment: 1

10. **Particle Size Distribution in Microns (μ):**
 Particle Type(s): _____ Moisture in gas stream: _____ %

Size	0-5 μ	5-10 μ	10-20 μ	20-44 μ	Greater than 44 μ
% by weight					

11. **Dust Disposal:**
 Automatic (screw conveyor, etc.) Manual (Describe): _____
 How often are hoppers emptied? Every _____ hours
 Name of commercial disposal company (if applicable): _____
 Is disposed material wetted for transport? Yes No
 Disposal Site: _____

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: _____ %

Required Efficiency: _____ %

Operational Efficiency (performance testing): _____ %

Size	0-5 μ	5-10 μ	10-20 μ	20-44 μ	Greater than 44 μ
% by weight					

13. **Fan Data:**

Fan Location: Clean air side (pull through) Dirty air side (push through)

Fan Design (check one - A, B, or C):

Fan Type:	Blade Type:
A. <input checked="" type="checkbox"/> Centrifugal (radial flow)	<input type="checkbox"/> Forward Curve <input type="checkbox"/> Backward Curve <input type="checkbox"/> Straight
B. <input type="checkbox"/> Axial-flow (propeller)	<input type="checkbox"/> Propeller <input type="checkbox"/> Tube Axial <input type="checkbox"/> Vane Axial

Fan Properties:

Diameter: _____ Inches Braking Horsepower: _____ BHP
 Speed: 3,600 RPM Inlet Area: _____ Ft²
 Volume: 900 Cfm @ STP Outlet Area: _____ Ft²
 Static Pressure: 15.18 Inches WC Motor Horsepower: 5 HP

Standard Heavy Duty Submitted copy of Manufacturer's Multirating Tables Yes No

Special Construction Materials:

Bronze Alloys Aluminum Stainless Steel Bisonite
 Zinc Chromate Primer Rubber, Phenolics, Vinyls, or Epoxy Covering

C. Compressor Positive Displacement Dynamic Reciprocating

*This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. **This form must be completely filled out before it will be processed.***

Mail to:
 CHATTANOOGA-HAMILTON
 COUNTY AIR POLLUTION
 CONTROL BUREAU
 6125 Preservation Drive
 Chattanooga, TN 37416

Company Official:  _____
 Title: Engineering Group Manager - AI&E
 Date: 6/30/2023

Do not write below this line.

_____ Engineer Approval Permit Number: _____

Special Notations: _____

BSGM-2 Production Line

- ▶ Volatile organic compound emissions from the BSGM-2 Production Line oven resulting from flavorings usage shall not exceed 2.88 lb/hr.
- ▶ Particulate matter emissions from the BSGM-2 Production Line mixer shall not exceed 0.20 lb/hr. Compliance with this limitation shall be met by venting emissions from the BSGM-2 Production Line mixer to a dust collector.
- ▶ Visible emissions from the BSGM-2 Production Line shall not exceed ten (10) percent opacity for an aggregate of more than five (5) minutes in any one-hour period or more than twenty (20) minutes in any twenty-four (24) hour period.
- ▶ Operation of the BSGM-2 Production Line is limited to a maximum of 7,500 hours during any period of twelve (12) consecutive calendar months.
- ▶ A report shall be submitted by May 22 of each year notifying the Bureau Director of the average VOC emissions from flavorings in terms of pounds per hour for each month, and the hours of operation of the BSGM-2 Production Line during the previous calendar year.

Energy Center

- ▶ Particulate matter emissions from HHGB-1 through HHGB-5 shall not exceed 3.6 lb/hr. This limitation shall be met by limiting fuel usage in these boilers to natural gas.
- ▶ Particulate matter emissions from PWH-1 and PWH-2 shall not exceed 6.25 lb/hr. This limitation shall be met by limiting fuel usage in these boilers to natural gas.
- ▶ Particulate matter emissions from SB-1 through SB-4 shall not exceed 6.01 lb/hr. This limitation shall be met by limiting fuel usage in these boilers to natural gas.
- ▶ Visible emissions from each boiler shall not exceed ten (10) percent opacity for an aggregate of one hour or more than twenty (20) minutes in any period of twenty-four hours.
- ▶ A report shall be submitted by May 22 of each year notifying the Bureau Director of the total quantity of natural gas combusted in each boiler during the previous calendar year.