Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS

Conditional Major, Construction/Operating
Permit: F-24-056
Kenlake Foods
Murray, KY 42071
March 07, 2025
Ken Porter, Reviewer

SOURCE ID: 21-035-00031
AGENCY INTEREST: 509
ACTIVITY: APE20240001 & APE20240002

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 2068, Salted and Roasted Nuts and Seeds

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Calloway
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Kenlake Foods packages a variety of roasted and unroasted snack nuts, and various drink mixes. Raw materials are shipped to the source via tractor trailer and off-loaded into the warehouse for storage until they are used in the manufacturing process. The facility is separated into two production departments, Salted Nuts and Dry Pack, for food safety and the prevention of cross-contamination.

For nut production, the raw material is transferred into one of three (3) roaster rooms where it is then roasted to specific temperatures. The ambient air cooler is used to cool the roasted nuts to specific temperatures prior to addition of dressing oil and seasoning and further cool-down. Half of the emissions of particulate matter from the roasting process are assigned to the nut roaster with the other half assigned to the ambient air cooler. Once the desired temperature is reached, the roasted nuts are moved into hoppers above the packaging lines where they are weighed for each container size. The nuts are then packaged and are ready for shipment.

SECTION 2 – CURRENT APPLICATION

Permit Number: F-24-056 Activities: APE20240001, APE20240002

Received: 9/11/2024, 11/22/2024 Application Complete Date(s): 10/7/2024, 1/24/2025

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒ Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
On September 11, 2024 and November 22, 2024, the Division for Air Quality (Division) received applications from Kenlake Foods for a renewal (APE20240001) of their conditional major permit which include the removal of the oatmeal room central vacuum (EU 09) and the revision (APE20240002) added an additional nut roaster, which consists of emission units EU11 and EU12.

F-24-056 Emission Summary				
Pollutant	2023 Actual (tpy)	PTE F-19-017 (tpy)	Change (tpy)	PTE F-24-056 (tpy)
CO	1.1876	6.5425	1.0095	7.552
NOx	1.4217	7.9737	1.2023	9.176
PT	4.2790	20.9356	2.5794	23.515
PM_{10}	4.2790	20.9361	2.5789	23.515
$PM_{2.5}$	3.1621	18.7750	2.959	21.734
SO_2	0.0085	0.0469	0.0071	0.054
VOC	0.6677	2.7601	0.0659	2.826
Lead	0.0000	0.0000	0.000	0.000
Greenhouse Gases (GHGs)				
Carbon Dioxide	1,695.8506	9,329.5793	1,442.830	10,772.405
Methane	0.0325	0.1788	0.027	0.206
Nitrous Oxide	0.0311	0.1709	0.026	0.197
CO_2 Equivalent (CO_2e)	1,705.9309	9,384.9916	1,451.399	10,836.391
Hazardous Air Pollutants (HAPs)				
Combined HAPs:	N/A	0.1501	0.0229	0.173

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Units: 01, 02, 06, & 11 Four(4) Indirect Heat Exchangers

Emission Units:		Manufacturer	Model	Max. Rated Capacity	Fuel	Date
KY EIS	Facility ID					
01	01	Clever Brooks	CB-200-100	4.148 (MMBtu/hr)	Natural Gas	11/29/1982
02	02	Clever Brooks	CB-200-100	4.148 (MMBtu/hr)		11/29/1982
06	06	Heat and Control	CTHX-20	2.8 (MMBtu/hr)		7/2005
11	11	AeroRoast	P2G1C-3M	2.8 (MMBtu/hr)		7/2024

Pollutant	Emission Limit or Standard (lb/MMBtu)		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	EU01	0.56	401 KAR 59:015, Section 4(1)(a)	7.6 lb/MMscf AP-42, Chapter 1.4-2	Assumed to be in compliance when burning natural gas
	EU02	0.56			
	EU06	0.546	401 KAR 59:015, Section 4(1)(c)		
	EU11	0.518			
	20% Opacity, except 40% for not more than 6 consecutive minutes in any 60 consecutive minutes during cleaning of firebox or blowing soot		401 KAR 59:015, Section 4(2)		
SO_2	EU01	3.0	401 KAR 59:015, Section 5(1)(a)(1)	0.6 lb/MMscf AP-42, Chapter 1.4-2	
	EU02	3.0	401 KAR 59:015, Section 5(1)(a)(1)		
	EU06	2.875	401 KAR 59:015, Section 5(1)(c)(2)(b)		
	EU11	2.621	401 KAR 59:015, Section 5(1)(c)(2)(b)		

Applicable Regulation:

401 KAR 59:015, *New Indirect Heat Exchangers*, applies to emissions units with a rated capacity greater than 1 MMBtu/hr and less than 250 MMBtu/hr, which commenced on or after April 9, 1972.

401 KAR 63:020 *Potentially hazardous matter or toxic substances*

Heat Input:= 8.296 MMBtu/hr =EU01, EU02 - (4.148) + (4.148)
11.096 MMBtu/hr =EU01, EU02, & EU06 - (4.148) + (4.148) + (2.8)
13.896 MMBtu/hr =EU01, EU02, EU06, & EU11 – (4.148) + (4.148) + (2.8) + (2.8)

*See Appendix B

Comments:
The permittee shall monitor the fuel usage (scf) and hours of operation for each unit on a monthly basis.

Emission Units: **03a** [Nut Roaster]
03b [Nut Roaster (Vegetable Oil for Cooking)]

Emission Units:		Manufacturer	Model	Maximum Throughout	Fuel	Date
KY EIS	Facility ID					
03a	03	Mastermatic	C24-30	2.7 MMBtu/hr	Natural Gas	11/29/1982
03b				2.5 Tons/hr		1983

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	P < 0.5	E = 2.34	401 KAR 59:010, Section 3(2)	EU 3a 7.6 lb/MMscf AP-42, Chapter 1.4-2 EU 3b 0.8 lb/ton AP-42, Chapter 9.13.3 (See Comments)	EU 3a, assumed to be in compliance while burning natural gas EU 3b, calculate particulate emissions *
	0.5 < P < 30	$E = 3.59P^{0.62}$			
	20 % opacity		401 KAR 59:010, Section 3(1)(a)		Qualitative visual observation on a weekly basis. U.S. EPA Reference Method 9, if needed

P = Process Weight Rate (ton/hr); E = Emission Rate (lb/hr)

Applicable Regulation:
401 KAR 59:010, *New Process Operations*

Comments:
Emission factor for PM was taken from AP-42, Chapter 9.13.3-2, *Continuous deep fat fryer – potato chips*

Since 50% of the emissions go through EU03b and 50% through EU 04, the emission factor (1.6 lb/ton) was halved to 0.8 lb/ton.

$$* \, PM \; Emissions \left(\frac{lbs}{hr}\right) = \frac{Monthly \; Operating \; Rate \left(\frac{tons}{month}\right) * Emission \; Factor \left(\frac{lb}{ton}\right)}{Monthly \; Hours \; of \; Operation}$$

$$Emission \; Factor = 0.8 \frac{lb}{ton}$$

Emission Units: 04, 08, & 12 Three(3) Ambient Air Coolers

Emission Unit		Manufacturer	Model	Maximum Throughout	Control	Date
KY EIS	Facility ID					
04	04	Heat and Control	AAC-3017	2.5 tons/hr	Fabric Filter	6/2010
08	08	Heat and Control	AAC-5614	3.75 tons/hr	Fabric Filter	7/2005
12	12	Buhler	P2G1C-3M	2.2 tons/hr		10/2024

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis (lb/ton)		Compliance Method
PM	P < 0.5	E = 2.34	401 KAR 59:010, Section 3(2)	EU04	0.8	Calculate particulate emissions*
				EU08	0.13	
				EU12	0.33	
	0.5 < P < 30	$E = 3.59P^{0.62}$		AP-42, Chapter 9.13.3 & 9.13.2 (See Comments)		
	20 % opacity		401 KAR 59:010, Section 3(1)(a)			Qualitative visual observation on a weekly basis. U.S. EPA Reference Method 9, if needed

P = Process Weight Rate (ton/hr); E = Emission Rate (lb/hr)

Applicable Regulation:
401 KAR 59:010, *New Process Operations*

Comments:
Emission factor for PM was taken from AP-42, Chapter 9.13.3-2 & 9.13.2-1

$$* PM\ Emissions\ \left(\frac{lbs}{hr}\right) = \frac{Monthly\ Operating\ Rate\ \left(\frac{tons}{month}\right) * Emission\ Factor\ \left(\frac{lb}{ton}\right) * (1 - Control\ Efficiency)}{Monthly\ Hours\ of\ Operation}$$

Emission Factor with 50% of the emissions going through unit and 50% through air cooler

** For EU08 & EU12, the emission factor includes the control, there was no control efficiency applied to the PTE

	EU04	EU08	EU12
Emission Factor	1.6 lb/ton	0.26 lb/ton	0.66 lb/ton
With 50% emission through the unit & 50% through air cooler			
*50% Emission Factor	0.8 lb/ton	0.13 lb/ton	0.33 lb/ton
Control Efficiency	0.9998	**0.0	**0.0

Emission Unit: 05 Dry Pack Central Vacuum

Emission Unit		Maximum Throughout	Control	Date
KY EIS	Facility ID			
05	05	0.0825 ton/hr	Cyclone and Fabric Filter	1983

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	P < 0.5	E = 2.34	401 KAR 59:010, Section 3(2)	2,000 lb/ton (Manufacturer)	Calculate particulate emissions*
	0.5 < P < 30	$E = 3.59P^{0.62}$			
	20 % opacity		401 KAR 59:010, Section 3(1)(a)		Qualitative visual observation on a weekly basis. U.S. EPA Reference Method 9, if needed

P = Process Weight Rate (ton/hr); E = Emission Rate (lb/hr)

Applicable Regulation:
401 KAR 59:010, *New Process Operations*

Comments:
The control efficiency of the cyclone is 75% and the control efficiency of the fabric filter is 99.9%.

$$* PM\ Emissions\ \left(\frac{lbs}{hr}\right) = \frac{Monthly\ Operating\ Rate\left(\frac{tons}{month}\right) * Emission\ Factor\left(\frac{lb}{ton}\right) * (1 - Control\ Efficiency)}{Monthly\ Hours\ of\ Operation}$$

$$Emission\ Factor = 2{,}000\frac{lb}{ton}$$

$$Control\ Efficiency = 0.999$$

The potential emissions of particulates emission (PM/PM_{10}) are more than 100 tons per year, due primarily from the approach taken in calculating the potential to emit from the two central vacuum systems, from the source operating at full capacity. The central vacuum systems are used to clean up product dust that accumulates on surfaces in the department. In calculating potential emissions from these units, it was assumed that all of the 165 lb/hr collection capacity of each unit would result in airborne emissions of particulate matter on an operating basis of 8760 hr/yr. While this is certainly a conservative approach, it does not accurately reflect the actual operation of these units. An alternate approach for calculating potential emissions from the central vacuum systems was prevented by the lack of sufficient information. Before exhausting to the roof, emissions from the central vacuum systems are controlled by a cyclone that eliminates 75 percent of the dust from the process air prior to entering the filter that eliminates 99.9 percent of the dust.

Emission Unit: 07 Nut Roaster #2

Emission Unit:		Manufacturer	Model	Maximum Throughout	Control	Date
KY EIS	Facility ID					
07	07	Heat and Control	OR-5414	3.75 tons/hr	Oil Demister	7 / 2005

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	P < 0.5	E = 2.34	401 KAR 59:010, Section 3(2)	0.13 lb/ton AP-42, Chapter 9.13-.3-2 (See Comments)	Calculate particulate emissions*
	0.5 < P < 30	$E = 3.59P^{0.62}$			
	20 % opacity		401 KAR 59:010, Section 3(1)(a)		Qualitative visual observation on a weekly basis. U.S. EPA Reference Method 9, if needed

P = Process Weight Rate (ton/hr); E = Emission Rate (lb/hr)

Applicable Regulation:
401 KAR 59:010, *New Process Operations*

Comments:
Emission factor for PM was taken from AP-42, Chapter 9.13.3-2, *Continuous deep fat fryer with standard mesh pad mist eliminator – other snack chips*

Since 50% of the emissions go through EU07 and 50% through EU 08, the emission factors for PM_{10} and $PM_{2.5}$ (0.26 lb/ton and 0.078 lb/ton) were halved to 0.13 lb/ton and 0.039 lb/ton, respectively. Since the emission factor includes the control, there was no control efficiency applied to the PTE.

$$* PM\ Emissions\ \left(\frac{lbs}{hr}\right) = \frac{Monthly\ Operating\ Rate\ \left(\frac{tons}{month}\right) * Emission\ Factor\ \left(\frac{lb}{ton}\right)}{Monthly\ Hours\ of\ Operation}$$

$$Emission\ Factor = 0.13\,\frac{lb}{ton}$$

Emission Unit: 10 Emergency Generator (4SLB) Natural Gas							
Emission Units:		**Manufacturer**	**Model**	**Engine Year**	**Serial#**	**Rating**	**Date**
KY EIS	Facility ID						
10	10	Kohler Generator	11-RMY-Q52	N/A	0720028	16.3 HP	12 / 2002

Applicable Regulation:
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applicable to stationary RICE located at a major or area source of HAP emissions.

Comments:
The permittee shall monitor the fuel usage (scf) and hours of operation on a monthly basis.

The permittee shall monitor how many hours of operation are spent for emergency operation and how many hours of operation are spent for non-emergency operation.

Emission factors based on AP-42, Chapter 3.2

Maximum fuel usage is 1.96 E -4 MMscf/hr

INSIGNIFICANT ACTIVITIES				
EMISSION UNITS		Description		Generally Applicable Regulation (401 KAR)
KY EIS	Facility ID			
IA1	IA01	Water Heater	275,000 Btu/hr	59:010
IA2	IA02	Water Heater (1 of 2)	300,000 Btu/hr	59:010
		Water Heater (2 of 2)	300,000 Btu/hr	59:010
IA3	IA03	Mechanical Room Make-Up Air System	1,720,000 Btu/hr	59:010
IA4	IA04	Bulk Sugar Receiving	30,000 lbs/hr	59:010
IA5	IA05	Clamshell Line Make-Up Air System	1,103,000 Btu/hr	59:010
IA6	IA06	Sugar Transfer System	12,000 lbs/hr	59:010

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results
N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
Less than 90 tpy of PM emissions	To preclude the applicability of 401 KAR 52:020, *Title V Permits*	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:010, *New process operations*	03a, 03b, 04, 05, 07, 08, 12
401 KAR 59:015, *New indirect heat exchangers*	01, 02, 06, 11
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	10
401 KAR 63:020, *Potentially hazardous matter or toxic substances*	01, 02, 06, 11

Table C - Summary of Precluded Regulations:
N/A

Table D - Summary of Non Applicable Regulations:
N/A

Air Toxic Analysis
N/A

Single Source Determination
N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action
S-04-052	State Origin	APE20040001	8/16/2004	10/22/2004	Initial Construction
F-09-025	Conditional Major	APE20090001	7/25/2009	11/6/2009	Conversion of 401 KAR 52:080 Permit
F-14-043	Renewal	APE20140001	7/8/2014	10/24/2014	Renewal
F-14-043 R1	Minor Revision	APE20180001	5/8/2018	7/14/2018	Added Emission Unit 10
F-19-017	Renewal	APE20190001	4/3/2019	11/30/2019	Renewal

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	–	Ambient Air Quality Standards
BACT	–	Best Available Control Technology
Btu	–	British thermal unit
CAM	–	Compliance Assurance Monitoring
CO	–	Carbon Monoxide
Division	–	Kentucky Division for Air Quality
ESP	–	Electrostatic Precipitator
GHG	–	Greenhouse Gas
HAP	–	Hazardous Air Pollutant
MMBtu/hr	–	million BTU per hour
mmHg	–	Millimeter of mercury column height
MSDS	–	Material Safety Data Sheets
NAAQS	–	National Ambient Air Quality Standards
NESHAP	–	National Emissions Standards for Hazardous Air Pollutants
NOx	–	Nitrogen Oxides
PM	–	Particulate Matter
PM_{10}	–	Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$	–	Particulate Matter equal to or smaller than 2.5 micrometers
PSD	–	Prevention of Significant Deterioration
PTE	–	Potential to Emit
SO_2	–	Sulfur Dioxide
VOC	–	Volatile Organic Compounds

APPENDIX B – INDIRECT HEAT EXCHANGER EMISSION LIMITATIONS

Name	**Construction Date**	**Date Removed**	**Capacity** *MMBtu/hr*	**Total for Year (T)** *MMBtu/hr*	**PM Limit (E_P)*** *lb/MMBtu*	**SO_2 Limit (E_S)**** *lb/MMBtu*
EU01	1982		4.148	8.296	0.56	3.0
EU02	1982		4.148	8.296	0.56	3.0
EU06	2005		2.8	11.096	0.546	2.875
EU11	2024		2.8	13.896	0.518	2.621

* 0.56 [401 KAR 59:015, Section 4(1)(a)] and $E_P = 0.9634 (T^{-0.2356})$ [401 KAR 59:015, Section 4(1)(c)]

**3.0 [401 KAR 59:015, Section 5(1)(a)(1)] and $E_S = 7.7223 (T^{-0.4106})$ [401 KAR 59:015, Section 5(1)(c)(2)(b)]