

Missouri Department of

dnr.mo.gov

# NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

APR 18 2019

Mr. Kent Cavender  
Maintenance Manager  
ConAgra Foods  
204 Vine Street  
Macon, MO 63552

RE: New Source Review Permit - Project Number: 2019-02-043

Dear Mr. Cavender:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



Recycled paper

Mr. Kent Cavender  
Page Two

If you have any questions regarding this permit, please do not hesitate to contact Chad Stephenson, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



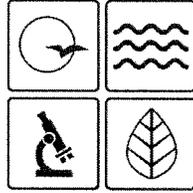
Susan Heckenkamp  
New Source Review Unit Chief

SH:csj

Enclosures

c: Northeast Regional Office  
PAMS File: 2019-02-043

Permit Number: 042019-009



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

**MISSOURI AIR CONSERVATION COMMISSION**

**PERMIT TO CONSTRUCT**

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 042019-009

Project Number: 2019-02-043  
Installation Number: 121-0003

Parent Company: ConAgra Foods

Parent Company Address: 11 ConAgra Drive, Omaha, NE 68102

Installation Name: ConAgra Foods

Installation Address: 204 Vine Street, Macon, MO 63552

Location Information: Macon County, S16, T56N, R14W

Application for Authority to Construct was made for:  
Fulton boiler (EP-26) and John Bean Technologies pre-fryer (EP-27a) and fryer (EP-27b).  
This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- 
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

  
\_\_\_\_\_  
Director or Designee  
Department of Natural Resources

APR 18 2019

\_\_\_\_\_  
Effective Date

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted to the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (3)(E). "Conditions required by permitting authority."*

**ConAgra Foods**

Macon County, S16, T56N, R14W

1. Control Device Requirement - Mist Eliminators
  - A. ConAgra Foods shall control particulate emissions from JBT pre-fryer (EP-27a) and fryer (EP-27b) using mist eliminators as specified in the permit application.
  - B. The mist eliminators shall be operated and maintained in accordance with the manufacturer's specifications. The mesh pads in the airway of the steam vents of the pre-fryer and fryer (EP27a and EP-27b) shall be removed daily for cleaning.
  - C. Replacement mesh pads for the mist eliminators shall be kept on hand at all times. The mesh pads shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
  - D. ConAgra Foods shall maintain an operating and maintenance log for the mist eliminator which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
2. Record Keeping and Reporting Requirements
  - A. ConAgra Foods shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
  - B. ConAgra Foods shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by email at [AirComplianceReporting@dnr.mo.gov](mailto:AirComplianceReporting@dnr.mo.gov), no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (5) REVIEW

Project Number: 2019-02-043  
Installation ID Number: 121-0003  
Permit Number: 042019-009

Installation Address:

ConAgra Foods  
204 Vine Street  
Macon, MO 63552

Parent Company:

ConAgra Foods  
11 ConAgra Drive  
Omaha, NE 68102

Macon County, S16, T56N, R14W

REVIEW SUMMARY

- ConAgra Foods has applied for authority to construct a 14 MMBtu/hr Fulton boiler (EP-26) and John Bean Technologies (JBT) pre-fryer (EP-27a) and fryer (EP-27b).
- The application was deemed complete on March 6, 2019.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are from the combustion of natural gas.
- 40 CFR 60 Subpart Dc, "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units" applies to the boiler (EP-26).
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- Oil Mist Eliminators are being used to control the PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from the pre-fryer and fryer (EP-27a and EP-27b).
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>10</sub> are above insignificant levels but below de minimis levels. All other criteria pollutants are below insignificant levels.
- This installation is located in Macon County, an attainment/unclassifiable area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

ConAgra Foods is a food processing plant located in Macon. The installation consists of two chicken processing lines equipped with two multipurpose ovens followed by a thermal brander. These processing lines are used for grinding, shaping, battering, breading, baking, branding, freezing, and packaging of the final product. The installation is a minor source for New Source Review (construction) permitting. No operating permit is required for this facility since all emissions are 100 tons per year. The following New Source Review permits have been issued to ConAgra Foods from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0684-002	Installation of equipment for formed chicken
1295-008	Addition of two chicken processing lines
0896-011	Replacement of one existing fryer line by two new chicken fryer lines
1297-025	Addition of two multipurpose ovens
072002-002	Addition of two new fryers and replacement of a brander
022011-011	Replacement of Boiler 1 with a 30.6 MMBtu/hr natural gas boiler
112013-007	Add Grill
112013-007A	Remove emission limit by modeling
112015-011	Add Grill

### PROJECT DESCRIPTION

ConAgra Foods (ConAgra) submitted an application to construct for the installation of a new Fulton Boiler (thermal oil heater), Model FT-1400-C; and a new John Bean Technologies (JBT) pre-fryer and fryer, SteinModel TFF IV 3423 Thermofin Fryer, to fry chicken. The new pre-fryer and fryer will replace the existing direct fired pre-fryer and fryer, EP-04 and EP-06. The new pre-fryer and fryer will not have a combustion source because the Fulton Boiler will supply thermal heat to heat the cooking oil in each fryer. The new fryers have steam vent assemblies with oil mist eliminators to remove particulates from the exhaust stream.

The Fulton Boiler (EP-26) is rated at 14 MM Btu per hour and will use natural gas for fuel. The new pre-fryer (EP-27a) and fryer (EP-27b) are capable of cooking 5,000 pounds of chicken per hour each. The pre-fryer initially cooks the chicken and then the

chicken goes directly to the fryer to complete the cooking process. Once the chicken is cooked it is transferred to freezers. The new sources are independent of other permitted cooking sources at the facility.

## EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition. Potential boiler (EP-26) emissions were calculated using AP-42 Section 1.4 *Natural Gas Combustion* (July 1998). All natural gas combustion emissions were considered uncontrolled.

There are particulate matter and VOC emissions from the oil used in the process for the pre-fryer (EP-27a) and the fryer (EP-27b). Particulate emissions from EP-27a and EP-27b are controlled by oil mist eliminators (as required by Special Condition 1). The PM, PM<sub>10</sub>, and VOC emission factors for EP-27a and EP-27b were obtained from WebFire (Factor Information Retrieval System), EPA's online emission factor repository, for the Source Classification Codes (SCC) 3-02-036-02. The particle size distribution for PM<sub>2.5</sub> was determined using the California Emission Inventory Development and Reporting System (CEIDARS) Appendix A: Table A – Cooking.

Potential emissions from the supporting haul road activity were calculated using AP-42 Chapter 13.2.1, Paved Roads, January 2011. A haul road distance of 268 feet was used with an empty truck weight of 13 tons and a loaded truck weight of 40 tons.

The following table provides an emissions summary for this project. Existing potential emissions were taken from permit 112015-011 and are the sum of the conditioned project emissions and the existing potential emissions. Existing actual emissions were taken from the installation's 2018 EIQ. Potential emissions of the project represent the potential of the new equipment and the increase in haul road activity, assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Potential Emissions of the Project
PM	25.0	N/D	N/D	6.98
PM <sub>10</sub>	15.0	88.32	8.59	6.15
PM <sub>2.5</sub>	10.0	N/D	5.89	3.87
SO <sub>x</sub>	40.0	0.30	0.03	0.04
NO <sub>x</sub>	40.0	58.08	7.05	6.01
VOC	40.0	11.82	7.91	2.19
CO	100.0	26.05	10.71	5.05
HAPs	10.0/25.0	N/D	0.06	0.11

N/D = Not Determined

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>10</sub> are above insignificant levels but below de minimis levels. All other criteria pollutants are below insignificant levels.

## APPLICABLE REQUIREMENTS

ConAgra Foods shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

## GENERAL REQUIREMENTS

- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
  - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

## SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070
  - *Standards of Performance for Performance for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 60, Subpart Dc*

## STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 21, 2019, received February 25, 2019, designating ConAgra Foods as the owner and operator of the installation.

## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....percent	<b>Mgal</b> .....1,000 gallons
<b>°F</b> .....degrees Fahrenheit	<b>MW</b> .....megawatt
<b>acfm</b> .....actual cubic feet per minute	<b>MHDR</b> .....maximum hourly design rate
<b>BACT</b> .....Best Available Control Technology	<b>MMBtu</b> ....Million British thermal units
<b>BMPs</b> .....Best Management Practices	<b>MMCF</b> .....million cubic feet
<b>Btu</b> .....British thermal unit	<b>MSDS</b> .....Material Safety Data Sheet
<b>CAM</b> ..... Compliance Assurance Monitoring	<b>NAAQS</b> ....National Ambient Air Quality Standards
<b>CAS</b> ..... Chemical Abstracts Service	<b>NESHAPs</b> National Emissions Standards for Hazardous Air Pollutants
<b>CEMS</b> ..... Continuous Emission Monitor System	<b>NO<sub>x</sub></b> .....nitrogen oxides
<b>CFR</b> ..... Code of Federal Regulations	<b>NSPS</b> .....New Source Performance Standards
<b>CO</b> .....carbon monoxide	<b>NSR</b> .....New Source Review
<b>CO<sub>2</sub></b> .....carbon dioxide	<b>PM</b> .....particulate matter
<b>CO<sub>2e</sub></b> .....carbon dioxide equivalent	<b>PM<sub>2.5</sub></b> .....particulate matter less than 2.5 microns in aerodynamic diameter
<b>COMS</b> ..... Continuous Opacity Monitoring System	<b>PM<sub>10</sub></b> .....particulate matter less than 10 microns in aerodynamic diameter
<b>CSR</b> ..... Code of State Regulations	<b>ppm</b> .....parts per million
<b>dscf</b> .....dry standard cubic feet	<b>PSD</b> .....Prevention of Significant Deterioration
<b>EIQ</b> .....Emission Inventory Questionnaire	<b>PTE</b> .....potential to emit
<b>EP</b> .....Emission Point	<b>RACT</b> .....Reasonable Available Control Technology
<b>EPA</b> ..... Environmental Protection Agency	<b>RAL</b> .....Risk Assessment Level
<b>EU</b> .....Emission Unit	<b>SCC</b> .....Source Classification Code
<b>fps</b> .....feet per second	<b>scfm</b> .....standard cubic feet per minute
<b>ft</b> .....feet	<b>SDS</b> .....Safety Data Sheet
<b>GACT</b> ..... Generally Available Control Technology	<b>SIC</b> .....Standard Industrial Classification
<b>GHG</b> ..... Greenhouse Gas	<b>SIP</b> .....State Implementation Plan
<b>gpm</b> ..... gallons per minute	<b>SMAL</b> .....Screening Model Action Levels
<b>gr</b> .....grains	<b>SO<sub>x</sub></b> .....sulfur oxides
<b>GWP</b> ..... Global Warming Potential	<b>SO<sub>2</sub></b> .....sulfur dioxide
<b>HAP</b> .....Hazardous Air Pollutant	<b>SSM</b> .....Startup, Shutdown & Malfunction
<b>hr</b> .....hour	<b>tph</b> .....tons per hour
<b>hp</b> .....horsepower	<b>tpy</b> .....tons per year
<b>lb</b> .....pound	<b>VMT</b> .....vehicle miles traveled
<b>lbs/hr</b> ..... pounds per hour	<b>VOC</b> .....Volatile Organic Compound
<b>MACT</b> .....Maximum Achievable Control Technology	
<b>µg/m<sup>3</sup></b> .....micrograms per cubic meter	
<b>m/s</b> .....meters per second	



Installation: ConAgra Foods  
ID: 121-0003  
Project Description: Boiler and Pre-Fryer/Fryer

Pollutant	Natural Gas PTE (tpy)	Pre-Fryer and Fryer PTE (tpy)	Haul Roads	Total PTE (tpy)
PM	0.46	6.53	0.09	6.98
PM10	0.46	5.69	0.02	6.15
PM2.5	0.46	3.42	0.00	3.87
SOx	0.04	0.00	0.00	0.04
Nox	6.01	0.00	0.00	6.01
VOC	0.33	1.86	0.00	2.19
CO	5.05	0.00	0.00	5.05
HAPs	0.11	0.00	0.00	0.11

Emission Unit	Description	Installation's Designation	MHDR (MMBtu/hr input)	Combined MHDR (MMBtu/hr input)	MHDR (MMcf/hr)	Pollutant	CAS	HAP?	Emission Factor (lb / mmcf)	Emission Factor Source (SCC)	Available Pollutant (lb/hr)	Control Device	PTE (lb/hr)	PTE (tpy)
EP-26	Fulton Boiler		14.0	14.00	0.014	PM			7.6	1-02-006-02 industrial boiler, natural gas, 10-100MMBtu and 1-02-006-03 < 10MMBtu	0.1043	none	0.1043	0.46
						PM10			7.6		0.1043	none	0.1043	0.46
						PM2.5			7.6		0.1043	none	0.1043	0.46
						SOx			0.6		0.0082	none	0.0082	0.04
						NOx			100		1.3725	none	1.3725	6.01
						VOC			5.5		0.0755	none	0.0755	0.33
						CO			84		1.1529	none	1.1529	5.05
						Combined HAPs			1.888		0.0259	none	0.0259	0.11350
						POM aggregate group			6.98E-04		9.58E-06	none	9.58E-06	4.20E-05
						2-Methylnaphthalene	91-57-6	y	2.40E-05		3.294E-07	none	3.29E-07	1.44E-06
						3-Methylchloranthrene	56-49-5	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						7,12-Dimethylbenzanthracene	57-97-6	y	1.60E-05		2.196E-07	none	2.20E-07	9.62E-07
						Acenaphthene	83-32-9	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Acenaphthylene	203-96-8	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Anthracene	120-12-7	y	2.40E-06		3.294E-08	none	3.29E-08	1.44E-07
						Benzanthracene	56-55-3	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Benzene	71-43-2	y	2.10E-03		2.882E-05	none	2.88E-05	1.26E-04
						Benzo(a)pyrene	50-32-8	y	1.20E-06		1.647E-08	none	1.65E-08	7.21E-08
						Benzo(b)fluoranthene	205-99-2	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Benzo(g,h,i)perylene	191-24-2	y	1.20E-06		1.647E-08	none	1.65E-08	7.21E-08
						Benzo(k)fluoranthene	205-82-3	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Butane	106-97-8		2.10E+00		2.882E-02	none	2.88E-02	1.26E-01
						Chrysene	218-01-9	y	1.80E-06		2.471E-08	none	2.47E-08	1.08E-07
						Dibenzo(a,h)anthracene	53-70-3	y	1.20E-06		1.647E-08	none	1.65E-08	7.21E-08
						Dichlorobenzene	25321-22-6	y	1.20E-03		1.647E-05	none	1.65E-05	7.21E-05
						Ethane	74-84-0		3.10E+00		4.255E-02	none	4.25E-02	1.86E-01
						Fluoranthene	206-44-0	y	3.00E-06		4.118E-08	none	4.12E-08	1.80E-07
						Fluorene	86-73-7	y	2.80E-06		3.843E-08	none	3.84E-08	1.68E-07
						Formaldehyde	50-00-0	y	7.50E-02		1.029E-03	none	1.03E-03	4.51E-03
				Hexane	110-54-3	y	1.80E+00	2.471E-02	none	0.0247	0.11			
				Indeno(1,2,3-cd)pyrene	193-39-5	y	1.80E-06	2.471E-08	none	2.47E-08	1.08E-07			
				Naphthalene	91-20-3	y	6.10E-04	8.373E-06	none	8.37E-06	3.67E-05			
				Pentane	109-66-0		2.60E+00	3.569E-02	none	3.57E-02	1.56E-01			
				Phenanathrene	85-01-8	y	1.70E-05	2.333E-07	none	2.33E-07	1.02E-06			
				Propane	74-98-6		1.60E+00	2.196E-02	none	2.20E-02	9.62E-02			
				Pyrene	129-00-0	y	5.00E-06	6.863E-08	none	6.86E-08	3.01E-07			
				Toluene	108-88-3	y	3.40E-03	4.667E-05	none	4.67E-05	2.04E-04			
				Arsenic	7440-38-2	y	2.00E-04	2.745E-06	none	2.75E-06	1.20E-05			
				Barium	7440-39-3		4.40E-03	6.039E-05	none	6.04E-05	2.65E-04			
				Beryllium	7440-41-7	y	1.20E-05	1.647E-07	none	1.65E-07	7.21E-07			
				Cadmium	7440-43-9	y	1.10E-03	1.510E-05	none	1.51E-05	6.61E-05			
				Chromium	7440-47-3	y	1.40E-03	1.922E-05	none	1.92E-05	8.42E-05			
				Cobalt	7440-48-4	y	8.40E-05	1.153E-06	none	1.15E-06	5.05E-06			
				Copper	7440-50-8		8.50E-04	1.167E-05	none	1.17E-05	5.11E-05			
				Manganese	7439-96-5	y	3.80E-04	5.216E-06	none	5.22E-06	2.28E-05			
				Mercury	7439-97-6	y	2.60E-04	3.569E-06	none	3.57E-06	1.56E-05			
				Molybdenum	7439-98-7		1.10E-03	1.510E-05	none	1.51E-05	6.61E-05			
				Nickel	7440-02-0	y	2.10E-03	2.882E-05	none	2.88E-05	1.26E-04			
				Selenium	7782-49-2	y	2.40E-05	3.294E-07	none	3.29E-07	1.44E-06			
				Vanadium	7440-62-2		2.30E-03	3.157E-05	none	3.16E-05	1.38E-04			
				Zinc	7440-66-6		2.90E-02	3.980E-04	none	3.98E-04	1.74E-03			
				CO2			120,000	1647.0588	none	1647.059	7,214.12			
				Methane			2.3	0.0316	none	0.0316	0.14			
				N2O			2.2	0.0302	none	0.0302	0.13226			
				GHG (mass)							7,214.388			
				GHG (CO2e)							7,256.99			

Natural Gas HHV (Btu/cf)
1,020

100yr GWP 40 CFR 98 Table A-1, Jan 1 2014	
CO2	1
CH4	25
N2O	298

Natural gas HHV of 1,020 Btu/cf cited from AP-42 Section 1.4, July 1998.  
 Dichlorobenzene group CAS 25321-22-6 conservatively assumed as 100% 1,4-dichlorobenzene CAS 106-46-7.  
 HAPs updated per "Air Pollution Control Program Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels" Revision 10, 5/3/2012

Emission Unit	Emission Point	Description	SCC	Material	MHDR (tph)	Pollutant	Emission Factor (lb/ton)	Emission Factor Source	Available Emissions (lb/hr)	Control Device	PTE (lb/hr)	PTE (tpy)
	EP27a & EP27b	Pre-Fryer & Fryer		chicken	5.0	PM	0.298	WebFire SCC 30203602	1.49	Oil Mist Eliminator for Particulate	1.49	6.53
					PM10	0.260	1.3		5.69			
					PM2.5	0.156	0.78		3.42			
					VOC	0.085	0.425		1.86			

MHDR is 5,000 lbs/hr in the pre-fryer and the same 5,000 lbs/hr in the fryer. Combined MHDR is 10,000 lbs/hr of 5 tons/hr

Emission factor is a controlled emission factor - fiber mist eliminator

PM2.5 emission factor from CEIDARS Table with PM2.5 factors, SCC Main Categor, Cooking, PM2.5 fraction of PM10 is 0.600



Activity	MHDR		Truck Types				We*	Wf*
	(tons/hr)	(trips/hr)	semi	type	type	type		
loading dock	10.0	0.370	100%				13	40
title		0					0	0
title		0					0	0
title		0					0	0
title		0					0	0
title		0					0	0
title		0					0	0
title		0					0	0
title		0					0	0
Road Segment ID	1							
D one way (feet)	268							
D one way (miles)	0.051							
loading dock	3							
title								
title								
title								
title								
title								
title								
loading dock	26.500	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
W	26.5	0	0	0	0	0	0	0
Surface	Paved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved
E(PM2.5) (lbs/VMT)	0.02871							
E(PM10) (lbs/VMT)	0.11697							
E(PM30) (lbs/VMT)	0.58484							
Eext(PM2.5) (lbs/VMT)	0.02665							
Eext(PM10) (lbs/VMT)	0.10856							
Eext(PM30) (lbs/VMT)	0.54278							
loading dock	0.03761	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0
MHDR	0.037613	0	0	0	0	0	0	0
PTE PM2.5 (lb/hr)	0.00108	0	0	0	0	0	0	0
PTE PM10 (lb/hr)	0.0044	0	0	0	0	0	0	0
PTE PM30 (lb/hr)	0.021998	0	0	0	0	0	0	0
PTE PM2.5 (lb/hr) w/ rain	0.001002	0	0	0	0	0	0	0
PTE PM10 (lb/hr) w/ rain	0.004083	0	0	0	0	0	0	0
PTE PM30 (lb/hr) w/ rain	0.020416	0	0	0	0	0	0	0
PTE PM2.5 (tons/yr)	0.005	0	0	0	0	0	0	0
PTE PM10 (tons/yr)	0.019	0	0	0	0	0	0	0
PTE PM30 (tons/yr)	0.096	0	0	0	0	0	0	0
PTE PM2.5 (tons/yr) w/ rain	0.004	0	0	0	0	0	0	0
PTE PM10 (tons/yr) w/ rain	0.018	0	0	0	0	0	0	0
PTE PM30 (tons/yr) w/ rain	0.089	0	0	0	0	0	0	0

Truck Type	We (tons)	Wf (tons)
semi	13	40
type		
type		
type		

truck type row must sum to 100% per each activity

1=empty  
2=full  
3=both

tpy	
0.089	PM
0.018	PM10
0.004	PM2.5

Haul Road/Haul Truck/Material Hauled Information								
Haul Road ID No.:	1	0	0	0	0	0	0	0
W (tons)	26.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sL (g/m <sup>2</sup> ):	2							
P:	105							
N:	365	365	365	365	365	365	365	365
Haul Roads - Max Hourly VMT Rate and Emission Factor Calculations								
E(PM <sub>2.5</sub> )(lbs/VMT):	0.0287							
E(PM <sub>10</sub> )(lbs/VMT):	0.1170							
E(PM <sub>30</sub> )(lbs/VMT):	0.5848							
Eext(PM <sub>2.5</sub> )(lbs/VMT):	0.0266							
Eext(PM <sub>10</sub> )(lbs/VMT):	0.1086							
Eext(PM <sub>30</sub> )(lbs/VMT):	0.5428							

$E = k(sL)^{0.91} * (W)^{1.02}$  where:

E = particulate emission factor (having units matching the units of k)

k = particle size multiplier for particle size range and units of interest

sL = road surface silt loading (grams per square meter) (g/m<sup>2</sup>)

W = average weight (tons) of the vehicles traveling the road

Table 13.2.1-1 PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Size range	k (lb/VMT)
PM2.5	0.00054
PM10	0.0022
PM15	0.0027
PM30	0.011

$E_{ext} = [k(sL)^{0.91} * (W)^{1.02}](1-P/(4N))$  where:

k, sL, W and S are as defined above and

Eext = annual average emission factor in the same units as k

P = number of "wet" days with at least 0.01 inch of precipitation during the averaging period

N = number of days in the averaging period (365 for annual)

The equations retain the quality rating of A (D for PM2.5), if applied within the range of source conditions that were

Silt loading:

0.03-400 g/m<sup>2</sup>

0.04-570 grains/square foot (ft<sup>2</sup>)

Mean vehicle weight:

1.8-38 megagrams (Mg)

2.0-42 tons

Mean vehicle speed:

1-88 kilometers per hour (kph)

1-55 miles per hour (mph)

The upper 95% confidence levels of equation 1 for PM10 is best described with equations using an exponent of 1.14

$E_{95\%} = k(sL)^{1.14} * (W)^{1.19}$

$E_{95\%}(PM_{2.5})(lbs/VMT):$  0.0588

$E_{95\%}(PM_{10})(lbs/VMT):$  0.2395