KraftHeinz

151 W Ohio Street
Kendallville, IN 46755

July 1, 2024

IDEM Air Permits Administration
ATTN: Incoming Application
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, IN 46204-2251

Received by State of Indiana IDEM-OAQ
via email July 1, 2024 MJ-1

Re: ***FESOP Administrative Amendment Application***
Kraft Heinz Foods Company – Kendallville Facility
Source ID 113-00017

To Whom It May Concern:

Please find enclosed an application for an administrative amendment to the Federally Enforceable State Operating Permit (FESOP) for Kraft Heinz Foods Company (Kraft Heinz) located at 151 West Ohio Street in Kendallville, Indiana (Kendallville Facility). Kraft Heinz currently operates the Kendallville Facility under FESOP No. 113-37563-00017, issued by the Indiana Department of Environmental Management (IDEM) on December 9, 2016 and most recently amended on December 4, 2018 (Administrative Amendment No. 40594).

If there are any questions concerning this application, please do not hesitate to contact Emily Stewart of Trinity Consultants at (317) 451-8102.

Sincerely,

KRAFT HEINZ FOODS COMPANY

Scott Borger
Sr. Operational Risk Manager, Kendallville

Enclosure

cc: Emily Stewart (Trinity Consultants)

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT ADMINISTRATIVE AMENDMENT

Kraft Heinz Foods Company / Kendallville, Indiana

Prepared By:

TRINITY CONSULTANTS
8900 Keystone Crossing
Suite 1070
Indianapolis, IN 46239
(317) 451-8100

June 2024

Project 231501.00107

Trinity Consultants

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1. INTRODUCTION

Kraft Heinz Foods Company (Kraft Heinz) operates a stationary confectionary manufacturing plant located in Kendallville, Indiana (Kendallville Facility). Kraft Heinz currently operates the Kendallville Facility under a Federally Enforceable State Operating Permit (FESOP), No. 113-37563-00017, issued by the Indiana Department of Environmental Management (IDEM) on December 9, 2016, and most recently amended on December 4, 2018 (Administrative Amendment No. 40594). Kraft Heinz is submitting an adminstrative ammendmnet application for a proposed anareobric wastewater treatment system project at the Kendalville Facility. Based on the anticipated operating requirements, the Kendalville Facility is requesting an administrative amendment. State forms are included in Appendix A and detailed emission calculations are included in Appendix B.

1.1 Source Description

The Kendallville Facility is located at 151 West Ohio Street in Kendallville, Indiana. The Kendallville Facility is located in Noble County, which has been designated as attainment or unclassifiable for all criteria pollutants.[1] The Kendallville Facility is an existing minor source under the Prevention of Significant Deterioration (PSD) permitting program and a minor source of hazardous air pollutants (HAP). The Kendallville Facility is not one of 28 major stationary source categories specified in 326 IAC 2-2-1(ff)(1).

The Kendallville Facility consists of a caramel and marshmallow production operation. Sugar and starch are received via truck and rail, then transferred into silos before they are fed into the building to be processed. The sugar is transferred to caramel and marshmallow kettles to be cooked, then starch is added later in the marshmallow production process to coat the marshmallows so that they do not stick to the cutters and conveyor. The final product is then packaged and loaded onto trucks for shipment.

[1] 326 IAC 1-4-58

2. FESOP PERMIT UPDATE

This section describes the updates Kraft Heinz requests IDEM to make to the Kendallville Facility's FESOP. Kraft Heinz is making a physical update at the Kendallville Facility to add an anaerobic wastewater treatment process (WWTP). The WWTP will consist of a dual-fired boiler and a biogas-fired flare with a natural gas fired flare pilot. Kraft Heinz requests that IDEM add the following language into Section A.3 of the Kendallville Facility's FESOP:

1. **One anaerobic wastewater treatment process, identified as WWTP, consisting of the following emission units:**
    a) **One (1) duel-fired boiler (natural gas and bio-gas), identified as EU5, with a maximum heat input capacity of 3.8 MMBtu/hr , and exhausting outside the building.**

    b) **One (1) bio-gas fired flare, identified as Flare 1, with a nominal gas flow rate of 125 cubic feet per minute (cfm) exhausting to the atmosphere.**

    c) **One (1) natural gas-fired pilot supporting the bio-gas fired flare, identified as Flare 1 Pilot, with a maximum flow rate of 50 ft^3 per hour, using no controls, and exhausting to the atmosphere.**

It is not possible for the proposed flare and boiler to operate at maximum capacity, firing bio-gas at the same time. The flare will be used to combust excess biogas beyond the heating demand for the boiler or to combust all biogas in the event that the boiler is not operational. As such, the emission calculations from the proposed WTTP include a summary of two worst-case scenarios. Scenario 1 includes the potential emissions if EU5 is combusting natural gas only, while Flare 1 is operating at its maximum capacity to combust all biogas. Scenario 2 reflects the potential emissions if the boiler is operating at its maximum worst-case capacity (Natural gas or bio-gas) and the flare is combusting excess bio-gas beyond the heat input capacity of the boiler. The worst-case emissions from the two scenarios are below the minor permit revision thresholds per 326 IAC 2-8-11.1(d). Therefore, Kraft Heinz is submitting this application for the proposed project as an administrative amendment. Detailed calculations are provided in Appendix B.

3. REGULATORY APPLICABILITY

This section of the permit application summarizes the air permitting requirements and the key air quality regulations that apply to the Kendallville Facility. Specifically, applicability of PSD, New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), and 326 IAC regulations are discussed. Operations at the Kendallville Facility are subject or potentially subject to certain federal and state air quality regulations.

3.1 Federal Regulatory Applicability

3.1.1 Title V Applicability

The Kendallville Facility currently operates under a FESOP. As shown in the detailed emission calculations in Appendix B, the uncontrolled PTE of each regulated NSR pollutant from the project will be below the minor permit revision threshold and the source-wide PTE of all regulated pollutants will remain below the Title V thresholds, and the facility can continue to operate under a FESOP.

3.1.2 New Source Performance Standards

NSPS require new, modified, or reconstructed sources in applicable source categories to control emissions to the level achievable by the best demonstrated technology, as specified in the applicable provisions. Any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except as noted. The updates at the Kendallville Facility are not applicable to NSPS rules, therefore, this revision is not subject to the requirements of any NSPS.

3.1.2.1 Subpart Dc –Small Industrial-Commercial-Institutional Steam Generating Units

Pursuant to 40 CFR 60.40c(a), NSPS Subpart Dc applies to each steam generating unit that has a maximum rated heat input no more than 100 MMBtu/hr (HHV) but greater than or equal to 10 MMBtu/hr (HHV) and for which construction commenced after June 9, 1989. The proposed dual-fired boiler will have a maximum heat input capacity of less than 10 MMBtu/hr; therefore, it is not subject to the requirements of NSPS Dc.

3.1.3 National Emissions Standards for Hazardous Air Pollutants

NESHAPs apply to sources in specifically regulated industrial source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Section 112(g)) for facilities not regulated as a specific industrial source type. Pollutant specific NESHAP may also be applicable. NESHAP are primarily developed for particular industrial source categories. Therefore, the potential applicability of a particular NESHAP to a facility can be readily ascertained based on the industrial source category covered. The updates at the Kendallville Facility are not applicable to NESHAP rules, therefore, this modification is not subject to the requirements of any NESHAP.

3.2 Indiana Regulatory Applicability

3.2.1 Administrative Amendment (326 IAC 2-8-10)

Pursuant to 326 IAC 2-8-10(a) and 326 IAC 2-1.1-3(e), the addition of the WWTP can be processed as an administrative amendment because this amendment will not increase the potential to emit (PTE) of any regulated pollutants above the thresholds in 326 IAC 2-1.1-3(e), nor result in any significant changes at the

Kendallville Facility. As such, this change may be addressed as an administrative amendment according to 326 IAC 2 8-10(a).

3.2.2 Particulate Emissions Limitations for Sources of Indirect Heating (326 IAC 6-2)

The provisions of 326 IAC 6-2-4 regulate PM emissions from indirect heating facilities constructed after September 21, 1983. The proposed boiler is classified as an indirect heating facility based on the definition of combustion for indirect heating in 326 IAC 1-2-19. Allowable PM emissions from the Kendallville Facility were calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where:
Pt = pounds of particulate matter emitted per million Btu (MMBtu) heat input
Q = total source maximum operating capacity rating in million Btu per hour (mmBtu/hr) heat input.

The Kendallville Facility has a facility-wide heat input for indirect heating sources of 101.73 MMBtu/hr. Based on the equation above, allowable PM emissions from the proposed boiler are calculated at 0.33 lb/MMBtu. The emissions from the dual-fired boiler were calculated using emission factors from AP 42, Chapter 1.4 and Chapter 2.4 for natural gas and bio-gas combustion, respectively. These factors indicate that the worst-case emission rate is 0.003 lb/MMBtu; therefore, no control device is required to satisfy the requirements of 326 IAC 6-2.

APPENDIX A. STATE FORMS

AIR PERMIT APPLICATION COVER SHEET

State Form 50639 (R4 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this cover sheet is to obtain the core information needed to process the air permit application. This cover sheet is required for all air permit applications submitted to IDEM, OAQ. Place this cover sheet on top of all subsequent forms and attachments that encompass your air permit application packet.
- Submit the completed air permit application packet, including all forms and attachments, to **IDEM Air Permits Administration** using the address in the upper right hand corner of this page.
- IDEM will send a bill to collect the filing fee and any other applicable fees.
- Detailed instructions for this form are available on the Air Permit Application Forms website.

FOR OFFICE USE ONLY

PERMIT NUMBER: 113-48033-00017

DATE APPLICATION WAS RECEIVED: Received by State of Indiana IDEM-OAQ via email July 1, 2024 MJ-1

1. Tax ID Number:

PART A: Purpose of Application

Part A identifies the purpose of this air permit application. For the purposes of this form, the term "source" refers to the plant site as a whole and NOT to individual emissions units.

2. Source / Company Name: Kraft Heinz Foods Company | **3. Plant ID:** 113 – 00017

4. Billing Address: 151 West Ohio Street

City: Kendallville | **State:** IN | **ZIP Code:** 46755 –

5. Permit Level: ☐ Exemption ☐ Registration ☐ SSOA ☐ MSOP ☒ FESOP ☐ TVOP ☐ PBR

6. Application Summary: *Check all that apply. Multiple permit numbers may be assigned as needed based on the choices selected below.*

☐ Initial Permit ☐ Renewal of Operating Permit ☐ Asphalt General Permit
☐ Review Request ☐ Revocation of Operating Permit ☐ Alternate Emission Factor Request
☐ Interim Approval ☐ Relocation of Portable Source ☐ Acid Deposition (Phase II)
☐ Site Closure ☐ Emission Reduction Credit Registry

☐ Transition (between permit levels) *From:* *To:*

☒ Administrative Amendment: ☐ *Company Name Change* ☐ *Change of Responsible Official*
☐ *Correction to Non-Technical Information* ☐ *Notice Only Change*
☒ *Other (specify):* Add emission units

☐ Modification: ☐ *New Emission Unit or Control Device* ☐ *Modified Emission Unit or Control Device*
☐ *New Applicable Permit Requirement* ☐ *Change to Applicability of a Permit Requirement*
☐ *Prevention of Significant Deterioration* ☐ *Emission Offset* ☐ *MACT Preconstruction Review*
☐ *Minor Source Modification* ☐ *Significant Source Modification*
☐ *Minor Permit Modification* ☐ *Significant Permit Modification*
☐ *Other (specify):*

7. Is this an application for an initial construction and/or operating permit for a **"Greenfield" Source?** ☐ Yes ☒ No

8. Is this an application for construction of a new emissions unit at an **Existing Source?** ☐ Yes ☒ No

Continued on Next Page

PART B: Pre-Application Meeting

Part B specifies whether a meeting was held or is being requested to discuss the permit application.

9. Was a meeting held between the company and IDEM prior to submitting this application to discuss the details of the project?

☒ No ☐ Yes: *Date:*

10. Would you like to schedule a meeting with IDEM management and your permit writer to discuss the details of this project?

☒ No ☐ Yes: *Proposed Date for Meeting:*

PART C: Confidential Business Information

Part C identifies permit applications that require special care to ensure that confidential business information is kept separate from the public file.

Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in the Indiana Administrative Code (IAC). To ensure that your information remains confidential, refer to the IDEM, OAQ information regarding submittal of confidential business information. For more information on confidentiality for certain types of business information, please review IDEM's Nonrule Policy Document Air-031-NPD regarding Emission Data.

11. Is any of the information contained within this application being claimed as **Confidential Business Information?**

☒ No ☐ Yes

PART D: Certification Of Truth, Accuracy, and Completeness

Part D is the official certification that the information contained within the air permit application packet is truthful, accurate, and complete. Any air permit application packet that we receive without a signed certification will be deemed incomplete and may result in denial of the permit.

For a Part 70 Operating Permit (TVOP) or a Source Specific Operating Agreement (SSOA), a "responsible official" as defined in 326 IAC 2-7-1(34) must certify the air permit application. For all other applicants, this person is an "authorized Individual" as defined in 326 IAC 2-1.1-1(1).

☒ *I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete.*

William Chacon	Plant Manager
Name *(typed)*	Title
	6/26/2024
Signature	Date

OAQ GENERAL SOURCE DATA APPLICATION
GSD-01: Basic Source Level Information

State Form 50640 (R5 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

Received by State of Indiana IDEM-OAQ
via email July 1, 2024 MJ-1

NOTES:

- The purpose of GSD-01 is to provide essential information about the entire source of air pollutant emissions. GSD-01 is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

113-48033-00017

PART A: Source / Company Location Information

1. **Source / Company Name**: Kraft Heinz Foods Company
2. **Plant ID**: 113 – 00017
3. **Location Address**: 151 West Ohio Street
   City: Kendallville **State**: IN **ZIP Code**: 46755 –
4. **County Name**: Noble
5. **Township Name**: Allen
6. Geographic Coordinates:
   Latitude: 41.4321 **Longitude**: -85.2668
7. Universal Transferal Mercadum Coordinates *(if known)*:
   Zone: 16 **Horizontal**: 644815 E **Vertical**: 4587981 N
8. **Adjacent States**: Is the source located within 50 miles of an adjacent state?
   ☐ No ☒ Yes – *Indicate Adjacent State(s):* ☐ Illinois (IL) ☒ Michigan (MI) ☒ Ohio (OH) ☐ Kentucky (KY)
9. **Attainment Area Designation**: Is the source located within a non-attainment area for any of the criteria air pollutants?
   ☒ No ☐ Yes – *Indicate Nonattainment Pollutant(s):* ☐ CO ☐ Pb ☐ NO_x ☐ O_3 ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ SO_2
10. **Portable / Stationary**: Is this a portable or stationary source? ☐ Portable ☒ Stationary

PART B: Source Summary

11. **Company Internet Address** *(optional)*: http://www.kraftheinzcompany.com/
12. **Company Name History**: Has this source operated under any other name(s)?
    ☐ No ☒ Yes – *Provide information regarding past company names in Part I, Company Name History.*
13. **Portable Source Location History**: Will the location of the portable source be changing in the near future?
    ☒ Not Applicable ☐ No ☐ Yes – *Complete Part J, Portable Source Location History, and Part K, Request to Change Location of Portable Source.*
14. **Existing Approvals**: Have any exemptions, registrations, or permits been issued to this source?
    ☐ No ☒ Yes – *List these permits and their corresponding emissions units in Part M, Existing Approvals.*
15. **Unpermitted Emissions Units**: Does this source have any unpermitted emissions units?
    ☒ No ☐ Yes – *List all unpermitted emissions units in Part N, Unpermitted Emissions Units.*
16. **New Source Review**: Is this source proposing to construct or modify any emissions units?
    ☐ No ☒ Yes – *List all proposed new construction in Part O, New or Modified Emissions Units.*
17. **Risk Management Plan**: Has this source submitted a Risk Management Plan?
    ☐ Not Required ☐ No ☒ Yes → Date submitted: 04/23/2009 EPA Facility Identifier: 1000 – 0018 – 8888

Continued on Next Page

PART C: Source Contact Information

IDEM will send the original, signed permit decision to the person identified in this section. This person MUST be an employee of the permitted source.

18. Name of Source Contact Person: Scott Borger

19. Title *(optional)*: Sr. Operational Risk Manager, Kendallville

20. Mailing Address: 151 West Ohio Street

City: Kendallville	**State**: IN	**ZIP Code**: 46755 –

21. Electronic Mail Address *(optional)*: scott.borger3@kraftheinz.com

22. Telephone Number: (260) 349 – 6298	**23. Facsimile Number** *(optional)*: ( ) –

PART D: Authorized Individual/Responsible Official Information

IDEM will send a copy of the permit decision to the person indicated in this section, if the Authorized Individual or Responsible Official is different from the Source Contact specified in Part C.

24. Name of Authorized Individual or Responsible Official: William Chacon

25. Title: Plant Manager

26. Mailing Address: 151 West Ohio Street

City: Kendallville	**State**: IN	**ZIP Code**: 46755 –

27. Telephone Number: (619) 787 – 5442	**28. Facsimile Number** *(optional)*: ( ) –

29. Request to Change the Authorized Individual or Responsible Official: Is the source officially requesting to change the person designated as the Authorized Individual or Responsible Official in the official documents issued by IDEM, OAQ? *The permit may list the title of the Authorized Individual or Responsible Official in lieu of a specific name.*

☐ No ☒ Yes – ***Change Responsible Official to:*** William Chacon

PART E: Owner Information

30. Company Name of Owner: Kraft Heinz Company

31. Name of Owner Contact Person: Bernardo Hees

32. Mailing Address: 200 East Randolph Street, Suite 7600

City: Chicago	**State**: IL	**ZIP Code**: 60601 –

33. Telephone Number: (847) 646 – 2000	**34. Facsimile Number** *(optional)*: ( ) –

34. Operator: Does the "Owner" company also operate the source to which this application applies?

☐ No – *Proceed to Part F below.*	☒ Yes – *Enter "SAME AS OWNER" on line 35 and proceed to Part G below.*

PART F: Operator Information

35. Company Name of Operator: SAME AS OWNER

36. Name of Operator Contact Person:

37. Mailing Address:

City:	**State**:	**ZIP Code**: –

38. Telephone Number: ( ) –	**39. Facsimile Number** *(optional)*: ( ) –

Continued on Next Page

PART G: Agent Information

40. Company Name of Agent: Trinity Consultants

41. Type of Agent: ☒ Environmental Consultant ☐ Attorney ☐ Other (specify):

42. Name of Agent Contact Person: Emily Stewart

43. Mailing Address: 8900 Keystone Crossing, Suite 1070

City: Indianapolis	**State**: IN	**ZIP Code**: 46240 –

44. Electronic Mail Address *(optional)*: estewart@trinityconsultants.com

45. Telephone Number: (317) 451 – 8102	**46. Facsimile Number** *(optional)*: ( ) –

47. Request for Follow-up: Does the "Agent" wish to receive a copy of the preliminary findings during the public notice period (if applicable) and a copy of the final determination? ☐ No ☒ Yes

PART H: Local Library Information

48. Date application packet was filed with the local library: within 10 days of filing with IDEM (if applicable)

49. Name of Library: Kendallville Public Library

50. Name of Librarian *(optional)*:

51. Mailing Address: 221 South Park Avenue

City: Kendallville	**State**: IN	**ZIP Code**: 46755 –

52. Internet Address *(optional)*:

53. Electronic Mail Address *(optional)*:

54. Telephone Number: (260) 343 – 2010	**55. Facsimile Number** *(optional)*: ( ) –

PART I: Company Name History *(if applicable)*

Complete this section only if the source has previously operated under a legal name that is different from the name listed above in Section A.

56. Legal Name of Company	**57. Dates of Use**	
Kraft Heinz Foods Company	2015	to Present
Kraft Foods Group, Inc.	2012	to 2015
Kraft Foods Global, Inc.		to 2012
		to
		to
		to
		to
		to
		to
		to

58. Company Name Change Request: Is the source officially requesting to change the legal name that will be printed on all official documents issued by IDEM, OAQ?

☒ No ☐ Yes – ***Change Company Name to:***

Continued on Next Page

PART J: Portable Source Location History *(if applicable)*

Complete this section only if the source is portable and the location has changed since the previous permit was issued. The current location of the source should be listed in Section A.

59. Plant ID	60. Location of the Portable Source	61. Dates at this Location
–	N/A	to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
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–		to
–		to
–		to

PART K: Request to Change Location of Portable Source *(if applicable)*

Complete this section to request a change of location for a portable source.

62. Current Location:

Address:		
City:	**State:**	**ZIP Code:** –
County Name:		

63. New Location:

Address:		
City:	**State:**	**ZIP Code:** –
County Name:		

Continued on Next Page

PART L: Source Process Description

Complete this section to summarize the main processes at the source.

64. Process Description	65. Products	66. SIC Code	67. NAICS Code
Confectionary Manufacturing	Marshmallows, Caramels, Marbits	2064	311340

PART M: Existing Approvals *(if applicable)*

Complete this section to summarize the approvals issued to the source since issuance of the main operating permit.

68. Permit ID	69. Emissions Unit IDs	70. Expiration Date
40594	Administrative Ammendment	12/9/2026
39320	Administrative Ammendment	12/9/2026
37563	FESOP Renewal / Significant New Source Review	12/9/2026

PART N: Unpermitted Emissions Units *(if applicable)*

Complete this section only if the source has emission units that are not listed in any permit issued by IDEM, OAQ.

71. Emissions Unit ID	72. Type of Emissions Unit	73. Actual Dates		
		Began Construction	Completed Construction	Began Operation
	N/A			

PART O: New or Modified Emissions Units *(if applicable)*

Complete this section only if the source is proposing to add new emission units or modify existing emission units.

74. Emissions Unit ID	75. NEW	76. MOD	77. Type of Emissions Unit	78. Estimated Dates		
				Begin Construction	Complete Construction	Begin Operation
			See Application Narrative			

APPENDIX B. EMISSION CALCULATIONS

Appendix B: Emission Calculations
Emissions Summary

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Scenario 1: All biogas is flared. Boiler combusts natural gas.

	PM	PM_{10}	$PM_{2.5}$	H_2S	SO_2	NO_x	VOC	CO	Total HAPs	Worst Single HAP (tons/yr)	
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	
Emission Unit											
Boiler (NG Only)	3.13E-02	1.25E-01	1.25E-01	-	9.87E-03	1.65E+00	9.05E-02	1.38E+00	3.11E-02	2.96E-02	Hexane
Flare (Worst Case)	2.96E-01	2.96E-01	2.96E-01	8.13E-02	7.51E+00	1.18E+00	3.75E-01	3.94E+00	5.61E-03	3.06E-03	Toluene
Flare Pilot	4.16E-04	1.66E-03	1.66E-03	0.00E+00	1.31E-04	2.19E-02	1.20E-03	1.84E-02	4.13E-04	3.94E-04	Hexane
Total Emissions	**0.33**	**0.42**	**0.42**	**0.08**	**7.52**	**2.85**	**0.47**	**5.34**	**3.71E-02**	**3.00E-02**	

Scenario 2: Maximum amount of biogas combusted in boiler and excess is flared

	PM	PM_{10}	$PM_{2.5}$	H_2S	SO_2	NO_x	VOC	CO	Total HAPs	Worst Single HAP (tons/yr)	
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	
Emission Unit											
Boiler (Worst Case)	4.58E-02	1.25E-01	1.25E-01	4.95E-03	4.57E-01	1.65E+00	3.19E-01	1.38E+00	3.11E-02	2.96E-02	Hexane
Flare (Excess)	4.39E-02	4.39E-02	4.39E-02	8.62E-03	7.97E-01	1.76E-01	5.57E-02	5.85E-01	8.33E-04	4.55E-04	Tolune
Flare Pilot	4.16E-04	1.66E-03	1.66E-03	0.00E+00	1.31E-04	2.19E-02	1.20E-03	1.84E-02	4.13E-04	3.94E-04	Hexane
Total Emissions	**0.09**	**0.17**	**0.17**	**0.01**	**1.25**	**1.84**	**0.38**	**1.99**	**3.23E-02**	**3.00E-02**	

Worst Case Emissions

	PM	PM_{10}	$PM_{2.5}$	H_2S	SO_2	NO_x	VOC	CO	Total HAPs	Worst Single HAP (tons/yr)
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
Emission Unit										
Worst Case Emissions	0.33	0.42	0.42	0.08	7.52	2.85	0.47	5.34	0.04	0.03
Minor Permit Revision Threshold[1]	5	5	5	5	10	10	10	25	2.5	1
Exempt ?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1. 326 IAC 2-1.1-3(e)

Appendix B: Emission Calculations
Boiler - Biogas

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Input Data

Heat Input Capacity, Hr	3.83 MMBtu/hr	Molecular Weight (*n*-Hexane)	86.17 lb/lb-mole
Heating Value of Gas, Hv[1]	600 Btu/ft^3	Molecular Weight (Vinyl Chloride)	62.5 lb/lb-mole
Gas Flow Rate, Fg	6,387 ft^3/hr	Molecular Weight (CH4)	16.04 lb/lb-mole
Gas Constant	10.73 (ft3*psi)/(lbmole*R)	Molecular Weight (CO2)	44.01 lb/lb-mole
Molecular Weight (SO2)	64.06 lb/lb-mole	Volume % Water in Gas[3]	9% (estimated)
Molecular Weight (VOC)	99.31 lb/lb-mole	Inlet Gas Temperature	528 R
Molecular Weight (Toluene)	92.14 lb/lb-mole	Inlet Gas Pressure	14.7 psia
Molecular Weight (H2S)	34.08 lb/lb-mole		
Molecular Weight (Ethylbenzene)	106.17 lb/lb-mole		

Uncontrolled Potential to Emit

Wet Gas Flow (ft^3/hr)	Dry Gas Flow (ft^3/hr)	% Methane[2]	Methane Flow Rate, Fm (Dry Basis)
6,387	5,812	60.00%	3,487 ft3/hr CH4

Pollutant	Concentration (ppmv)	Pollutant Flow (ft^3/hr)	Emission Factor		PTE (TPY)	Notes / Sources
PM			3.00	lb/MMft^3 CH_4	0.05	Emission Factor based on AP-42 Chapter 2.4, Table 2.4-4 10/2008
PM_{10}			3.00	CH_4	0.05	Assumed same as PM
Direct $PM_{2.5}$			3.00	CH_4	0.05	Assumed same as PM
H_2S	100	0.6387	0.02	Convert at least 98% to SO2	0.0049	Max concentration of 100 ppmv H_2S in biogas into boiler (treated to protect boiler). Mead & Hunt 4.16.24. Assume 98% destruction in boiler
SO_2			16.336	lb SO2/CF^6 Gas	0.4570	See calculations to side. Even though assume 98% of H2S is converted to SO2 (above), assume 100% is converted to SO2 for this calculation to be conservative
NOx			42.00	lb/MMft^3 CH_4	0.64	Emission Factor based on AP-42 Chapter 2.4, Table 2.4-4 10/2008
VOC	44.3	0.2829			0.32	Assumed concentration per permit for similar operation issued by IDEM.
CO			7.00	lb/MMft^3 CH_4	0.11	Emission Factor based on AP-42 Chapter 2.4, Table 2.4-4 10/2008
Toluene	0.39	0.0025			2.61E-03	Assumed concentration per permit for similar operation issued by IDEM.
Ethylbenzene	0.25	0.0016			1.93E-03	Assumed concentration per permit for similar operation issued by IDEM.
n-Hexane	0.032	0.0002			2.00E-04	Assumed concentration per permit for similar operation issued by IDEM.
Vinyl Chloride	0.01	6.39E-05			4.54E-05	Assumed concentration per permit for similar operation issued by IDEM.
Total HAP					4.78E-03	
Worst HAP					2.61E-03	

Methodology and Notes:

Gas Flow Rate (ft^3/hr) = Hr (MMBtu/hr) * 1/Hv (Btu/ft^3) * 1,000,000 Btu/MMBtu

Dry Gas Flow, dry (ft^3/hr) = biogas flow, wet (ft^3/hr) x (1 - Volume % Water)

Methane Flow Rate, dry (ft^3/hr) = biogas flow, dry x % methane in biogas

PTE (ton/yr) = Methane Flow Rate (ft^3/hr) x emission factor (lb/MMft^3 CH_4) x 8760 hr/ yr x 1 ton / 2000 lb x 1 MMft^3/1,000,000 ft^3

Pollutant Flow (ft^3/hr) = concentration (ppmv) x 1 part / 1,000,000 part x Wet Gas Flow (ft^3/hr)

PTE (ton/yr) using Pollutant concentration (ppmv) = Pollutant Flow Rate (ft^3/hr) x MW of pollutant (lb/lbmol) x 1 lbmol-°R/(10.73 ft^3-psi) x Press (psia) / Temp (°R) x 8760 hr/yr x 1 ton / 2000 lb

MW = Molecular Weight

ppmv = (1 m^3 gad /106 m^3 air) * (1 mol gas / .002271108 m^3) (MW_{gas}) * (10000)

[1] Heating value of biogas assumed to be 600 BTU/scf.

[2] Percent methane in the gas obtained from U.S. Energy Information Administration website

[3] Volume percent water in biogas estimated to be less than ten percent.

Appendix B: Emission Calculations
Boiler - Natural Gas

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Heat Input Capacity MMBtu/hr	HHV mmBtu/mmscf	Potential Throughput MMCF/yr
3.83	1020	32.9

	Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	direct PM2.5* 7.6	SO2 0.6	NOx 100 **see below	VOC 5.5	CO 84
Potential Emission in tons/yr	0.03	0.13	0.13	0.01	1.65	0.09	1.38

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
PM2.5 emission factor is filterable and condensable PM2.5 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

HAPS Calculations

	HAPs - Organics					
Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzen 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03	**Total - Organics**
Potential Emission in tons/yr	3.456E-05	1.975E-05	1.234E-03	2.96E-02	5.595E-05	**3.10E-02**

	HAPs - Metals					
Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03	**Total - Metals**
Potential Emission in tons/yr	8.228E-06	1.810E-05	2.304E-05	6.253E-06	3.456E-05	**9.017E-05**

Total HAPs	**3.11E-02**
Worst HAP	**2.96E-02**

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix B: Emission Calculations
Bio-gas Fired Flare

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Input Data

Maximum biogas production	125.0 scfm	Molecular Weight (*n*-Hexane)	86.17 lb/lb-mole
Heating Value of Gas, Hv[1]	600 Btu/ft^3	Molecular Weight (Vinyl Chloride)	62.5 lb/lb-mole
Gas Flow Rate, Fg	7,500 ft^3/hr	Molecular Weight (CH4)	16.04 lb/lb-mole
Gas Constant	10.73 (ft3*psi)/(lbmole*R)	Molecular Weight (CO2)	44.01 lb/lb-mole
Molecular Weight (SO2)	64.06 lb/lb-mole	Volume % Water in Gas[3]	0% (estimated)
Molecular Weight (VOC)	99.31 lb/lb-mole	Inlet Gas Temperature	528 R
Molecular Weight (Toluene)	92.14 lb/lb-mole	Inlet Gas Pressure	14.7 psia
Molecular Weight (H2S)	34.08 lb/lb-mole		
Molecular Weight (Ethylbenzene)	106.17 lb/lb-mole		

Uncontrolled Potential to Emit

Wet Gas Flow (ft^3/hr)	Dry Gas Flow (ft^3/hr)	% Methane[2]	Methane Flow Rate, Fm (Dry Basis)
7,500	7,500	60.00%	4,500 ft3/hr CH4

Pollutant	Concentration (ppmv)	Pollutant Flow (ft3/hr)	Emission Factor		PTE (TPY)	Notes / Sources
PM			15.00	lb/MMft^3 CH_4	0.30	Emission Factor based on AP-42 Chapter 2.4, Table 2.4-4 10/2008
PM_{10}			15.00	lb/MMft^3 CH_4	0.30	Assumed same as PM
Direct PM2.5			15.00	lb/MMft^3 CH_4	0.30	Assumed same as PM
H_2S	1400	10.5000	0.02	Convert at least 98% to SO2	0.0813	Max concentration of 1000 ppmv H_2S in biogas into flare. Mead & Hunt 4.16.24. Assume 98% destruction in flare
SO_2			228.708	lb SO2/CF*6 Gas	7.5130	See calculations to side. Even though assume 98% of H2S is converted to SO2 (above), assume 100% is converted to SO2 for this calculation to be conservative.
NOx			0.06	lb/mmBTU	1.18	Emission Factor based on vendor specific data
VOC	44.3	0.3323			0.3750	Assumed concentration per permit for similar operation issued by IDEM.
CO			0.20	lb/mmBTU	3.94	Emission Factor based on vendor specific data
Toluene	0.39	0.0029			3.06E-03	Assumed concentration per permit for similar operation issued by IDEM.
Ethylbenzene	0.25	0.0019			2.26E-03	Assumed concentration per permit for similar operation issued by IDEM.
n-Hexane	0.032	0.0002			2.35E-04	Assumed concentration per permit for similar operation issued by IDEM.
Vinyl Chloride	0.01	0.0001			5.33E-05	Assumed concentration per permit for similar operation issued by IDEM.
Total HAP					5.61E-03	
Worst HAP					3.06E-03	

Methodology and Notes:

Heating Value of Gas based on laboratory gas analysis - July 3, 2013

Gas Flow Rate (ft^3/hr) based on operational data, converted from cubic feet per minute to cubic feet per hour given there are 60 minutes in an hour

Dry Gas Flow, dry (ft^3/hr) = biogas flow, wet (ft^3/hr) x (1 - Volume % Water)

Methane Flow Rate, dry (ft^3/hr) = biogas flow, dry x % methane in biogas

PTE (ton/yr) = Methane Flow Rate (ft^3/hr) x emission factor (lb/MMft^3 CH_4) x 8760 hr/ yr x 1 ton / 2000 lb x 1 MMft^3/1,000,000 ft^3

Pollutant Flow (ft^3/hr) = concentration (ppmv) x 1 part / 1,000,000 part x Wet Gas Flow (ft^3/hr)

PTE (ton/yr) using Pollutant concentration (ppmv) = Pollutant Flow Rate (ft^3/hr) x MW of pollutant (lb/lbmol) x 1 lbmol-°R/(10.73 ft^3-psi) x Press (psia) / Temp (°R) x 8760 hr/yr x 1 ton / 2000 lb

MW = Molecular Weight

ppmv = (1 m^3 gad /106 m^3 air) * (1 mol gas / .002271108 m^3) (MW_{gas}) * (10000)

[1] Heating value of biogas assumed to be 600 BTU/scf.

[2] Percent methane in the gas obtained from U.S. Energy Information Administration website

[3] Volume percent water in biogas estimated to be less than ten percent.

Appendix B: Emission Calculations
Bio-gas Fired Flare

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Input Data

Maximum biogas production, minus boiler	18.6 scfm	Molecular Weight (*n*-Hexane)	86.17 lb/lb-mole
Heating Value of Gas, Hv[1]	600 Btu/ft^3	Molecular Weight (Vinyl Chloride)	62.5 lb/lb-mole
Gas Flow Rate, Fg	1,113 ft^3/hr	Molecular Weight (CH4)	16.04 lb/lb-mole
Gas Constant	10.73 (ft3*psi)/(lbmole*R)	Molecular Weight (CO2)	44.01 lb/lb-mole
Molecular Weight (SO2)	64.06 lb/lb-mole	Volume % Water in Gas[3]	0% (estimated)
Molecular Weight (VOC)	99.31 lb/lb-mole	Inlet Gas Temperature	528 R
Molecular Weight (Toluene)	92.14 lb/lb-mole	Inlet Gas Pressure	14.7 psia
Molecular Weight (H2S)	34.08 lb/lb-mole		
Molecular Weight (Ethylbenzene)	106.17 lb/lb-mole		

Uncontrolled Potential to Emit

Wet Gas Flow (ft^3/hr)	Dry Gas Flow (ft^3/hr)	% Methane[2]	Methane Flow Rate, Fm (Dry Basis)
1,113	1,113	60.00%	668 ft3/hr CH4

Pollutant	Concentration (ppmv)	Pollutant Flow (ft^3/hr)	Emission Factor		PTE (TPY)	Notes / Sources
PM			15.00	lb/MMft^3 CH_4	0.04	Emission Factor based on AP-42 Chapter 2.4, Table 2.4-4 10/2008
PM_{10}			15.00	lb/MMft^3 CH_4	0.04	Assumed same as PM
Direct $PM_{2.5}$			15.00	lb/MMft^3 CH_4	0.04	Assumed same as PM
H_2S	1000	1.1133	0.02	Convert at least 98% to SO2	0.0086	Max concentration of 1000 ppmv H_2S in biogas into flare. Mead & Hunt 4.16.24. Assume 98% destruction in flare
SO_2			163.363	lb SO2/CF*6 Gas	0.7866	See calculations to side. Even though assume 98% of H2S is converted to SO2 (above), assume 100% is converted to SO2 for this calculation to be conservative.
NOx			0.06	lb/mmBTU	0.18	Emission Factor based on vendor specific data
VOC	44.3	0.0493			0.0557	Assumed concentration per permit for similar operation issued by IDEM.
CO			0.20	lb/mmBTU	0.59	Emission Factor based on vendor specific data
Toluene	0.39	0.0004			4.55E-04	Assumed concentration per permit for similar operation issued by IDEM.
Ethylbenzene	0.25	0.0003			3.36E-04	Assumed concentration per permit for similar operation issued by IDEM.
n-Hexane	0.032	0.0000			3.49E-05	Assumed concentration per permit for similar operation issued by IDEM.
Vinyl Chloride	0.01	0.0000			7.91E-06	Assumed concentration per permit for similar operation issued by IDEM.
Total HAP					8.33E-04	
Worst HAP					4.55E-04	

Methodology and Notes:

Heating Value of Gas based on laboratory gas analysis - July 3, 2013

Gas Flow Rate (ft^3/hr) based on operational data, converted from cubic feet per minute to cubic feet per hour given there are 60 minutes in an hour

Dry Gas Flow, dry (ft^3/hr) = biogas flow, wet (ft^3/hr) x (1 - Volume % Water)

Methane Flow Rate, dry (ft^3/hr) = biogas flow, dry x % methane in biogas

PTE (ton/yr) = Methane Flow Rate (ft^3/hr) x emission factor (lb/MMft^3 CH_4) x 8760 hr/ yr x 1 ton / 2000 lb x 1 MMft^3/1,000,000 ft^3

Pollutant Flow (ft^3/hr) = concentration (ppmv) x 1 part / 1,000,000 part x Wet Gas Flow (ft^3/hr)

PTE (ton/yr) using Pollutant concentration (ppmv) = Pollutant Flow Rate (ft^3/hr) x MW of pollutant (lb/lbmol) x 1 lbmol-°R/(10.73 ft^3-psi) x Press (psia) / Temp (°R) x 8760 hr/yr x 1 ton / 2000 lb

MW = Molecular Weight

ppmv = (1 m^3 gad /106 m^3 air) * (1 mol gas / .002271108 m^3) (MW_{pol}) * (10000)

[1] Heating value of biogas assumed to be 600 BTU/scf.

[2] Percent methane in the gas obtained from U.S. Energy Information Administration website

[3] Volume percent water in biogas estimated to be less than ten percent.

Appendix B: Emission Calculations
Flare Pilot

Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Flow Rate of Gas MMCF/yr
0.438

	Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	direct PM2.5* 7.6	SO2 0.6	NOx 100 **see below	VOC 5.5	CO 84
Potential Emission in tons/yr	4.16E-04	1.66E-03	1.66E-03	1.31E-04	2.19E-02	1.20E-03	1.84E-02

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined. PM2.5 emission factor is filterable and condensable PM2.5 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03

Potential Throughput (MMCF/yr) = 50 SCFH * (8650 hrs/yr) *(1 MMCF/1,000,000 SCF)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

HAPS Calculations

	HAPs - Organics					
Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03	**Total - Organics**
Potential Emission in tons/yr	4.60E-07	2.63E-07	1.64E-05	3.94E-04	7.45E-07	**4.12E-04**

	HAPs - Metals					
Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03	**Total - Metals**
Potential Emission in tons/yr	1.10E-07	2.41E-07	3.07E-07	8.32E-08	4.60E-07	**1.20E-06**

Total HAPs	**4.13E-04**
Worst HAP	**3.94E-04**

Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix B: Emission Calculations
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Company Name: Kraft Heinz Food Company - Kendallville Facility
Source Address: 151 West Ohio Street, Kendallville, IN 46755
Source ID: 113-00017

Particulate matter emission for sources of indirect heating shall be limtied by the followng equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where:

Pt = Pounds of particulate matter emitted per million Btu heat input (lb/MMBtu).
Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu/hr).

Particulate emissions from indirect heating facilities constructed after September 21, 1983 shall be limited by the above equation.
For Q less than 10 mmBtu/hr, Pt shall not exceed 0.6

Emission Unit	Number of Units	Rating (MMBtu/hr)	Q* (MMBtu/hr)	Calculated Pt (lb/MMBtu)	Limited Pt (lb/MMBtu)
Boiler (EU-5)	1	3.83	101.73	0.33	0.33

Notes:

* Total source maximum operating capacity rating in million Btu per hour (MMBtu/hr) from permit No. 113-40594-00017