Trinity Consultants
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September 16, 2024

New Jersey Department of Environmental Protection (NJDEP)
Air Quality Permitting and Planning
Bureau of Stationary Sources
Preconstruction Permits Section
2 Riverside Drive
Suite 201
Camden, NJ 08103

RE: Campbell Soup Co. – Camden, NJ (PI No. 50182)
Air Preconstruction Permit Application

Dear Sir/Madam:

Trinity Consultants, Inc. (Trinity) is submitting the attached air preconstruction permit application on behalf of Campbell Soup Co. (Campbell's) for bakery operations at their facility located in Camden, New Jersey.

BACKGROUND

Campbell Soup has a facility in Camden, NJ supporting its meals & beverages as well its snack divisions. The facility operates several pieces of equipment within multiple air permits under the New Jersey Department of Environmental Protection (NJDEP) Program Interest Number (PI No.) 50182. Campbell's currently operates under four General Permits (GP) authorizing the equipment described in Table 1.

Table 1. GP Equipment

Permit	Equipment NJID	Equipment Description
GEN170001	E18	Bldg 81 emergency generator, 5.32 MMBtu/hr
	E21	CTC fire pump, 1.6MMBtu/hr
GEN190001	E23	CB-705 natural gas boiler, 3.5 MMBtu/hr
	E24	CB-706 natural gas boiler, 3.5 MMBtu/hr
	E25	ESB-1 natural gas boiler, 2.5 MMBtu/hr
	E26	ESB-2 natural gas boiler, 2.5 MMBtu/hr
	E27	CB-1 natural gas boiler, 4.17 MMBtu/hr
	E30	CB-2 natural gas boiler, 4.17 MMBtu/hr
GEN230001	E31	Bldg 70 emergency generator, 3.44 MMBtu/hr
	E32	Pilot plant emergency generator, 10.32 MMBtu/hr
GEN240001	E33	R&D #4 natural gas boiler, 33.5 MMBtu/hr
	E34	R&D #1 natural gas boiler, 25.2 MMBtu/hr
	E35	R&D #2 natural gas boiler, 25.2 MMBtu/hr
	E36	R&D #3 natural gas boiler, 24.5 MMBtu/hr

This application requests to permit the following:

- One (1) Buhler-Haas Turbu three convention oven rated 1.54 MMBtu/hr (E10),
- One (1) Buhler-Haas oven rated 2.15 MMBtu/hr (E11),
- One (1) Reed 4-26x80 oven rated 0.27 MMBtu/hr (E12), and
- One (1) Reed 4-20x80 oven rated 0.1 MMBtu/hr (E13).

The Reed 4-20x80 will be located in the facility's R&D building while the remaining ovens will be in the pilot plant.

EMISSIONS QUANTIFICATION

Emissions generated at the facility include combustion emissions from the ovens burning natural gas as well as VOC emissions from baking crackers, cinnamon raisin bread, and rolls. Pollutant emission rates resulting from combustion of natural gas have been developed in association with this application utilizing the AP-42 Chapter 1.4, "Natural Gas Combustion" tables 1-4. As the ovens are classified as space heaters with maximum rated heat input <100 MMBtu/hr and do not vent to any control devices, these factors were appropriate.

Campbell's provided Trinity with internally developed emissions factors to quantify the VOC emissions resulting from baking each of its products. Detailed emission calculations are included in **Attachment 2**.

AIR PERMIT APPLICATION CONTENTS

This air permit application includes the following significant sources:

- One emission unit identified as Ovens (U20);
- Six emissions points: two for combustion emissions (PT21, PT23), two for exhaust (PT20, PT22), and two venting both combustion and exhaust from their respective ovens (PT24, PT25);
- Eight operating scenarios for
  - Baking (OS1, OS3, OS5, OS7), and
  - Combustion (OS2, OS4, OS6, OS8).

A copy of the RADIUS application is included as **Attachment 1**.

REGULATORY APPLICABILITY ANALYSIS

New Jersey Administrative Code

N.J.A.C. 7:27-4 Control and Prohibition of Particles Combustion of Fuel

N.J.A.C. 7:27-4.2(a) limits the mass emission of particulates from stacks/chimneys of fuel burning equipment based on the maximum heat input of the unit. A stack/chimney is defined as "a flue, conduit or opening designed, constructed and/or utilized for the purpose of emitting air contaminants into the outdoor air." The ovens utilize stacks and have a combined maximum heat input of 4.06 MMBtu/hr. **Attachment 2** indicates that by interpolation, the maximum allowable emission rate of particles is 2.44 lb hr. Campbell's ovens are in compliance with this subchapter as the total emission rate of TSP for all ovens is 0.03 lb/hr.

N.J.A.C. 7:27-6 Control and Prohibition of Particles from Manufacturing Process

N.J.A.C. 7:27-6.2(a) sets forth control or emission rate requirements for particulate emissions that are emitted to the outdoor air from a stack or chimney associated with a manufacturing process. The facility does not use any control devices for the ovens. Assuming that each oven emits exhaust at a rate ≤ 3000 scfm and 0.02 grain/scf of particulates, each oven's total suspended particulates emission rate is less than the allowable limit of 0.5 lb/hr. The ovens are therefore in compliance with this subchapter.

N.J.A.C. 7:27-8 Permits and Certificates for Minor Facilities

This application seeks authorization to construct and operate the emission unit and associated equipment located at the Campbell facility. The proposed ovens are categorized as "significant source operations" as defined in Subchapter 8.2(c)(1) as they fall into one of the following categories:

- The oven is heated by commercial fuel burning equipment with a rated heat input of 1,000,000 Btu/hr or greater.
- The oven baking rate exceeds the threshold established in Subchapter 8.2(c)(19), defined as equipment in which the combined weight of all raw materials used exceeds 50 pounds in any one hour.

Based on the "significant" status of the baking lines, submittal of a preconstruction permit application is required. Subchapter 8 also imposes State of the Art (SOTA) requirements for new and/or modified sources. As per N.J.A.C. 7:27-8.12(a), newly constructed, reconstructed, or modified equipment which constitutes a significant source operation shall incorporate advances in the art of air pollution control if potential emissions exceed 5 tpy for criteria pollutants and (Hazardous Air Pollutants) HAPs greater than the SOTA thresholds identified in Subchapter 17. The PTE for each pollutant is below its applicable SOTA threshold, therefore SOTA does not apply.

N.J.A.C. 7:27-16 Control and Prohibition of Air Pollution by Volatile Organic Compounds

N.J.A.C. 7:27-16.16 outlines the VOC reasonably available control technology (RACT) requirements for various operations including ovens. This subchapter is applicable to the proposed baking lines as the operations will result in the emissions of VOC. To accurately determine the VOC range that applies to these operations, the facility will need to determine the following:

- Vapor pressure at standard conditions in psia of the VOC emitted from the source operation, and
- The percent by volume of the VOC in the exhaust emitted from the ovens.

The operations of the ovens emit VOC at rate of 1.3 lb/hr. Assuming that the vapor pressure of the VOC emitted is equal to or greater than atmospheric pressure, this allows for a VOC volumetric composition of up to 97% for the exhaust gas from the ovens. If the vapor pressure of the emitted VOC is less than 14.7 psia, Table 16B in N.J.A.C. 7:27-16.16 must be used to verify the VOC range of the oven operations. Assuming that the operations fall within ranges A-E, the operations comply with the provisions of this subchapter and the facility will not need to install a thermal oxidizer.

N.J.A.C. 7:27-17 Control and Prohibition of Air Pollution by Toxic Substances

N.J.A.C. 7:27-17 (Subchapter 17) applies to any source or equipment that has the potential to emit (PTE) any Group 1 or Group 2 air toxic (TXS) at a rate greater than 0.01 lb/hr. Tables 3A and 3B also provide reporting and SOTA thresholds for HAPs. The potential emissions of each HAP have been evaluated for the ovens and are below their respective reporting thresholds.

N.J.A.C. 7:27-18 Netting Analysis

The entire State of New Jersey is classified as non-attainment for ozone. As such, NO_X and VOC emissions, which are precursors to ozone, are regulated under New Jersey's NNSR permitting program, N.J.A.C. 7:27 Subchapter 18 (Control and Prohibition of Air Pollution from a New Source Affecting Ambient Air Quality in a Non-attainment Area), which is commonly referred to as "Subchapter 18". The Subchapter 18 analysis is not applicable to Campbell's since the facility wide PTE is below the applicability thresholds in N.J.A.C.7:27-18.2(a) as listed below and the proposed project does not increase emissions of any criteria pollutants above these thresholds:

- 25 tpy of NO_X and VOC
- 10 tpy of Lead
- 100 tpy of CO, PM_{10}, $PM_{2.5}$, SO_2, and TSP.

N.J.A.C. 7:27-19 Control and Prohibition of Air Pollution by Oxides of Nitrogen

This subchapter establishes requirements and procedures concerning the control and prohibition of air pollution for NO_X. The general purpose of this subchapter is to require the owner or operator of certain stationary source operations to use RACT to prevent or control NO_x emissions. The proposed ovens are not

subject to this subchapter. Assuming that the maximum power output for each is less than 500 hp, per N.J.A.C. 7:27-19.2(b) the ovens would be exempt from these regulations.

N.J.A.C. 7:27-21 Emission Statements

Facilities having the potential to emit of 100 tpy of CO, PM_{10}, $PM_{2.5}$, SO_2, and TSP, 5 tpy of Pb, 25 tpy of NO_X and/or 10 tpy of VOC are required to submit an annual emission statement in accordance with N.J.A.C. 7:27-21 to report actual air contaminant emissions. The facility wide potential to emit are below that of the annual emissions statement thresholds for the respective criteria pollutants, and therefore the Campbell site shall not be required to submit annual emission statements.

*****

If you have any questions or comments about the information presented in this letter, please do not hesitate to email me at jkwiatkowski@trinityconsultants.com or call me at 609.668.1779.

Sincerely,

TRINITY CONSULTANTS

Joseph J. Kwiatkowski
Managing Consultant

Attachments

cc: Kevin Sheffield (Campbell)
Andrew Eross (Campbell)

ATTACHMENT 1

RADIUS Printout

Campbell Soup Co (50182)

Date: 9/16/2024

New Jersey Department of Environmental Protection
Reason for Application

Permit Being Modified

Permit Class: **Number:** 0

Description of Modifications: Campbell Soup Co has a facility in Camden, NJ supporting its meals & beverages as well its snack divisions. The facility's equipment currently operate under four general permits. This application requests to permit the following:

1) One (1) Buhler-Haas Turbu three convection oven rated 1.54 MMBtu/hr,
2) One (1) Buhler-Haas oven rated 2.15 MMBtu/hr,
3) One (1) Reed 4-26x80 oven rated 0.27 MMBtu/hr, and
4) One (1) Reed 4-20x80 oven rated 0.1 MMBtu/hr.

New Jersey Department of Environmental Protection
Facility Profile (General)

Facility Name (AIMS): Campbell Soup Co **Facility ID (AIMS):** 50182

Street Address: 1 CAMPBELL PL
CAMDEN, NJ 08103

Mailing Address: 1 CAMPBELL PL
CAMDEN, NJ 08103

State Plane Coordinates:

X-Coordinate:	490,779
Y-Coordinate:	4,421,046
Units:	UTM Zone 18N - Meters
Datum:	
Source Org.:	Other/Unknown
Source Type:	GPS

County: Camden

Location Description:

Industry:

Primary SIC:	
Secondary SIC:	
NAICS:	551114

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: Air Permit Information Contact

Organization: Campbell Soup Co
Org. Type: Corporation
Name: Andrew Eross
NJ EIN: 00000000000
Title:
Phone: (856) 342-4855 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: andrew_eross@contractors.campbellsoup.com
Mailing Address: 1 Campbell Pl
Camden, NJ 08103

Contact Type: Fees/Billing Contact

Organization: Campbell Soup Co
Org. Type: Corporation
Name: Kevin Sheffield
NJ EIN: 00000000000
Title: Sr. Manager of Facilities
Phone: (856) 342-3716 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: kevin_sheffield@campbells.com
Mailing Address: 1 Campbell Pl
Camden, NJ 08103

Contact Type: Responsible Official

Organization: Campbell Soup Co
Org. Type: Corporation
Name: Kevin Sheffield
NJ EIN: 00000000000
Title: Sr. Manager of Facilities
Phone: (856) 342-3716 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: kevin_sheffield@campbells.com
Mailing Address: 1 Campbell Pl
Camden, NJ 08103

Campbell Soup Co (50182) Date: 8/20/2024

New Jersey Department of Environmental Protection
Facility Profile (Permitting)

1. Is this facility classified as a small business by the USEPA?	No
2. Is this facility subject to N.J.A.C. 7:27-22?	No
3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22?	No
4. Has a copy of this application been sent to the USEPA?	No
5. If not, has the EPA waived the requirement?	No
6. Are you claiming any portion of this application to be confidential?	No
7. Is the facility an existing major facility?	No
8. Have you submitted a netting analysis?	No
9. Are emissions of any pollutant above the SOTA threshold?	No
10. Have you submitted a SOTA analysis?	No
11. If you answered "Yes" to Question 9 and "No" to Question 10, explain why a SOTA analysis was not required	
12. Have you provided, or are you planning to provide air contaminant modeling?	No

Campbell Soup Co (50182) Date: 8/20/2024

New Jersey Department of Environmental Protection
Equipment Inventory

Equip. NJID	Facility's Designation	Equipment Description	Equipment Type	Certificate Number	Install Date	Grand-Fathered	Last Mod. (Since 1968)	Equip. Set ID
E10	Oven 1	Cookie oven	Bakery Oven			No		
E11	Oven 2	Crackers oven	Bakery Oven			No		
E12	Oven 3	Large Reed oven	Bakery Oven			No		
E13	Oven 4	Small Reed oven	Bakery Oven			No		

000000 E10 (Bakery Oven)
Print Date: 8/20/2024

Make:	Buhler-Haas
Manufacturer:	Buhler-Haas
Model:	Turbu Three Convection
Maximum rated Gross Heat Input (MMBtu/hr-HHV):	1.54

Have you attached a diagram showing the location and/or the configuration of this equipment?

- ○ Yes
- ● No

Have you attached any manuf.'s data or specifications to aid the Dept. in its review of this application?

- ○ Yes
- ● No

Comments: Serial no. 115169

Include Emission Rates on the Potential to Emit Screen for each contaminant in ppmvd @ 7%O2 in addition to lbs/hr and tons/yr.

000000 E11 (Bakery Oven)
Print Date: 8/20/2024

Make:	Buhler-Haas
Manufacturer:	Buhler-Haas
Model:	
Maximum rated Gross Heat Input (MMBtu/hr-HHV):	2.15

Have you attached a diagram showing the location and/or the configuration of this equipment?

- ○ Yes
- ● No

Have you attached any manuf.'s data or specifications to aid the Dept. in its review of this application?

- ○ Yes
- ● No

Comments:

Include Emission Rates on the Potential to Emit Screen for each contaminant in ppmvd @ 7%O2 in addition to lbs/hr and tons/yr.

000000 E12 (Bakery Oven)
Print Date: 8/20/2024

Make:	Reed Oven
Manufacturer:	Reed Oven
Model:	4-26x80
Maximum rated Gross Heat Input (MMBtu/hr-HHV):	0.27

Have you attached a diagram showing the location and/or the configuration of this equipment?

- ○ Yes
- ● No

Have you attached any manuf.'s data or specifications to aid the Dept. in its review of this application?

- ○ Yes
- ● No

Comments: Serial no. R10203

Include Emission Rates on the Potential to Emit Screen for each contaminant in ppmvd @ 7%O2 in addition to lbs/hr and tons/yr.

000000 E13 (Bakery Oven)
Print Date: 8/20/2024

Make:	Reed Oven
Manufacturer:	Reed Oven
Model:	4-20x28
Maximum rated Gross Heat Input (MMBtu/hr-HHV):	0.10

Have you attached a diagram showing the location and/or the configuration of this equipment?

- ○ Yes
- ● No

Have you attached any manuf.'s data or specifications to aid the Dept. in its review of this application?

- ○ Yes
- ● No

Comments:

Include Emission Rates on the Potential to Emit Screen for each contaminant in ppmvd @ 7%O2 in addition to lbs/hr and tons/yr.

Campbell Soup Co (50182)

Date: 8/20/2024

New Jersey Department of Environmental Protection
Emission Points Inventory

PT NJID	Facility's Designation	Description	Config.	Equiv. Diam. (in.)	Height (ft.)	Dist. to Prop. Line (ft)	Exhaust Temp. (deg. F)			Exhaust Vol. (acfm)			Discharge Direction	PT Set ID
							Avg.	Min.	Max.	Avg.	Min.	Max.		
PT20	Oven 1E	Oven 1 exhaust	Round	12		300	550.0	300.0	700.0					
PT21	Oven 1C	Oven 1 combustion	Round	10		300	550.0	300.0	700.0					
PT22	Oven 2E	Oven 2 exhaust	Round	10		300	900.0	300.0	1,000.0					
PT23	Oven 2C	Oven 2 combustion	Round	10		300	900.0	300.0	1,000.0					
PT24	Oven 3	Oven 3 stack	Round	8		250	550.0	550.0	550.0					
PT25	Oven 4	Oven 4 stack	Round	6			550.0	550.0	550.0					

Campbell Soup Co (50182)

Date: 8/20/2024

New Jersey Department of Environmental Protection
Emission Unit/Batch Process Inventory

U 20 Ovens Pilot Plant/R&D ovens

UOS NJID	Facility's Designation	UOS Description	Operation Type	Signif. Equip.	Control Device(s)	Emission Point(s)	SCC(s)	Annual Oper. Hours Min.	Annual Oper. Hours Max.	VOC Range	Flow (acfm) Min.	Flow (acfm) Max.	Temp. (deg F) Min.	Temp. (deg F) Max.
OS1	Oven 1 bake	Oven 1 baking cookies	Normal - Steady State	E10		PT20	3-02-032-05	0.0	1,000.0				300.0	1,000.0
OS2	Oven 1 NG	Oven 1 burning NG	Normal - Steady State	E10		PT21	1-05-002-06	0.0	1,000.0				300.0	700.0
OS3	Oven 2 bake	Oven 2 baking crackers	Normal - Steady State	E11		PT22	3-02-032-05	0.0	1,000.0				300.0	1,000.0
OS4	Oven 2 NG	Oven 2 burning NG	Normal - Steady State	E11		PT23	1-05-002-06	0.0	1,000.0				300.0	1,000.0
OS5	Oven 3 bake	Oven 3 baking cinnamon raisin	Normal - Steady State	E12		PT24	3-02-032-02	0.0	2,080.0				550.0	550.0
OS6	Oven 3 NG	Oven 3 burning NG	Normal - Steady State	E12		PT24	1-05-002-06	0.0	2,080.0				550.0	550.0
OS7	Oven 4 bake	Oven 4 baking rolls	Normal - Steady State	E13		PT25	3-02-032-02	0.0	2,080.0				550.0	550.0
OS8	Oven 4 NG	Oven 4 burning NG	Normal - Steady State	E13		PT25	1-05-002-06	0.0	2,080.0				550.0	550.0

000000 U20 OS2 (Fuel Information Table)
Print Date: 8/20/2024

Is this fuel a blend?	○ Yes ● No
Fuel Category:	Commercial
Fuel Type:	Natural gas
Description (if other):	
Amount of Sulfur in Fuel (%):	0.0001
Amount of Ash in Fuel (%):	
Fuel Heating Value:	1,020.00
Units:	BTU/scf
Estimated Maximum Amount of Fuel Burned Annually:	1.51
Units:	MMft^3/yr
Estimated Actual Amount of Fuel Burned Annually:	1.51
Units:	MMft^3/yr
Amount of Oxygen in Flue Gas (%):	
Amount of Moisture in Flue Gas (%):	
Comments:	

000000 U20 OS4 (Fuel Information Table)
Print Date: 8/20/2024

Is this fuel a blend?	○ Yes ● No
Fuel Category:	Commercial
Fuel Type:	Natural gas
Description (if other):	
Amount of Sulfur in Fuel (%):	0.0001
Amount of Ash in Fuel (%):	
Fuel Heating Value:	1,020.00
Units:	BTU/scf
Estimated Maximum Amount of Fuel Burned Annually:	2.11
Units:	MMft^3/yr
Estimated Actual Amount of Fuel Burned Annually:	2.11
Units:	MMft^3/yr
Amount of Oxygen in Flue Gas (%):	
Amount of Moisture in Flue Gas (%):	
Comments:	

000000 U20 OS6 (Fuel Information Table)
Print Date: 8/20/2024

Is this fuel a blend?	○ Yes ● No
Fuel Category:	Commercial
Fuel Type:	Natural gas
Description (if other):	
Amount of Sulfur in Fuel (%):	0.0001
Amount of Ash in Fuel (%):	
Fuel Heating Value:	1,020.00
Units:	BTU/scf
Estimated Maximum Amount of Fuel Burned Annually:	0.55
Units:	MMft^3/yr
Estimated Actual Amount of Fuel Burned Annually:	0.55
Units:	MMft^3/yr
Amount of Oxygen in Flue Gas (%):	
Amount of Moisture in Flue Gas (%):	
Comments:	

000000 U20 OS8 (Fuel Information Table)
Print Date: 8/20/2024

Is this fuel a blend?	○ Yes ● No
Fuel Category:	Commercial
Fuel Type:	Natural gas
Description (if other):	
Amount of Sulfur in Fuel (%):	0.0001
Amount of Ash in Fuel (%):	
Fuel Heating Value:	1,020.00
Units:	BTU/scf
Estimated Maximum Amount of Fuel Burned Annually:	0.20
Units:	MMft^3/yr
Estimated Actual Amount of Fuel Burned Annually:	0.20
Units:	MMft^3/yr
Amount of Oxygen in Flue Gas (%):	
Amount of Moisture in Flue Gas (%):	
Comments:	

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U20 Ovens**

Operating Scenario: **OS0 Summary**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO		0.15190000	0.15190000	0.15190000	tons/yr	No
HAPs (Total)					tons/yr	No
NOx (Total)		0.18090000	0.18090000	0.18090000	tons/yr	No
Pb					tons/yr	No
PM-10 (Total)		D	D	0.00000000	tons/yr	No
SO2					tons/yr	No
TSP		D	D	0.00000000	tons/yr	No
VOC (Total)		1.29400000	1.29400000	1.29400000	tons/yr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS1**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
VOC (Total)		D	D	0.00000000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS2**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO		0.12680000	0.12680000	0.12680000	lb/hr	No
HAPs (Total)					lb/hr	No
NOx (Total)		0.15100000	0.15100000	0.15100000	lb/hr	No

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U20 Ovens**

Operating Scenario: **OS2**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
Pb					lb/hr	No
PM-10 (Total)		D	D	0.00000000	lb/hr	No
SO2					lb/hr	No
TSP		D	D	0.00000000	lb/hr	No
VOC (Total)		D	D	0.00000000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS3**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
VOC (Total)		0.05770000	0.05770000	0.05770000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS4**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO		0.17710000	0.17710000	0.17710000	lb/hr	No
HAPs (Total)					lb/hr	No
NOx (Total)		0.21080000	0.21080000	0.21080000	lb/hr	No
Pb					lb/hr	No
PM-10 (Total)		D	D	0.00000000	lb/hr	No
SO2					lb/hr	No

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U20 Ovens**

Operating Scenario: **OS4**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
TSP		D	D	0.00000000	lb/hr	No
VOC (Total)		D	D	0.00000000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS5**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
VOC (Total)		0.47250000	0.47250000	0.47250000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS6**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO		D	D	0.00000000	lb/hr	No
HAPs (Total)					lb/hr	No
NOx (Total)		D	D	0.00000000	lb/hr	No
Pb					lb/hr	No
PM-10 (Total)		D	D	0.00000000	lb/hr	No
SO2					lb/hr	No
TSP		D	D	0.00000000	lb/hr	No
VOC (Total)		D	D	0.00000000	lb/hr	No

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U20 Ovens**

Operating Scenario: **OS7**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
VOC (Total)		0.74400000	0.74400000	0.74400000	lb/hr	No

Subject Item: **U20 Ovens**

Operating Scenario: **OS8**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO		D	D	0.00000000	lb/hr	No
HAPs (Total)					lb/hr	No
NOx (Total)		D	D	0.00000000	lb/hr	No
Pb					lb/hr	No
PM-10 (Total)		D	D	0.00000000	lb/hr	No
SO2					lb/hr	No
TSP		D	D	0.00000000	lb/hr	No
VOC (Total)		D	D	0.00000000	lb/hr	No

ATTACHMENT 2

Emission Calculations

Campbell Soup (PI #50182)

Camden, NJ

Potential to Emit

Facility Total Potential to Emit

Contaminant	Potential Emissions (tpy)
CO	5.72
PM_{10}	0.80
$PM_{2.5}$	0.78
TSP	0.79
SO_2	0.06
NOx	4.39
VOC	1.84
Lead	1.09E-06
All HAPs	0.01
NH_3	0.01
CH_4	0.01

Project Reportable Pollutants

Contaminant	Potential Emissions (tpy)
CO	0.1519
NOx	0.1809
VOC	1.294

Campbell Soup (PI #50182)
Camden, NJ
Potential to Emit

Emission Unit:	U20

SOTA required
Major facility level
Requirement to install thermal oxidizer
Reportable Pollutant

Combustion Emission Factors (lb/MMscf)

Boilers/Heaters - Natural Gas Emission Factors (AP-42, Chapter 1.4)	lb/MMScf [1]
CO	84
NOx	100
TSP	7.6
PM_{10}	7.6
$PM_{2.5}$	7.6
SO_2	0.6
VOC	5.5
NH_3	3.2
CO_2	120,000
CH_4	2.3

Operating Parameters

U20		Max Heat Input (MMBtu/hr)	Fuel	Annual Operation (hr/yr)	Annual Production (tpy)	Throughput (lb/hr)	Baking VOC [2] (lb VOC/ton product)	Fuel burned (MMscf/yr)
Oven 1 - Cookie	E10	1.54	NG	1000	2.5	5	0	1.510
Oven 2 - Cracker	E11	2.15	NG	1000	2.5	5	23.08	2.108
Oven 3 - Large Reed (Cinnamon Raisin)	E12	0.27	NG	2080	104	100	9.45	0.551
Oven 4 - Small Reed (Roll)	E13	0.10	NG	2080	104	100	14.88	0.204
	Totals	4.06		6160	213	210	47.41	4.372

Heat content of NG	1020	MMBtu/MMscf
N.J.A.C. 7:27-4.2(a) Particle Limit	2.436	lb/hr

Emissions (lb/hr)

Line	**U20**	**Baking**	**Combustion**											
	Equipment ID	VOC	U20	VOC	CO	NOx	TSP	PM_{10}	$PM_{2.5}$	SO_2	NH_3	CO_2	CH_4	Total VOC
Oven 1 - Cookie	E10	0.0000	OS1	0.0083	0.1268	0.1510	0.0115	0.0115	0.0115	0.0009	0.0048	181.18	0.0035	0.01
Oven 2 - Cracker	E11	0.0577	OS2	0.0116	0.1771	0.2108	0.0160	0.0160	0.0160	0.0013	0.0067	252.94	0.0048	0.07
Oven 3 - Cinnamon Raisin	E12	0.4725	OS3	0.0015	0.0222	0.0265	0.0020	0.0020	0.0020	0.0002	0.0008	31.76	0.0006	0.47
Oven 4 - Roll	E13	0.7440	OS4	0.0005	0.0082	0.0098	0.0007	0.0007	0.0007	0.0001	0.0003	11.76	0.0002	0.74
	Totals	1.27		0.02	0.33	0.40	0.03	0.03	0.03	0.00	0.01	477.65	0.01	1.30

Emissions (tpy)

U20	CO	NOx	VOC	TSP	PM_{10}	$PM_{2.5}$	SO_2	NH_3	CO_2	CH_4
E10	0.06	0.08	0.004	0.01	0.01	0.01	0.00	0.00	90.59	0.00
E11	0.09	0.11	0.03	0.01	0.01	0.01	0.00	0.00	126.47	0.00
E12	0.02	0.03	0.49	0.00	0.00	0.00	0.00	0.00	33.04	0.00
E13	0.01	0.01	0.77	0.00	0.00	0.00	0.00	0.00	12.24	0.00
OS0	0.1836	0.2186	1.3060	0.0166	0.0166	0.0166	0.0013	0.0070	262.329	0.0050

HAPs

Reportable HAP

CAS #	HAP	Emission Factor (lb/MMscf)	Potential Emissions (lb/yr)					Potential Emissions (tpy)	NJDEP Reporting Threshold (lb/yr)	SOTA Reporting Threshold (lb/yr)
			E10	E11	E12	E13	U20	U20		
83-32-9	Acenaphthene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	2	
203-96-8	Acenaphthylene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	2	
120-12-7	Anthracene	2.40E-06	3.62E-06	5.06E-06	1.32E-06	4.89E-07	1.05E-05	0.0000	2	
56-55-3	Benz(a)anthracene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	0.4	20
71-43-2	Benzene	2.10E-03	3.17E-03	4.43E-03	1.16E-03	4.28E-04	9.18E-03	0.0000	6	4000
50-32-8	Benzo(a)pyrene	1.20E-06	1.81E-06	2.53E-06	6.61E-07	2.45E-07	5.25E-06	0.0000	0.04	20
205-99-2	Benzo(b)fluoranthene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	0.4	20
191-24-2	Benzo(g,h,i)perylene	1.20E-06	1.81E-06	2.53E-06	6.61E-07	2.45E-07	5.25E-06	0.0000	2	
205-82-3	Benzo(k)fluoranthene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	2	
218-01-9	Chrysene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	2	20
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	1.81E-06	2.53E-06	6.61E-07	2.45E-07	5.25E-06	0.0000	0.04	20
106-46-7	1,4 Dichlorobenzene	1.20E-03	1.81E-03	2.53E-03	6.61E-04	2.45E-04	5.25E-03	0.0000	4	6000
57-97-6	7,12-Dimethylbenz(a)anthracene	1.60E-05	2.42E-05	3.37E-05	8.81E-06	3.26E-06	7.00E-05	0.0000	0.0007	20
206-44-0	Fluoranthene	3.00E-06	4.53E-06	6.32E-06	1.65E-06	6.12E-07	1.31E-05	0.0000	2	
86-73-7	Fluorene	2.80E-06	4.23E-06	5.90E-06	1.54E-06	5.71E-07	1.22E-05	0.0000	2	
50-00-0	Formaldehyde	7.50E-02	1.13E-01	1.58E-01	4.13E-02	1.53E-02	3.28E-01	0.0002	3.5	4000
110-54-3	Hexane	1.80E+00	2.72E+00	3.79E+00	9.91E-01	3.67E-01	7.87E+00	0.0039	2000	10000
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	0.4	20
56-49-5	3-Methylchloranthrene	1.80E-06	2.72E-06	3.79E-06	9.91E-07	3.67E-07	7.87E-06	0.0000	2	
91-57-6	2-Methylnaphthalene	2.40E-05	3.62E-05	5.06E-05	1.32E-05	4.89E-06	1.05E-04	0.0000	2	
91-20-3	Naphthalene	6.10E-04	9.21E-04	1.29E-03	3.36E-04	1.24E-04	2.67E-03	0.0000	1.4	10000
85-01-8	Phenanthrene	1.70E-05	2.57E-05	3.58E-05	9.36E-06	3.47E-06	7.43E-05	0.0000	2	
129-00-0	Pyrene	5.00E-06	7.55E-06	1.05E-05	2.75E-06	1.02E-06	2.19E-05	0.0000	2	
108-88-3	Toluene	3.40E-03	5.13E-03	7.17E-03	1.87E-03	6.93E-04	1.49E-02	0.0000	2000	10000
	POM	6.98E-04	1.05E-03	1.47E-03	3.84E-04	1.42E-04	3.05E-03	0.0000	2	20
	HAP Metals									
7440-38-2	Arsenic	2.00E-04	3.02E-04	4.22E-04	1.10E-04	4.08E-05	8.74E-04	0.0000	0.01	10
7440-41-7	Beryllium	1.20E-05	1.81E-05	2.53E-05	6.61E-06	2.45E-06	5.25E-05	0.0000	0.02	16
7440-43-9	Cadmium	1.10E-03	1.66E-03	2.32E-03	6.06E-04	2.24E-04	4.81E-03	0.0000	0.01	20
7440-47-3	Chromium	1.40E-03	2.11E-03	2.95E-03	7.71E-04	2.85E-04	6.12E-03	0.0000	1000	10000
7440-48-4	Cobalt	8.40E-05	1.27E-04	1.77E-04	4.62E-05	1.71E-05	3.67E-04	0.0000	0.005	200
	Lead	5.00E-04	7.55E-04	1.05E-03	2.75E-04	1.02E-04	2.19E-03	1.093E-06	2	20
7439-96-5	Manganese	3.80E-04	5.74E-04	8.01E-04	2.09E-04	7.75E-05	1.66E-03	0.0000	0.6	1600
7439-97-6	Mercury	2.60E-04	3.93E-04	5.48E-04	1.43E-04	5.30E-05	1.14E-03	0.0000	2	20
7440-02-0	Nickel	2.10E-03	3.17E-03	4.43E-03	1.16E-03	4.28E-04	9.18E-03	0.0000	0.6	2000
7782-49-2	Selenium	2.40E-05	3.62E-05	5.06E-05	1.32E-05	4.89E-06	1.05E-04	0.0000	925	200

Total HAPs (tpy)	0.0041

HAPS Hourly

CAS #	HAP	Emission Factor (lb/MMscf)	Potential Emissions (lb/hr)				
			E10	E11	E12	E13	U20
83-32-9	Acenaphthene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
203-96-8	Acenaphthylene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
120-12-7	Anthracene	2.40E-06	3.62E-09	5.06E-09	6.35E-10	2.35E-10	9.55E-09
56-55-3	Benz(a)anthracene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
71-43-2	Benzene	2.10E-03	3.17E-06	4.43E-06	5.56E-07	2.06E-07	8.36E-06
50-32-8	Benzo(a)pyrene	1.20E-06	1.81E-09	2.53E-09	3.18E-10	1.18E-10	4.78E-09
205-99-2	Benzo(b)fluoranthene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
191-24-2	Benzo(g,h,i)perylene	1.20E-06	1.81E-09	2.53E-09	3.18E-10	1.18E-10	4.78E-09
205-82-3	Benzo(k)fluoranthene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
218-01-9	Chrysene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	1.81E-09	2.53E-09	3.18E-10	1.18E-10	4.78E-09
106-46-7	1,4 Dichlorobenzene	1.20E-03	1.81E-06	2.53E-06	3.18E-07	1.18E-07	4.78E-06
57-97-6	7,12-Dimethylbenz(a)anthracene	1.60E-05	2.42E-08	3.37E-08	4.24E-09	1.57E-09	6.37E-08
206-44-0	Fluoranthene	3.00E-06	4.53E-09	6.32E-09	7.94E-10	2.94E-10	1.19E-08
86-73-7	Fluorene	2.80E-06	4.23E-09	5.90E-09	7.41E-10	2.75E-10	1.11E-08
50-00-0	Formaldehyde	7.50E-02	1.13E-04	1.58E-04	1.99E-05	7.35E-06	2.99E-04
110-54-3	Hexane	1.80E+00	2.72E-03	3.79E-03	4.76E-04	1.76E-04	7.16E-03
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
56-49-5	3-Methylchloranthrene	1.80E-06	2.72E-09	3.79E-09	4.76E-10	1.76E-10	7.16E-09
91-57-6	2-Methylnaphthalene	2.40E-05	3.62E-08	5.06E-08	6.35E-09	2.35E-09	9.55E-08
91-20-3	Naphthalene	6.10E-04	9.21E-07	1.29E-06	1.61E-07	5.98E-08	2.43E-06
85-01-8	Phenanthrene	1.70E-05	2.57E-08	3.58E-08	4.50E-09	1.67E-09	6.77E-08
129-00-0	Pyrene	5.00E-06	7.55E-09	1.05E-08	1.32E-09	4.90E-10	1.99E-08
108-88-3	Toluene	3.40E-03	5.13E-06	7.17E-06	9.00E-07	3.33E-07	1.35E-05
	POM	6.98E-04	1.05E-06	1.47E-06	1.85E-07	6.85E-08	2.78E-06
HAP Metals							
7440-38-2	Arsenic	2.00E-04	3.02E-07	4.22E-07	5.29E-08	1.96E-08	7.96E-07
7440-41-7	Beryllium	1.20E-05	1.81E-08	2.53E-08	3.18E-09	1.18E-09	4.78E-08
7440-43-9	Cadmium	1.10E-03	1.66E-06	2.32E-06	2.91E-07	1.08E-07	4.38E-06
7440-47-3	Chromium	1.40E-03	2.11E-06	2.95E-06	3.71E-07	1.37E-07	5.57E-06
7440-48-4	Cobalt	8.40E-05	1.27E-07	1.77E-07	2.22E-08	8.24E-09	3.34E-07
	Lead	5.00E-04	7.55E-07	1.05E-06	1.32E-07	4.90E-08	1.99E-06
7439-96-5	Manganese	3.80E-04	5.74E-07	8.01E-07	1.01E-07	3.73E-08	1.51E-06
7439-97-6	Mercury	2.60E-04	3.93E-07	5.48E-07	6.88E-08	2.55E-08	1.03E-06
7440-02-0	Nickel	2.10E-03	3.17E-06	4.43E-06	5.56E-07	2.06E-07	8.36E-06
7782-49-2	Selenium	2.40E-05	3.62E-08	5.06E-08	6.35E-09	2.35E-09	9.55E-08
	Total HAPs		2.851E-03	3.981E-03	4.999E-04	1.851E-04	7.517E-03

[1] Uncontrolled emission factors for Small Boilers, < 100 MMbtu/hr.

[2]Baking emission factors developed and provided by Campbell Soup Inc.