Attachment 2

Maximum Permitted Emissions Calculations

Kraft Foods Inc.
Application No. 23324
BAAQMD

Potential to Emit for NOx, CO, POC, SO2, Formaldehyde, and Acetaldehyde

Coffee Roaster Emission Factors for NOx, CO, POC, Formaldehyde, and Acetaldehyde from 2010 Source Testing. Coffee Roaster Emission Factor for SO2 from 1998 Source Test on S-72

	Capacity (tons/hour)	Permit Limit (tons/year)	Test Date	Actual NOx (lb/ton)	Actual CO (lb/ton)	Actual POC (lb/ton)	District EF SO2 (lb/ton)	Actual Formaldehyde (lb/ton)	Actual Acetaldehyde (lb/ton)
S-37 Max Pax Roaster No. 1	1.8	15768	8/18/2010	0.969	11.968	1.82	0.05	0.19	0.0838
S-40 Max Pax Roaster No. 2	1.8	15768	8/27/2010	1.403	15.01	0.737	0.05	0.319	0.323
S-72 Neotec Roaster No. 1	2.7	27000	8/17/2010	0.59	3.202	0.15	0.05	0.199	0.116
S-73 Neotec Roaster No. 2	2.7	27000	8/18/2010	0.787	0.963	0.15	0.05	0.301	0.128
S-90 Neotec Roaster No. 3	2.7	20494	9/1/2010	1.009	0.199	0.16	0.05	0.0625	0.0151
S-102 Neotec Roaster No. 4	4	34000	12/1/2009	0.783	0.267	0.15	0.05	0.0434	0.0177
Total		140030							

Coffee Roaster Emissions of NOx, CO, POC, SO2, Formaldehyde, and Acetaldehyde in tons/year (based on permitted maximum throughputs)

	Capacity (tons/hour)	Permit Limit (tons/year)	Test Date	NOx (ton/year)	CO (ton/year)	POC (ton/year)	SO2 (ton/year)	Formaldehyde (lb/year)	Acetaldehyde (lb/year)
S-37 Max Pax Roaster No. 1	1.8	15768	8/18/2010	7.64	94.36	14.35	0.39	2995.9	1321.4
S-40 Max Pax Roaster No. 2	1.8	15768	8/27/2010	11.06	118.34	5.81	0.39	5030.0	5093.1
S-72 Neotec Roaster No. 1	2.7	27000	8/17/2010	7.97	43.23	2.03	0.68	5373.0	3132.0
S-73 Neotec Roaster No. 2	2.7	27000	8/18/2010	10.62	13.00	2.03	0.68	8127.0	3456.0
S-90 Neotec Roaster No. 3	2.7	20494	9/1/2010	10.34	2.04	1.64	0.51	1280.9	309.5
S-102 Neotec Roaster No. 4	4	34000	12/1/2009	13.31	4.54	2.55	0.85	1475.6	601.8
Total		140030		60.94	275.50	28.40	3.501	24282.39	13913.68

Notes:
S-72 and S-73 have a combined annual permit limit of 54000 tons/year
SO2 Emission Factor from BAAQMD Source Test Report No. 99125 (11/4/98) for testing performed on S-72.
The natural gas combustion SO2 is included in the 3.501 tons SO2/year estimate.
The formaldehyde and acetaldehyde source test based emission factors include the amount contributed from natural gas combustion.
POC Emission Factors for S-37 and S-40 are actual emission rates.
POC Emission Factors for Other Roasters are permit limits.

Other Combustion Sources and Abatement Devices Emissions of NOx, CO, POC, SO2, Formaldehyde, and Acetaldehyde in tons/year

				NOx (ton/year)	CO (ton/year)	POC (ton/year)	SO2 (ton/year)	Formaldehyde (lb/year)	Acetaldehyde (lb/year)
S-99 Emergency Standby Diesel Firepump				0.791	0.315	0.172	0.001	5.77	0.56
S-32001 Natural Gas Fired Boiler				1.50	1.26	0.08	0.04	2.25	0.26
A-104 Recuperative Thermal Oxidizer				1.50	1.26	0.08	0.04	2.25	0.26
Total All Combustion				**64.74**	**278.33**	**28.74**	**3.59**	**24292.67**	**13914.76**

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

Maximum PM10 Emissions based on District Approved Emission Factors and Maximum Permitted Throughput

Source	Description	Maximum Hourly Throughput	Maximum Throughput	Units	Unabated Emission Factor	Abatement Factor	Emission Factor	Units	Particulate (tons/year)	Reference
37	Max Pax Roaster #1, 4 MMBtu/hour, Abatement 4 MMBtu/hour		70080	MMBtu			0.00745	lb/MMBtu	0.261	AP-42 Table 1.4-2, 7/98
37	Max Pax Roaster #1	1.8	15768	tons			0.1920	lb/ton	1.514	AP-42 Table 9.13.2-1, 9/95
38	Max Pax Cooler #1	1.8	15768	tons			0.0280	lb/ton	0.221	AP-42 Table 9.13.2-1, 9/95
39	Max Pax Destoner #1	1.8	15768	tons			0.0280	lb/ton	0.221	AP-42 Table 9.13.2-1, 9/95
40	Max Pax Roaster #2, 4 MMBtu/hour, Abatement 4 MMBtu/hour		70080	MMBtu			0.00745	lb/MMBtu	0.261	AP-42 Table 1.4-2, 7/98
40	Max Pax Roaster #2	1.8	15768	tons			0.1920	lb/ton	1.514	AP-42 Table 9.13.2-1, 9/95
41	Max Pax Cooler #2	1.8	15768	tons			0.0280	lb/ton	0.221	AP-42 Table 9.13.2-1, 9/95
42	Max Pax Destoner #2	1.8	15768	tons			0.0280	lb/ton	0.221	AP-42 Table 9.13.2-1, 9/95
46	DECAF System #1 - Green Coffee Transfer	10	87600	tons	0.79	0.01	0.0079	lb/ton	0.346	District Databank
47	DECAF System #2 - Green Coffee Cleaning	10	87600	tons	3.15	0.01	0.0315	lb/ton	1.380	District Databank
48	DECAF System #3 - Green Coffee Blend	10	87600	tons	2.36	9.00E-03	0.0212	lb/ton	0.930	District Databank
49	DECAF System #4 - DECAF Bean System	5	43800	tons	0.85	0.01	0.0085	lb/ton	0.186	District Databank
50	DECAF System #5 - Transfer & Storage	10	87600	tons	0.85	0.01	0.0085	lb/ton	0.372	District Databank
51	DECAF System #6 - Plant General System	0.02	175.2	tons	0.02	0.01	0.0002	lb/ton	0.000	District Databank
55	Airveyor System A	20	175200	tons	1.4	0.01	0.0140	lb/ton	1.226	District Databank
56	Airveyor System B	20	175200	tons	1.4	0.01	0.0140	lb/ton	1.226	District Databank
57	Airveyor System C	20	175200	tons	1.4	0.01	0.0140	lb/ton	1.226	District Databank
61	General Chaff Collection & Conveyor System	9.5	83220	tons	1.85	2.00E-05	3.70E-05	lb/ton	0.002	District Databank
70	Whole Roasted Bean Airveyor System	7.5	65700	tons	0.11	1	0.1100	lb/ton	3.614	District Databank
71	Whole Roasted Bean Airveyor Receiving Hopper	7.5	65700	tons	0.12	0.15	0.0180	lb/ton	0.591	District Databank
72	Neotec Roaster #1, 6 MMBtu/hour, Abatement 4 MMBtu/hour		87600	MMBtu			0.00745	lb/MMBtu	0.326	AP-42 Table 1.4-2, 7/98
72	Neotec Roaster #1	2.7	27000	tons			0.1920	lb/ton	2.592	AP-42 Table 9.13.2-1, 9/95
73	Neotec Roaster #2, 6 MMBtu/hour, Abatement 4 MMBtu/hour		87600	MMBtu			0.00745	lb/MMBtu	0.326	AP-42 Table 1.4-2, 7/98
73	Neotec Roaster #2	2.7	27000	tons			0.1920	lb/ton	2.592	AP-42 Table 9.13.2-1, 9/95
74	Neotec Cooler #1	2.7	27000	tons			0.0340	lb/ton	0.459	Neotec Guarantee for Neotec No. 4
75	Neotec Cooler #2	2.7	27000	tons			0.0340	lb/ton	0.459	Neotec Guarantee for Neotec No. 4
76	Neotec Destoner #1	2.7	27000	tons			0.0340	lb/ton	0.459	Neotec Guarantee for Neotec No. 4
77	Neotec Destoner #2	2.7	27000	tons			0.0340	lb/ton	0.459	Neotec Guarantee for Neotec No. 4
78	System 200 Green Bean Airveyor	20	175200	tons	1	0.01	0.010	lb/ton	0.876	District Databank
79	System 300 Cyclone Receiver	17.5	153300	tons	1	0.01	0.010	lb/ton	0.767	District Databank
80	System 400 Max Pax Filter Receiver	17.5	153300	tons	1	0.0102	0.01020	lb/ton	0.782	District Databank
81	System 400 Neotec Filter Receiver #1	17.5	153300	tons	1	0.0102	0.01020	lb/ton	0.782	District Databank
82	System 400 Neotec Filter Receiver #2	17.5	153300	tons	1	0.0102	0.01020	lb/ton	0.782	District Databank
83	System 400 Small Thermelo Filter Receiver	17.5	153300	tons	1	0.0102	0.01020	lb/ton	0.782	District Databank
84	System 700 Filter Receiver #1	6	52560	tons	1	0.0102	0.01020	lb/ton	0.268	District Databank
85	System 700 Filter Receiver #2	12.5	109500	tons	1	0.0102	0.01020	lb/ton	0.558	District Databank
86	Bulk Green Coffee Unloader	20	175200	tons	1	0.0010	0.00100	lb/ton	0.088	District Databank
87	Super Bag Fill Station	5	43800	tons	1	0.001	0.001	lb/ton	0.022	District Databank
88	Bag Coffee Dump Station	6	52560	tons	1	0.0010	0.00100	lb/ton	0.026	District Databank
89	Conveyor/Transfer Line	2.7	20494	tons	1	0.1000	0.10000	lb/ton	1.025	District Databank
90	Neotec Roaster #3, 6 MMBtu/hour, Abatement 4 MMBtu/hour		87600	MMBtu			0.00745	lb/MMBtu	0.326	AP-42 Table 1.4-2, 7/98
90	Neotec Roaster #3	2.7	20494	tons			0.19200	lb/ton	1.967	AP-42 Table 9.13.2-1, 9/95
91	Neotec Cooler #3	2.7	20494	tons			0.0340	lb/ton	0.348	Neotec Guarantee for Neotec No. 4
92	Neotec Destoner #3	2.7	20494	tons			0.0340	lb/ton	0.348	Neotec Guarantee for Neotec No. 4
93	Green Bean Unloading, Clean Weigh		190000	tons	1	0.0100	0.01000	lb/ton	0.950	District Databank
94	Coffee Conveying and Blending System 1		75000	tons	1	5.00E-04	0.00050	lb/ton	0.019	District Databank
95	Coffee Conveying and Blending System 2		75000	tons	1	5.00E-03	0.00500	lb/ton	0.188	District Databank
96	Coffee Conveying and Blending System 3		75000	tons	1	5.00E-03	0.00500	lb/ton	0.188	District Databank
97	Coffee Conveying and Blending System 4		75000	tons	1	5.00E-03	0.00500	lb/ton	0.188	District Databank
98	NABOB Coffee Conveying and Blending System		65000	tons	1	5.00E-04	0.00050	lb/ton	0.016	District Databank
99	Fire Pump Diesel Engine (208 hp, 0.25 g/bhp-hr)		500	hours			0.1146	lb/hour	0.029	Data Form
101	Green Bean Conveying System		34000	tons	1	1.00E-02	0.01000	lb/ton	0.170	District Databank
102	Neotec Roaster #4, 6 MMBtu/hour, Abatement 4 MMBtu/hour		87600	MMBtu			0.00745	lb/MMBtu	0.326	AP-42 Table 1.4-2, 7/98
102	Neotec Roaster #4		34000	tons			0.19200	lb/ton	3.264	AP-42 Table 9.13.2-1, 9/95
103	Neotec Cooler #4		34000	tons			0.0340	lb/ton	0.578	Neotec Guarantee for Neotec No. 4
104	Neotec Destoner #4		34000	tons			0.0340	lb/ton	0.578	Neotec Guarantee for Neotec No. 4
32001	Boiler, Natural Gas, 3.5 MMBtu/hour		30660	MMBtu			0.00745	lb/MMBtu	0.114	AP-42 Table 1.4-2, 7/98
A-104	Recuperative Thermal Oxidizer, 3.5 MMBtu/hour		30660	MMBtu			0.00745	lb/MMBtu	0.114	AP-42 Table 1.4-2, 7/98
Total All Particulate (tons/year)									39.673	

Note: AP-42 (Table 9.12.2-1, 9/95) Cooler Emission Factor of 0.028 lb/ton for S-37 and S-40 includes condensible particulate matter (See Nestle Source Test Report for testing performed at Nestle Union City on September 18, 1992).
Neotec provided a vendor guarantee for cooler emissions at 0.034 lb/ton for Application No. 16923/21497. This guarantee will be used to estimate emissions from the Neotec Coolers
Destoner PM10 emissions assumed to be equal to Cooler PM10 emissions.

This page intentionally left blank

Kraft Foods Inc.
Application No. 23324
BAAQMD

POC Emissions based on Permit Limits and Maximum Permitted Throughput

	Capacity (tons/hour)	Permit Limit (tons/year)	POC (lb/ton)
S-37 Max Pax Roaster No. 1	1.8	15768	1.82
S-40 Max Pax Roaster No. 2	1.8	15768	0.737
S-72 Neotec Roaster No. 1	2.7	23652	0.15
S-73 Neotec Roaster No. 2	2.7	23652	0.15
S-90 Neotec Roaster No. 3	2.7	20494	0.16
S-102 Neotec Roaster No. 4	4	34000	0.15
Total		133334	

	Capacity (tons/hour)	Permit Limit (tons/year)	POC (ton/year)
S-37 Max Pax Roaster No. 1	1.8	15768	14.35
S-40 Max Pax Roaster No. 2	1.8	15768	5.81
S-72 Neotec Roaster No. 1	2.7	23652	1.77
S-73 Neotec Roaster No. 2	2.7	23652	1.77
S-90 Neotec Roaster No. 3	2.7	20494	1.64
S-102 Neotec Roaster No. 4	4	34000	2.55
Total		133334	27.90

Notes:
S-37 and S-40 POC Emissions Factors are based on actual 2010 source test results (these roasters do not have POC permit limits).
S-37 and S-40 do not have an annual throughput limit. The data form capacity in tons per hour was multiplied by 8,760 hour per year.
POC Emission Factors for the remaining roasters are based on the permit limits for each roaster.
S-72 and S-73 have a combined annual permit limit of 47,304 tons/year

Other Combustion Sources and Abatement Devices Emissions of POC in tons/year

			POC (ton/year)
S-99 Emergency Standby Diesel Firepump			0.172
S-32001 Natural Gas Fired Boiler			0.083
A-104 Recuperative Thermal Oxidizer			0.083
Total All Combustion			**28.23**

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

Criteria Pollutant Emissions for Emergency Standby Diesel Firepump Engine S-99 at Maximum Usage of 500 hour/year

Diesel Engine Emissons

Engine Emissions from Application 8151 (2003)
Rated Horsepower: 208 Nameplate
S-99 Diesel Fire Pump Maxwell House Division of Kraft Foods

	g/kw-hr	(g/hp-hr)
NOx		6.9000
CO		2.7500
POC		1.5000
PM_{10}		0.2500
SO_2		0.0055

g/kw-hr
NOx & POC

95% NOx
5% POC

**The emission factor for SO2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.*
SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (453.6 g/lb) = 0.0055 g/hp-hr

Annual Emissions

Pollutants	Factors	Annual (lb/yr)	Annual (TPY)
NOx	6.9000	1582.011	0.791
CO	2.7500	630.511	0.315
POC	1.5000	343.915	0.172
PM_{10}	0.2500	57.319	0.029
SO_2	0.0055	1.261	0.0006

Maximum Daily Emissions

Pollutants	Factors	Daily (lb/day)
NOx	6.900	75.937
CO	2.750	30.265
POC	1.500	16.508
PM_{10}	0.250	2.751
SO_2	0.0055	0.061

Pollutants		Factors	hp	Hours	lb/g		
NOx	=	(6.9000 g/hp-hr)*	(208 hp)*	(500 hrs/yr)*	(0.00220 lbs/g)	= 1582.01 lbs/yr	= 0.791 TPY
CO	=	(2.7500 g/hp-hr)*	(208 hp)*	(500 hrs/yr)*	(0.00220 lbs/g)	= 630.51 lbs/yr	= 0.315 TPY
POC	=	(1.5000 g/hp-hr)*	(208 hp)*	(500 hrs/yr)*	(0.00220 lbs/g)	= 343.92 lbs/yr	= 0.172 TPY
PM_{10}	=	(0.2500 g/hp-hr)*	(208 hp)*	(500 hrs/yr)*	(0.00220 lbs/g)	= 57.32 lbs/yr	= 0.029 TPY
SO_2	=	(0.0055 g/hp-hr)*	(208 hp)*	(500 hrs/yr)*	(0.00220 lbs/g)	= 1.26 lbs/yr	= 0.001 TPY

Pollutants		Factors	hp	hr/day	lb/g	
NOx	=	(6.9000 g/hp-hr)*	(208 hp)*	(24 hr/day)*	(0.00220 lbs/g)	= 75.937 lbs/day
CO	=	(2.7500 g/hp-hr)*	(208 hp)*	(24 hr/day)*	(0.00220 lbs/g)	= 30.265 lbs/day
POC	=	(1.5000 g/hp-hr)*	(208 hp)*	(24 hr/day)*	(0.00220 lbs/g)	= 16.508 lbs/day
PM_{10}	=	(0.2500 g/hp-hr)*	(208 hp)*	(24 hr/day)*	(0.00220 lbs/g)	= 2.751 lbs/day
SO_2	=	(0.0055 g/hp-hr)*	(208 hp)*	(24 hr/day)*	(0.00220 lbs/g)	= 0.061 lbs/day

Pollutant	Existing	New	Total
NOx	0	0.791	0.791
CO	0	0.3153	0.3153
POC	0	0.1720	0.1720
PM_{10}	0	0.0287	0.0287
SO_2	0	0.0006	0.0006
NPOC	0	0.000	0.000

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

HAP Emissions for Emergency Standby Diesel Firepump Engine S-99 at Maximum Usage of 500 hour/year

S-99 has a maximum throughput of 10.4 gallons per hour, gallons per year = 500 hours/year x 10.4 gallons/year = 5200 gallons/year = 5.2 thou gal/year

HAPs Emission Factors from ARB CATEF Database

SOURCEID	SYSTEM	MATERIAL	SCC	TYPE	DESCRIPTION	CAS	SUBSTANCE	MEAN	UNIT	Annual HAP Emissions	
3246	Internal Combustion Engine	Diesel	20200102	None	O2>13%	106-99-0	1,3-Butadiene	5.41E-03	lbs/Mgal	2.81E-02	lb/year
3251	Internal Combustion Engine	Diesel	20200102	None	O2>13%	75-07-0	Acetaldehyde	1.07E-01	lbs/Mgal	5.56E-01	lb/year
3252	Internal Combustion Engine	Diesel	20200102	None	O2>13%	107-02-8	Acrolein	1.30E-02	lbs/Mgal	6.76E-02	lb/year
3256	Internal Combustion Engine	Diesel	20200102	None	O2>13%	71-43-2	Benzene	1.22E-01	lbs/Mgal	6.34E-01	lb/year
3220	Internal Combustion Engine	Diesel	20100102	None	O2>13%	50-32-8	Benzo(a)pyrene	3.35E-03	lbs/Mgal	1.74E-02	lb/year
3222	Internal Combustion Engine	Diesel	20100102	None	O2>13%	205-99-2	Benzo(b)fluoranthene	6.70E-03	lbs/Mgal	3.48E-02	lb/year
3226	Internal Combustion Engine	Diesel	20100102	None	O2>13%	207-08-9	Benzo(k)fluoranthene	6.70E-03	lbs/Mgal	3.48E-02	lb/year
3227	Internal Combustion Engine	Diesel	20100102	None	O2>13%	218-01-9	Chrysene	3.58E-03	lbs/Mgal	1.86E-02	lb/year
3229	Internal Combustion Engine	Diesel	20100102	None	O2>13%	53-70-3	Dibenz(a,h)anthracene	3.49E-03	lbs/Mgal	1.81E-02	lb/year
3235	Internal Combustion Engine	Diesel	20100102	None	O2>13%	50-00-0	Formaldehyde	1.11E+00	lbs/Mgal	5.77E+00	lb/year
3238	Internal Combustion Engine	Diesel	20100102	None	O2>13%	193-39-5	Indeno(1,2,3-cd)pyrene	3.46E-03	lbs/Mgal	1.80E-02	lb/year
3240	Internal Combustion Engine	Diesel	20100102	None	O2>13%	91-20-3	Naphthalene	5.64E-02	lbs/Mgal	2.93E-01	lb/year
3286	Internal Combustion Engine	Diesel	20200102	None	O2>13%	108-88-3	Toluene	5.50E-02	lbs/Mgal	2.86E-01	lb/year
3289	Internal Combustion Engine	Diesel	20200102	None	O2>13%	1330-20-7	Xylene (Total)	3.59E-02	lbs/Mgal	1.87E-01	lb/year

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

HAP Emissions for S-32001 Boiler 3.5 MMBtu/hour Natural Gas Fired at Maximum Fuel Usage Rate

	ppm@3%O2	lb/MMBtu	MMBtu/hr	lb/day	hours/year	lb/year	tons/year
NOx	80.8	0.098	3.5	8.23	8760	3.00E+03	1.50E+00
CO	111	0.082	3.5	6.89	8760	2.51E+03	1.26E+00
VOC		0.0054	3.5	0.45	8760	1.66E+02	8.28E-02
PM10		0.00745	3.5	0.63	8760	2.28E+02	1.14E-01
SO2		0.0028	3.5	0.24	8760	8.58E+01	4.29E-02

Emission Factors for Small Boilers from Table 1.4-1, Table 1.4-2 AP-42 7/98

	lb/MMBtu	MMBtu/hr	lb/hour	hours/year	lb/year	Acute Trigger lb/hour	Chronic Trigger lb/year
Benzene Note 1	2.06E-06	3.5	7.21E-06	8760	6.32E-02	2.90E+00	3.80E+00
Formaldehyde Note 1	7.35E-05	3.5	2.57E-04	8760	2.25E+00	1.20E-01	1.80E+01
Toluene Note 1	3.33E-06	3.5	1.17E-05	8760	1.02E-01	8.20E+01	1.20E+04
Acetaldehyde Note 2	8.45E-06	3.5	2.96E-05	8760	2.59E-01	1.00E+00	3.80E+01

Note 1 TAC Emission Factors from Miscellaneous Natural Gas Sources Policy Approved 2/28/08
Note 2 Emission Factor from CATEF Database for Natural Gas Fired Boilers (Mean Value 8.87E-03 lbs/MMcf)

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

HAP Emissions for A-104 Recuperative Thermal Oxidizer, 3.5 MMBtu/hour Natural Gas Fired at Maximum Fuel Usage Rate

	ppm@3%O2	lb/MMBtu	MMBtu/hr	lb/day	hours/year	lb/year	tons/year
NOx	80.8	0.098	3.5	8.23	8760	3.00E+03	1.50E+00
CO	111	0.082	3.5	6.89	8760	2.51E+03	1.26E+00
VOC		0.0054	3.5	0.45	8760	1.66E+02	8.28E-02
PM10		0.00745	3.5	0.63	8760	2.28E+02	1.14E-01
SO2		0.0028	3.5	0.24	8760	8.58E+01	4.29E-02

Emission Factors for Small Boilers from Table 1.4-1, Table 1.4-2 AP-42 7/98

	lb/MMBtu	MMBtu/hr	lb/hour	hours/year	lb/year	Acute Trigger lb/hour	Chronic Trigger lb/year
Benzene Note 1	2.06E-06	3.5	7.21E-06	8760	6.32E-02	2.90E+00	3.80E+00
Formaldehyde Note 1	7.35E-05	3.5	2.57E-04	8760	2.25E+00	1.20E-01	1.80E+01
Toluene Note 1	3.33E-06	3.5	1.17E-05	8760	1.02E-01	8.20E+01	1.20E+04
Acetaldehyde Note 2	8.45E-06	3.5	2.96E-05	8760	2.59E-01	1.00E+00	3.80E+01

Note 1 TAC Emission Factors from Miscellaneous Natural Gas Sources Policy Approved 2/28/08
Note 2 Emission Factor from CATEF Database for Natural Gas Fired Boilers (Mean Value 8.87E-03 lbs/MMcf)

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

Maximum HAP Emissions from all natural gas combustion sources combined at maximum usage rates.

Source/Abatement No.	**Fuel**	**MMBtu/hour**
S-37 Max Pax Roaster No. 1	Natural Gas	4
A-26 Max Pax Afterburner #1	Natural Gas	4
S-40 Max Pax Roaster No. 2	Natural Gas	4
A-30 Max Pax Afterburner #2	Natural Gas	4
S-72 Neotec Roaster No. 1	Natural Gas	6
A-56 Neotec Roaster No. 1 Catalytic Afterburner	Natural Gas	4
S-73 Neotec Roaster No. 2	Natural Gas	6
A-58 Neotec Roaster No. 2 Catalytic Afterburner	Natural Gas	4
S-90 Neotec Roaster No. 3	Natural Gas	6
A-91 Neotec No. 3 Catalytic Afterburner	Natural Gas	4
S-102 Neotec Roaster No. 4	Natural Gas	6
A-106 Neotec No. 4 Catalytic Afterburner	Natural Gas	4
A-104 Recuperative Thermal Oxidizer (Chaff System)	Natural Gas	3.5
S-32001 Natural Gas Fired Boiler (Exempt)	Natural Gas	3.5
Total		63

	lb/MMBtu	MMBtu/hr	lb/hour	hours/year	lb/year	Acute Trigger lb/hour	Chronic Trigger lb/year
Benzene Note 1	2.06E-06	63	1.30E-04	8760	1.14E+00	2.90E+00	3.80E+00
Formaldehyde Note 1	7.35E-05	63	4.63E-03	8760	4.06E+01	1.20E-01	1.80E+01
Toluene Note 1	3.33E-06	63	2.10E-04	8760	1.84E+00	8.20E+01	1.20E+04
Acetaldehyde Note 2	8.45E-06	63	5.32E-04	8760	4.66E+00	1.00E+00	3.80E+01

Note 1 TAC Emission Factors from Miscellaneous Natural Gas Sources Policy Approved 2/28/08
Note 2 Emission Factor from CATEF Database for Natural Gas Fired Boilers
The formaldehyde and acetaldehyde emissions from the natural gas combusted at the coffee roasters are acounted for in the coffee roaster calculations.

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

Maximum HAP Emissions from all natural gas combustion sources combined at maximum usage rates.

Source/Abatement No.	**Fuel**	**MMBtu/hour**
S-37 Max Pax Roaster No. 1	Natural Gas	4
A-26 Max Pax Afterburner #1	Natural Gas	4
S-40 Max Pax Roaster No. 2	Natural Gas	4
A-30 Max Pax Afterburner #2	Natural Gas	4
S-72 Neotec Roaster No. 1	Natural Gas	6
A-56 Neotec Roaster No. 1 Catalytic Afterburner	Natural Gas	4
S-73 Neotec Roaster No. 2	Natural Gas	6
A-58 Neotec Roaster No. 2 Catalytic Afterburner	Natural Gas	4
S-90 Neotec Roaster No. 3	Natural Gas	6
A-91 Neotec No. 3 Catalytic Afterburner	Natural Gas	4
S-102 Neotec Roaster No. 4	Natural Gas	6
A-106 Neotec No. 4 Catalytic Afterburner	Natural Gas	4
A-104 Recuprative Thermal Oxidizer (Chaff System)	Natural Gas	3.5
S-32001 Natural Gas Fired Boiler (Exempt)	Natural Gas	3.5
Total		63

	lb/MMBtu	MMBtu/hr	lb/hour	hours/year	lb/year	ton/year
SO2	2.80E-03	63	1.76E-01	8760	1545.26	0.77

Note: The SO2 from the coffee roasters is included in the 0.05 lb/ton emission factor.

Kraft Foods Inc.
Plant No. 167, Application No. 23324
BAAQMD October 2011

Greenhouse Gas Emissions at Maximum Fuel Usage

	Fuel Usage (MMBtu/hour)	Fuel Usage (MMBtu/year)	Emission Factor (kg CO2/MMBtu)	Emission Factor (g CH4/MMBtu)	Emission Factor (g N2O/MMBtu)	GHG Emissions (metric tons/year)	Global Warming Potential	CO2 equivalents (metric tons/year)
Coffee Roasters and Oxidizers	**56**	490560						
CO2			52.87			2.594E+04	1	25935.907
CH4				0.9		4.415E-01	21	9.272
N2O					0.1	4.906E-02	310	15.207
S-32001 Boiler	**3.5**	30660						
CO2			52.87			1.621E+03	1	1620.994
CH4				0.9		2.759E-02	21	0.579
N2O					0.1	3.066E-03	310	0.950
A-104 Recuperative Thermal Oxidizer	**3.5**	30660						
CO2			52.87			1.621E+03	1	1620.994
CH4				0.9		2.759E-02	21	0.579
N2O					0.1	3.066E-03	310	0.950
Emergency Standby Diesel Engine	**1.425**	713						
CO2			73.10			5.208E+01	1	52.084
CH4				3.0		2.138E-03	21	0.045
N2O					0.6	4.275E-04	310	0.133
TOTAL GHG Emissions (CO2 equivalent, metric tons/year)								29257.7

Emergency Standby Diesel Generator assumed to run a maximum of 500 hours per year for this calculation.

Emission Factors from Regulation for the Mandatory Reporting of Greenhouse Gas Emissions
Appendix A, title 17 California Code of Regulations, Subchapter 10, Article 2, sections 95100 to 95133

CO2 emission factors from Table 4 Appendix A-6 for Natural Gas with a heat content between 1000 Btu/scf and 1025 Btu/scf and Distillate Fuel Oil #2 (diesel)
CH4 emission factors from Table 6 Appendix A-9 for Natural Gas and Distillate
NO2 emission factors from Table 6 Appendix A-9 for Natural Gas and Distillate
Global Warming Potentials from Table 2 Appendix A-4