

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

April 12, 2005

SUBJECT: Del Monte Corporation
1075 Progress Street
Pittsburgh, PA 15212
Allegheny County

Title V Operating Permit No. 0079

TO: Sandra L. Etzel
Chief Engineer

FROM: JoAnn Truchan
Air Quality Engineer

FACILITY DESCRIPTION:

The Del Monte Foods facility in Pittsburgh is a manufacturing and packaging facility for baby foods and soups, along with other specialty foods. In addition to the production and packaging equipment, the facility has five (5) operating boilers, which provide steam to the facility. Four of these are coal and natural gas fired; the fifth is natural gas fired. The facility is a major source of Particulate Matter (PM), Particulate Matter <10 µm (PM₁₀), Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x), Carbon Monoxide (CO), and Hydrochloric Acid (HCl)

EMISSION SOURCES:

Boilers

- 1. B001 & B002**

Facility ID:	No. 1 and No. 2 CE Boiler
Number of Units:	two (2)
Manufacturer:	Combustion Engineering
Model:	traveling grate
Maximum Rating:	91,000,000 Btu/hr (each)
Primary Fuel:	coal
Secondary Fuel:	natural gas (Boiler No. 1 only)
Control Device:	multi-cyclone, C001 and C002 (respective to each boiler)
Stack ID:	S001

2. **B003 & B004**
Facility ID: No. 3 and No. 4 B&W Boiler
Number of Units: two (2)
Manufacturer: Babcock & Wilcox
Model: traveling grate
Maximum Rating: 61,000,000 Btu/hr
Primary Fuel: coal
Secondary Fuel: natural gas
Control Device: cyclone, C003
Stack ID: S002

3. **B008**
Facility ID: No. 8 Zurn Boiler
Number of Units: one (1)
Manufacturer: Zurn Industries
Maximum Rating: 180,000,000 Btu/hr
Primary Fuel: natural gas
Secondary Fuel: n/a
Control Device: n/a
Stack ID: S002

Other Combustion Units

The following table lists the emergency generators at the Del Monte facility:

Facility ID	Generator Name & Model	Maximum Rating	Fuel	Stack ID
G001	Katolight 460T	341,200 Btu/hr	LP Gas	S005
G002	Kohler COM-6	50,923 Btu/hr	Natural Gas	S010
G003	Clarke PDEP	231,791 Btu/hr	#2 Diesel Fuel	S006
G004	Spectrum 290DSJ	85,300 Btu/hr	#2 Diesel Fuel	S007
G005	Kohler 30R2882	152,800 Btu/hr	Natural Gas	S011
G007	Kohler 10RYGL	43,300 Btu/hr	Natural Gas	S012
G008	Caterpillar SR-4	358,300 Btu/hr	#2 Diesel Fuel	S008
G009	Allis Chambers 11000	341,200 Btu/hr	#2 Diesel Fuel	S009

Other Sources of Minor Significance

1. **D001**
Facility ID: Diesel Fuel Tank
Capacity: 1,000 gallons
Contents: #2 diesel fuel

2. **D002**
Facility ID: Diesel Fuel Tank
Capacity: 500 gallons
Contents: #2 diesel fuel

3. **D006**
Facility ID: Diesel Fuel Tank
Capacity: 115 gallons
Contents: #2 diesel fuel

4. **E001 – Bulk Starch Silo**
Dimensions: 42.8 ft (h) × 11 ft (w)
Throughput: 720 tons per year
Control Efficiency: 99.9%

5. **E002 – Bulk Flour Silo**
Dimensions: 42.8 ft (h) × 11 ft (w)
Throughput: 3,600 tons per year
Control Efficiency: 99.9%

6. **E003 & E004 – Coal Silos**
Dimensions: 52.75 ft (h)
Throughput: 48,000 tons per year
Control Efficiency: n/a

7. **E005 – Fly Ash Silo**
Dimensions: 27.1 ft (h)
Throughput: 6,552 tons per year
Control Efficiency: 99%

8. **G001 – Glue**
Annual Use: 112 tons per year
Percent Volatiles: 0.10%_{wt}

9. **G002 – Ink**
Annual Use: 11,400 lbs per year
Percent Volatiles: 85%_{wt}

Stacks

The following table lists all stacks located at the Del Monte Pittsburgh facility:

Stack ID	Material	Height	Diameter	Exhaust Rate	Exhaust Temperature
S001	Brick	250 ft	10 ft	100,000 acfm	390 °F
S002	Brick	250 ft	10 ft	53,000 acfm	250 °F
S005	Steel	12 ft	4"	250 acfm	100 °F
S006	Steel	10 ft	4"	--	--
S007	Steel	12 ft	2"	--	--
S008	Steel	6 ft	3"	250 acfm	100 °F
S009	Steel	inside bldg.	6"	250 acfm	100 °F
S010	Steel	15 ft	1.5"	--	--
S011	Steel	85 ft	2"	--	--
S012	Steel	7 ft	2"	--	--

EMISSIONS CALCULATIONS:

Boilers No. 1 & No. 2

Basis:

Boiler rating: 91 MMBtu/hr (per boiler)
Maximum annual operation: 8,760 hr/year
Natural gas rating: 1,030 Btu/scf
Coal Rating: 13,000 Btu/lb
Coal Sulfur Content: 0.8%_{wt}

Emission calculations were based on emission factors for bituminous coal combustion found in U.S. EPA AP-42 Section 1.1: Bituminous and Subbituminous Coal Combustion (9/98) and Section 1.4: Natural Gas Combustion (7/98), except for PM and SO₂, which are based on Article XXI emission limits (§§2104.02, 2104.03) and NO_x, which is based on the amended RACT plan (Order No. 211, §1.1).

In order to meet PM and SO₂ limits, Del Monte established the following equation to relate coal and natural gas co-firing:

$$G = 2 \times 10^{-06} \times S^2 + 0.1663S - 1811.1$$

where G = natural gas flow in cf/h
S = actual steam flow in lb/hr

The maximum combined steam rate from both boilers is 120,000 lb/hr. Using this in the above equation, you get the following:

Gas flow at max. steam rate = 46,945 scfh
 $46,945 \text{ scfh} \times 1,030 \text{ Btu/scf} \div 10^6 \text{ Btu/MMBtu} = 48.35 \text{ MMBtu/hr}$
Heat from Natural Gas: 48.35 MMBtu/hr
Heat from Coal: $(91 + 91) - 48.35 = 133.65 \text{ MMBtu/hr}$

$48.35 \text{ MMBtu/hr} \div 1,030 \text{ Btu/scf} = 0.047 \text{ MMscf/hr natural gas}$

$$133.65 \text{ MMBtu/hr} \div 13,000 \text{ Btu/lb} \div 2,000 \text{ lb/ton} \times 10^6 = 5.140 \text{ ton/hr coal}$$

Note: These numbers are based on the combined exhaust of Boilers No. 1 and No. 2. Short-term emission limits for each boiler are based on one boiler operating, combusting only coal.

Maximum Potential Emissions – Boilers #1 & #2

Pollutant	AP-42 Emission Factors ¹		Each Boiler ²	Boilers No.1 & No.2 Combined	
	n.g.	coal	lb/hr	lb/hr	tpy
Particulate Matter	--	--	25.47	34.55	112.83
PM-10	1.9	5	20.13	34.55	112.83
Nitrogen Oxides	100	7.5	40.95	81.90	222
Sulfur Oxides	0.6	38×S	82.27	149.32	654.01
Carbon Monoxide	84	6	24.15	48.30	175.21
VOC's	5.5	0.05	0.56	1.12	2.60
Hydrochloric Acid	--	1.2	4.83	9.66	31.07
Hydrofluoric Acid	--	0.15	0.60	1.21	3.88

1. Factors for natural gas are in lbs of pollutant per 10⁶ scf of natural gas combusted; factors for coal are in lbs of pollutant per ton of coal used. The factor for SO_x is 38 × the weight percent of sulfur in the coal.
2. A 15% adjustment factor was added to all emissions calculated using AP-42 factors to account for operational variability within the system.

Boilers No. 3 & No. 4

Calculations for Boilers No. 3 & No. 4 were done using the same method as for Boilers No. 1 & No. 2.

Boiler rating: 61 MMBtu/hr (per boiler)
 Maximum annual operation: 8,760 hr/year
 Natural gas rating: 1,030 Btu/scf
 Coal Rating: 13,000 Btu/lb
 Coal Sulfur Content: 0.8%_{wt}

Maximum Combined Steam Rate: 80,000 lb/hr

$$G = 2 \times 10^{-6} \times S^2 + 0.1663S - 1811.1$$

Gas Flow = 24,293 scfh
 Heat from Natural Gas: 25.02 MMBtu/hr
 Heat from Coal: 96.98 MMBtu/hr
 25.02 MMBtu/hr ÷ 1,030 Btu/scf = 0.024 MMscf/hr natural gas
 96.98 MMBtu/hr ÷ 13,000 Btu/lb ÷ 2,000 lb/ton × 10⁶ = 3.73 ton/hr coal

Maximum Potential Emissions – Boilers #3 & #4

Pollutant	AP-42 Emission Factors ¹		Each Boiler ²	Boilers No.3 & No.4 Combined	
	n.g.	coal	lb/hr	lb/hr	tpy
Particulate Matter	--	--	21.36	28.98	101.77
PM-10	1.9	5	13.49	26.98	94.17
Nitrogen Oxides	100	7.5	39.04	78.08	148
Sulfur Oxides	0.6	38×S	58.32	105.86	463.65
Carbon Monoxide	84	6	16.19	32.38	123.00
VOC's	5.5	0.05	0.38	0.75	1.61
Hydrochloric Acid	--	1.2	3.24	6.48	22.55
Hydrofluoric Acid	--	0.15	0.41	0.82	2.82

1. Factors for natural gas are in lbs of pollutant per 10⁶ scf of natural gas combusted; factors for coal are in lbs of pollutant per ton of coal used. The factor for SO_x is 38 × the weight percent of sulfur in the coal.
2. A 15% adjustment factor was added to all emissions calculated using AP-42 factors to account for operational variability within the system.

Boiler No. 8

Boiler rating: 180 MMBtu/hr
 Maximum annual operation: 8,760 hr/year
 Natural gas rating: 1,030 Btu/scf

Emission limits for Boiler No. 8 are based Operating Permit #3033609-000-00500, issued to Heinz USA on 02/26/93. Del Monte is accepting a limit on the annual capacity factor for Boiler #8 of 10%. Therefore the requirement to maintain and operate a NO_x CEMS is not applicable as long as the capacity factor is less than 10%. The monitoring, recordkeeping, and reporting requirements from OP #3033609-000-00500 that are based on the NSPS have been changed as a result of this limit. Emission limits and other conditions from the existing operating permit have been reduced or omitted accordingly.

Maximum Potential Emissions – Boiler #8

Pollutant	Boiler No. 8		
	Existing Operating Permit		Emission Limits
	lb/hr	tpy	tpy
Particulate Matter	1.05	4.6	0.46
PM-10	1.05	4.6	0.46
Nitrogen Oxides	18.0	78.0	7.80
Sulfur Oxides	0.13	0.6	0.06
Carbon Monoxide	5.00	21.6	2.16
VOC's	0.59	2.6	0.26

Emergency Generators

Emission calculations were based on emission factors for fuel oil and natural gas combustion found in U.S. EPA AP-42 Section 1.3: Fuel Oil Combustion (9/98) and Section 1.4: Natural Gas Combustion (7/98)

Maximum annual operation: 8,760 hr/year
 Natural gas rating: 1,030 Btu/scf
 Fuel rating: 137,000 Btu/gallon
 Sulfur content: 0.2%_{wt}

		Natural Gas-Fired Generators (in tpy)		
Pollutant	AP-42	Kohler COM-6	Kohler 30R2882	Kohler 10RYGL
Particulate Matter	7.6	0.0016	0.0049	0.0014
PM-10	1.9	0.0004	0.0012	0.0003
Nitrogen Oxides	100	0.0217	0.0650	0.0184
Sulfur Oxides	0.6	0.0001	0.0004	0.0001
Carbon Monoxide	84	0.0182	0.0546	0.0155
VOC's	5.5	0.0012	0.0036	0.0010

		#2 Fuel Oil-Fired Generators (in tpy)				
Pollutant	AP-42	Katolight 460T	Clarke PDEP	Spectrum 290DSJ	Caterpillar SR-4	Allis Chambers 11000
Particulate Matter	2	0.022	0.015	0.006	0.023	0.022
PM-10	2	0.022	0.015	0.006	0.023	0.022
Nitrogen Oxides	20	0.218	0.148	0.055	0.229	0.218
Sulfur Oxides	142×S	0.310	0.211	0.077	0.325	0.310
Carbon Monoxide	5	0.055	0.037	0.014	0.057	0.055
VOC's	0.556	0.006	0.004	0.002	0.006	0.006

Coal Silos – E003 & E004

Basis: 0.01 lb PM per ton (based on AP-42 factors for coal mine unloading)
 Yearly throughput: 48,000 tpy
 $48,000 \text{ tpy} \times 0.01 \text{ lb/ton} \div 2,000 \text{ lb/ton} = 0.24 \text{ tpy PM}$

Fly Ash Silo – E005

Basis: AP-42 – Aggregate Handling & Storage Piles
 $E = k \times (0.0032) \times (u/5)^{1.3} \div (M/2)^{1.4}$
 k = particle size multiplier = 0.35
 u = mean wind speed = 9.1 mph

M = average moisture content = 27%

$$E = 6.38 \times 10^{-5} \text{ lb/ton} \times 6,552 \text{ ton/year} \times (1\%) \div 2,000 \text{ lb/ton} = 2.01 \times 10^{-6} \text{ tpy PM}$$

PERMIT APPLICATION COMPONENTS:

1. Title V Permit Application No. 0079, dated November 12, 2004
2. Stack test report, dated October 29, 2004
3. RACT Enforcement Order No. 211, dated March 8, 1995; amended -----, 2005 (the permit and this document will be issued upon finalization of the RACT).
4. Consent Agreement with Operation, Maintenance, Monitoring, and Reporting Plan, dated December 10, 2004
5. Operating permit #3033609-000-00500 (Boiler #8)

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated by stack testing for particulate matter, NO_x, SO₂, and CO on Boilers #1-#4 once every two years, as well as an initial test for hydrochloric acid, and analysis of coal chlorine and fluorine content. The permittee will be required to conduct weekly analyses of coal sulfur content. The permittee will maintain daily fuel combustion records for Boiler #8 to show compliance with the 10% capacity factor limit. The permittee will also be required to record production, all fuel usage, and hours of operation on all boilers. See Permit No. 0079 for the specific conditions for determining compliance with the applicable requirements.

REGULATORY APPLICABILITY:

1. **Article XXI Requirements for Issuance:**
See Permit Application No. 0079, Section 5: Applicable Requirements. The requirements of Article XXI, Parts B and C for the issuance of major source operating permits have been met for this facility. Article XXI, Part D, Part E & Part H will have the necessary sections addressed individually.
2. **Testing Requirements:**
The facility will test Boilers No. 1, No. 2, No. 3 and No. 4 for compliance with PM, NO_x, SO₂, and CO emissions every two years as well as an initial test for hydrochloric acid. The facility will perform an initial test on Boiler No. 8 for NO_x emissions to demonstrate compliance with the 10% capacity factor limit, then test once every five years. All tests will be performed according to approved U.S. EPA test methods and Section 2108.02 of Article XXI.
3. **New Source Performance Standards (NSPS):**
Boiler No. 8 is subject to 40 CFR Part 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. The other three boilers were constructed prior to June 9, 1984 so 40 CFR Part 60, so no NSPSs apply.
4. **NESHAP and MACT Standards:**
The facility is subject to 40 CFR Part 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial/Commercial/Institutional Boilers and Process Heaters and shall be in compliance by September 13, 2007.

The facility is not subject to Subpart KK – Printing & Publishing because the printing done at the facility is not product and packaging rotogravure or wide-web flexographic printing. The facility is also not subject to Subpart JJJJ – Paper and Other Web Coating because the printing done at the facility is not web coating.

5. **Clean Air Act, Section 112(r):**

No materials stored at the facility meet the threshold for CAA §112(r). Therefore, the facility is not subject to CAA §112(r).

EMISSIONS SUMMARY:

Pollutant	Annual Emissions (tons/year)
PM	219.96
PM₁₀	207.61
NO_x	378.92
SO₂	1,119
CO	300.73
VOC's	9.46
HCl	53.62
HF	6.70

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application. The Title V permit application for Del Monte Corporation should be approved with the emission limitations and terms & conditions in Permit No. 0079.