

**Lane Regional Air Protection Agency
Simple Air Contaminant Discharge Permit**

Review Report

Attune Foods, LLC

2545 Prairie Road
Eugene, Oregon 97402
Website: <https://www.8avegranola.com/>

Permit No. 203141

Source Information:

Primary SIC	2043 – Cereal Breakfast Foods
Secondary SIC	--
Primary NAICS	311230 – Breakfast Cereal Manufacturing
Secondary NAICS	--

Source Categories (LRAPA title 37, Table 1)	Part B: 17: Cereal preparations and associated grain elevators 10,000 or more tons/year throughput
Public Notice Category	III

Compliance and Emissions Monitoring Requirements:

Unassigned Emissions	N
Emission Credits	N
Special Conditions	N
Compliance Schedule	N

Source Test [date(s)]	N
COMS	N
CEMS	N
Ambient monitoring	N

Reporting Requirements

Annual Report (due date)	February 15
SACC (due date)	N
GHG Report (due date)	N
Quarterly Report (due date)	N

Monthly Report (due dates)	N
Excess Emissions Report	Y
Other Reports (due date)	N

Air Programs

NSPS (list subparts)	N
NESHAP (list subparts)	N
Compliance Assurance Monitoring (CAM)	N
Regional Haze (RH)	N
TACT	N
40 CFR part 68 Risk Management	N
Synthetic Minor (SM)	N
SM-80	N

Title V	N
Major FHAP Source	N
Federal Major Source	N
Type A State New Source Review	N
Type B State New Source Review	N
Prevention of Significant Deterioration (PSD)	N
Nonattainment New Source Review (NNSR)	N

Permittee Identification

1. Attune Foods, LLC ('the facility' or 'Attune') proposes to construct a cereal processing facility on Prairie Road in Eugene, Oregon.

General Background

2. Attune owns and operates a cereal processing facility and can make a variety of cereal products, such as cereal and granola. The raw ingredients include, but are not limited to, wheat, rice, corn, oats, oil, molasses, and honey.
3. Attune operates five (5) separate process lines consisting of two (2) extrusion lines, three (3) granola lines and five (5) individual packaging lines. The facility's ancillary equipment consists of scalpers, destoners, dryers, sifters, extrusion equipment, puffing equipment, conveyors, packaging machines, cookers, process heaters, intermediate storage equipment, shipping and receiving areas, and natural gas-fired combustion units with a combined rating of 47.75 MMBtu/hr. The facility has two (2) baghouses that control particulate matter (PM) emissions. The baghouses exhaust into the building, not to the atmosphere. The operating schedule varies depending on orders.
4. The facility started operations in 1988 as Golden Temple of Oregon and was initially permitted as a minimal source in 2002. In 2010 the facility changed ownership to Hearthside Food Solutions and received a Simple ACDP. In 2013 the facility changed ownership to Attune Foods.

Reasons for Permit Action and Fee Basis

5. This is a permit renewal with a simple technical modification (see item 6 below) of an existing Simple Air Contaminant Discharge Permit (Simple ACDP) which was issued on April 6, 2018, and expired on April 6, 2023. The facility submitted a timely renewal application on October 14, 2022, the current permit will remain in effect until final action has been taken on the renewal application.
6. Attune requested a modification that has been incorporated during the renewal. Attune proposed an increase to the facility's overall MMBtu/hour rating for the combined natural gas-fired combustion units (boilers, ovens, process heaters and water heaters) from 30.2 MMBtu per hour to 47.75 MMBtu per hour and the removal of one packaging line (PL4) as it has been decommissioned. There will be an increase in NO_x and CO emissions over the de minimis level.

Attainment Status

7. Attune is located inside the Eugene-Springfield Air Quality Management Area. The facility is located in an area that has been designated attainment/unclassified for PM_{2.5}, ozone (VOC), NO₂, SO₂, and Pb and a maintenance area for CO and PM₁₀. The facility is located within 100 kilometers of three (3) Class I air quality protection areas: Diamond Peak, Mount Washington and Three Sisters Wilderness areas.

Permitting History

8. LRAPA has reviewed and issued the following permitting actions to this facility since the last permit renewal:

Date(s) Approved/Valid	Permit Action Type	Description
04/06/2018-04/06/2023	Simple ACDP	Renewal
03/04/2020	Modification	Clarifying that there are six (6) packaging lines

Date(s) Approved/Valid	Permit Action Type	Description
Upon Issuance	Simple ACDP	Renewal

Compliance History

9. The facility was inspected by LRAPA on November 10, 2022. The facility was in compliance with the permit.
10. LRAPA has not issued any violation notices and/or taken enforcement action against this facility since the issuance of the current permit.

Source Testing History

11. The facility is not required to conduct source testing at this time. LRAPA is not aware of any historical source testing conducted at this facility.

Emission Unit Description

12. The emission units regulated by this permit include the following:

Emission Unit	Description	Pollution Control Device	Year Installed
EL-1	Extrusion Line 1	Baghouse (BH1)	2002
EL-2	Extrusion Line 2	Baghouse (BH2)	2007
GL-1	Granola Line 1	NA	1987
GL-2	Granola Line 2	NA	2007
GL-3	Granola Line 3	NA	2016
CU	Natural Gas Combustion Units	NA	1987-2016
Aggregate Insignificant Activities:			
AIA	Five (5) Packaging Lines	NA	NA

Nuisance, Deposition and Other Emission Limitations

13. Under LRAPA 49-010(1), the permittee must not cause or allow air contaminants from any source subject to regulation by LRAPA to cause a nuisance. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.
14. Under LRAPA 32-055, the permittee must not cause or permit the emission of particulate matter which is larger than 250 microns in size at sufficient duration or quantity as to create an observable deposition upon the real property of another person. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.
15. Under LRAPA 32-090(1), the permittee must not discharge from any source whatsoever such quantities of air contaminants which cause injury or damage to any persons, the public, business or property; such determination is to be made by LRAPA. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.

Emission Limitations

16. The facility may not exceed a production rate of 38,700 tons of cereal on a 12-month rolling basis.
17. The facility is subject to a limit of 20 percent opacity for each source emission point. The facility is subject to the grains per dry standard cubic foot limitations under LRAPA 32-015(2)(b)(B) and 32-015(2)(c). Visual emission survey (opacity readings) must be performed quarterly and must not exceed an average of 20 percent opacity for a period or periods measured as a six-minute block average using EPA Method 9. A survey log must be kept of all visual surveys conducted and any correctives taken.
18. Under LRAPA 32-007, LRAPA may request the facility to prepare an Operation and Maintenance Plan (O&M Plan) for the particulate matter control devices. If an O&M Plan is prepared, the facility must submit a copy to LRAPA for review. If LRAPA determines the plan is deficient, LRAPA may require the facility to amend the plan. At a minimum, the O&M Plan must include inspection schedules for each particulate matter control device. The O&M Plan must identify procedures for recording the date and time of any inspections, identification of the equipment inspected, the results of the inspection, and the actions taken if repairs or maintenance are necessary.

Typically Achievable Control Technology (TACT)

19. LRAPA 32-008(2) requires new or modified emission units after January 1, 1994 to meet TACT if the emission unit meets the following criteria: The emission unit is not subject to Major NSR or Type A State NSR in LRAPA title 38, and applicable NSPS in LRAPA title 46, or any other standard applicable to only new or modified sources in LRAPA title 32, title 33, or title 39 for the regulated pollutant; the source is required to have a permit; if new, the emission unit has emissions of any criteria pollutant equal to or greater than one (1) ton per year of any criteria pollutant; if modified, the emission unit would have an increase in emissions of any criteria pollutant equal to or greater than one (1) ton per year of any criteria pollutant; and LRAPA determines that the proposed air pollution control devices and emission reduction processes do not represent TACT.
 - 19.a. The extrusion lines (EUs: EL-1 and EL-2) are controlled by baghouses which are exhausted into the building. While a formal TACT determination has not been conducted, LRAPA has determined that the use of these particulate matter control devices likely meets the TACT requirements for this facility.
 - 19.b. The granola lines (EUs: GL-2 and GL-3) have no exhaust stack and any particulate matter emissions are emitted into the building. While a formal TACT determination has not been conducted, LRAPA has determined that emitting particulate matter into the building likely meets the TACT requirements for this facility.
 - 19.c. The natural gas-fired combustion units (EU: CU) for CO and NO_x emissions have the potential to exceed one (1) ton per year. While a formal TACT determination has not been conducted, LRAPA has determined that the purchase of natural gas combustion units with a manufacturer's guarantee for CO and NO_x emissions of 100 ppm or less would likely meet the TACT requirements for this facility.

Plant Site Emission Limits (PSELs)

20. Provided below is a summary of the baseline emissions rate, netting basis, and PSELs for this facility.

Pollutant	Baseline Emission Rate (TPY)	Netting Basis		Plant Site Emission Limit (PSEL)		PSEL Increase Over Netting Basis (TPY)	Significant Emission Rate (TPY)
		Previous (TPY)	Proposed (TPY)	Previous PSEL (TPY)	Proposed PSEL (TPY)		
PM	NA	0	0	24	4.4	4.4	25
PM ₁₀	NA	0	0	14	4.4	4.4	15
PM _{2.5}	NA	0	0	9	4.4	4.4	10
CO	NA	0	0	99	17	17	100
NO _x	NA	0	0	39	20	20	40
SO ₂	NA	0	0	NA	NA	NA	40
VOC	NA	0	0	39	39	39	40
GHG (CO ₂ e)	2,217	74,000	2,217	74,000	24,491	22,274	75,000
Individual HAP	NA	NA	NA	NA	NA	NA	NA
Aggregate HAPs	NA	NA	NA	NA	NA	NA	NA

- 20.a. The facility does not have a baseline emission rate for pollutants other than PM_{2.5} and GHGs because the facility was not in operation during either the 1977 or 1978 baseline year. A baseline emission rate is not established for PM_{2.5} in accordance with LRAPA 42-0048(3). The facility's baseline for GHGs is based on actual emissions from the 2009 calendar year in accordance with LRAPA 42-0048(1)(G) and (4).
- 20.b. The netting basis for all pollutants is 0 (zero) in accordance with LRAPA 42-0046(4) and 42-0040(2) & (3), except GHGs which was evaluated in accordance with LRAPA 42-0046(1)(b).
- 20.c. In accordance with LRAPA 42-0041(2), the PM, PM₁₀, PM_{2.5}, CO, and NO_x PSELs have been set at the source's potential to emit. VOC emissions PSEL was requested by the facility to maintain the existing VOC PSEL of 39 tons per year on January 11, 2024. The previous PSELs for this facility were set at the Generic PSEL levels that are no longer allowed as of March 1, 2023, due to a DEQ rule change. No PSEL is set for SO₂ in accordance with LRAPA 42-0020(3) because SO₂ is emitted facility-wide below the de minimis level, as defined in LRAPA title 12.
- 20.d. The baseline year, netting basis and SER are not applicable for limiting federal HAPs. As this facility is a minor source of federal HAPs, no PSELs have been established for federal HAPs.

Federal Hazardous Air Pollutants/Toxic Air Contaminants

21. The facility does not have a potential-to-emit for federal HAPs that will exceed the major source thresholds for individual federal HAPs and aggregate federal HAPs of 10 TPY and 25 TPY, respectively. Therefore, the facility is considered a minor or area source of federal HAPs.
22. Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is, therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants. LRAPA required reporting of approximately 600 toxic air contaminants in 2016 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in the rule. All federal HAPs are on the list of approximately 600 toxic air contaminants. After the source is notified by LRAPA, they must update their inventory and perform a risk assessment to see

if they must reduce risk from their toxic air contaminant emissions. Until then, sources will be required to report toxic air contaminant emissions triennially.

23. Provided below is a summary of the federal HAP and CAO TAC emission estimates based on the potential emissions as calculated in the emission detail sheets. The highest potential emission for an individual HAP is toluene at 6.75E-03 TPY. The potential emissions in aggregate of all federal HAPs is 6.19E-01 TPY.

Pollutant	CAS Number	Potential Emissions (TPY)	Federal HAP	CAO Air Toxic
Organics				
Acetaldehyde	75-07-0	7.93E-04	Yes	Yes
Acrolein	107-02-8	4.98E-04	Yes	Yes
Benzene	71-43-2	1.48E-03	Yes	Yes
Benzo[a]pyrene	50-32-8	2.21E-07	Yes	Yes
Ethyl Benzene	100-41-4	1.75E-03	Yes	Yes
Formaldehyde	50-00-0	3.14E-03	Yes	Yes
Hexane	110-54-3	1.16E-03	Yes	Yes
Naphthalene	91-20-3	5.53E-05	Yes	Yes
POM (including PAHs)	--	1.84E-05	Yes	Yes
Toluene	108-88-3	6.75E-03	Yes	Yes
Xylenes	1330-20-7	5.02E-03	Yes	Yes
Inorganic Gases				
Ammonia	7664-41-7	5.90E-01	No	Yes
Metals				
Arsenic	7440-38-2	3.69E-05	Yes	Yes
Barium	7440-39-3	8.11E-04	No	Yes
Beryllium	7440-41-7	2.21E-06	Yes	Yes
Cadmium	7440-43-9	2.03E-04	Yes	Yes
Chromium, Hexavalent	18540-29-9	2.58E-04	Yes	Yes
Cobalt	7440-48-4	1.55E-05	Yes	Yes
Copper	7440-50-8	1.57E-04	No	Yes
Lead	7439-92-1	9.22E-05	Yes	Yes
Manganese	7439-96-5	7.01E-05	Yes	Yes
Mercury	7439-97-6	4.79E-05	Yes	Yes
Molybdenum Trioxide	1313-27-5	3.04E-04	No	Yes
Nickel	7440-02-0	3.87E-04	Yes	Yes
Selenium	7782-49-2	4.43E-06	Yes	Yes
Vanadium	7740-62-2	4.24E-04	No	Yes
Zinc	7440-66-6	5.35E-03	No	Yes

Toxics Release Inventory

24. The Toxics Release Inventory (TRI) is a federal program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment, over which LRAPA has no regulatory authority. It is a resource for learning about toxic chemical releases and pollution prevention activities reported by certain industrial facilities. Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI program. In general, chemicals covered by the TRI program are those that cause:

- Cancer or other chronic human health effects;
- Significant adverse acute human health effects; or
- Significant adverse environmental effects.

There are currently over 650 chemicals covered by the TRI program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual TRI reports on each chemical. NOTE: The TRI program is a federal program over which LRAPA has no regulatory authority. LRAPA does not guarantee the accuracy of any information copied from EPA's TRI website.

In order to report emissions to the TRI program, a facility must operate under a reportable NAICS code, meet a minimum employee threshold, and manufacture, process, or otherwise use chemicals in excess of the applicable reporting threshold for the chemical. The facility's NAICS code is 311230 – Breakfast Cereal Manufacturing which is subject to the TRI program, but the facility falls below the reporting limits and does not have to report to the TRI program.

New Source Performance Standards (NSPSs)

25. There are no emission units at this facility for which NSPS have been promulgated or are applicable.
- 25.a. 40 CFR 60 subpart DD – Standards of Performance for Grain Elevators is not applicable to this facility because the facility does not meet the definition of a "grain terminal elevator" or "grain storage elevator" under 40 CFR 60.301. The definition of a grain terminal elevator does not include cereal manufacturers. The definition of grain storage elevator only applies to wheat flour, corn, rice or soybeans.

National Emission Standards for Hazardous Air Pollutants (NESHAPs)

26. There are no emission units at this facility for which NESHAPs have been promulgated or are applicable.

Recordkeeping Requirements

27. The permittee must monitor and maintain records for a period of at least five (5) years from the date of entry of the following information: [LRAPA 34-016(1) and LRAPA 42-0080]

Activity	Units	Minimum Recording Frequency
Emission Unit Recordkeeping		
Cereal Production	Tons	Monthly
Total natural gas combusted	MMscf	Monthly
PSEL pollutant emissions as calculated according to Condition 4 (of the permit), including the supporting process information	Tons	Monthly
General Recordkeeping		
Log of each nuisance complaint and the resolution	NA	Upon receipt of complaint
Visible emission survey	Percent	Maintain current version on-site

Activity	Units	Minimum Recording Frequency
Operation and Maintenance Plan (if required by LRAPA) according to Condition 14 (of the permit)	NA	Maintain the current version on-site
Upset log of all planned and unplanned excess emissions	See Condition G15	Per occurrence

Reporting Requirements

28. The facility must submit to LRAPA the following reports by no later than the dates indicated in the table below:

Report	Reporting Period	Due Date
PSEL pollutant emissions as calculated according to Condition 4 (of the permit), including supporting calculations.	Annual	February 15
A summary of any maintenance done and each inspection of any control device at the facility.	Annual	February 15
A summary of nuisance complaints from the public and the resolution, as applicable/	Annual	February 15
The upset log information required by Condition G14, if required by Condition G14.	Annual	February 15
GHG Report, as required by Condition 6 (of the permit).	Annual	March 31

Public Notice

29. Pursuant to LRAPA 37-0064(5)(a), which became effective on April 11, 2024, issuance of a renewed Simple Air Contaminant Discharge Permit requires public notice in accordance with LRAPA 31-0030(3)(c), which requires LRAPA to provide notice of the proposed permit action and a minimum of 35 days for interested persons to submit written comments.

The draft permit will be on public notice April 24, 2024 to May 30, 2024. Written comments may be submitted during the 35-day comment period. If requested by ten (10) or more individuals or an individual representing a group of more than ten (10) individuals, there will be a public hearing following the comment period.

After the comment period and hearing (if requested), LRAPA will respond to comments received and then take final action to issue or deny the permit within 45 days of the close of the public comment period or hearing period.

BE/aa
04/23/2024

LIST OF ABBREVIATIONS THAT MAY BE USED IN THIS PERMIT

ACDP	Air Contaminant Discharge Permit	MMBtu	Million British thermal units
AQMA	Air Quality Management Area	MMCF	Million cubic feet
Act	Federal Clean Air Act	NA	Not applicable
ASTM	American Society of Testing and Materials	NESHAP	National Emission Standards for Hazardous Air Pollutants
Btu	British thermal unit	NO _x	Nitrogen oxides
CAO	Cleaner Air Oregon	NSPS	New Source Performance Standards
CD ID	Control device identifier	NSR	New Source Review
CEMS	Continuous Emissions Monitoring System	O ₂	Oxygen
CFR	Code of Federal Regulations	OAR	Oregon Administrative Rules
CMS	Continuous Monitoring System	ODEQ	Oregon Department of Environmental Quality
CO	Carbon Monoxide	ORS	Oregon Revised Statutes
CO ₂	Carbon dioxide	O&M	Operation and maintenance
CO _{2e}	Carbon dioxide equivalent	PB	Lead
COMS	Continuous Opacity Monitoring System	PCD	Pollution Control Device
CPMS	Continuous parameter monitoring system	PM	Particulate matter
dscf	Dry standard cubic feet	PM _{2.5}	Particulate matter less than 2.5 microns in size
EF	Emission factor	PM ₁₀	Particulate matter less than 10 microns in size
EPA	US Environmental Protection Agency	ppm	Parts per million
EU	Emissions Unit	PSEL	Plant Site Emission Limit
EU ID	Emission unit identifier	PTE	Potential to Emit
FCAA	Federal Clean Air Act	scf	Standard cubic foot
ft ²	Square foot	SER	Significant emission rate
gal	Gallon	SIC	Standard Industrial Code
GHG	Greenhouse Gas	SIP	State Implementation Plan
gr/dscf	Grain per dry standard cubic feet (1 pound = 7000 grains)	SO ₂	Sulfur dioxide
HAP	Hazardous Air Pollutants as defined by LRAPA title 12	TAC	Toxic air contaminant
hr	Hour	TACT	Typically Achievable Control Technology
ID	Identification number or label	TBD	To Be Determined
Lb	Pound	TEU	Toxic Emission Unit
LRAPA	Lane Regional Air Protection Agency	tpy	Tons per year
MACT	Maximum Achievable Control Technology	VE	Visible emissions
MM	Million	VOC	Volatile organic compounds
		Year	A period consisting of any 12-consecutive calendar months

Emission Detail Sheets

Plant Site Emission Limits (PSEL)

PLANT SITE EMISSION LIMITS										
Emission Units	PM	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC ⁽³⁾	Single HAP *	Aggregate HAP *	GHG
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
Cereal Production ⁽¹⁾	3.87	3.87	3.87	0.00	0.00	0.00	38.62	0.00	0.00	0.00
Combustion Units	1.55	1.55	1.55	17.12	20.38	0.53	1.12	0.01	0.02	24491
Potential to Emit (PTE)	5.42	5.42	5.42	17.12	20.38	0.53	39.74	0.01	0.02	24,491
PSELs ⁽²⁾	5.4	5.4	5.4	17	20	0.5	39	0.01	0.02	24,491
<p>(1) Cereal production emissions are based on a throughput of total cereal produced of 38,700 tons per year.</p> <p>(2) PSELs were rounded to the 0.45. If PSEL was below the 0.45, it was rounded down and if above the PSEL was rounded up.</p> <p>(3) Attune requested a VOC PSEL limit of 39 tpy on January 11, 2024</p>										

Baseline and Netting

Pollutant	Baseline ⁽¹⁾	Netting Basis ⁽²⁾		Plant Site Emission Limit (PSEL) ⁽³⁾		PSEL Increase	PTE Emissions	Increase over Netting Basis	SER
		Previous	Proposed	Previous PSEL	Proposed PSEL				
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
PM	NA	0.0	0.0	24	5.4	-19	5.42	5.4	25
PM ₁₀	NA	0.0	0.0	14	5.4	-8.6	5.42	5.4	15
PM _{2.5}	NA	0.0	0.0	9.0	5.4	-3.6	5.42	5.4	10
CO	NA	0.0	0.0	99	17	-82	17.12	17	99
NO _x	NA	0.0	0.0	39	20	-19	20.38	20	39
SO ₂	NA	0.0	0.0	de minimis	de minimis	de minimis	de minimis	de minimis	39
VOC	NA	0.0	0.0	39	39	0.0	39.74	39.0	39
GHG ⁽³⁾	2,217	74,000	2,217	74,000	24,491	-49,509	24,491	22,274	74,000
(1) Baseline emission rates (BERs) have been set at zero (0) for all criteria pollutants because the facility was not in operation during the 1978 baseline									
(1) BER for PM _{2.5} was not established in accordance with LRAPA 42-0048(3).									
(1) BER for GHG was evaluated for year 2009 the facility in accordance with LRAPA 42-0048(b).									
(2) Proposed netting for VOC was established according to LRAPA 42-0046(3)(e)(B).									
(2) Proposed netting basis for GHG was established according to LRAPA 42-0046(1)(b).									
(2) For all other pollutants the netting is zero because the facility was constructed after the 1978 baseline year.									
(3) PSELs VOC was set at the 39 tons per year generic level per Attune's January 11, 2024 request.									

Cereal Production Calculations

CEREAL PRODUCTION EMISSIONS CALCULATIONS		
Pollutants	Emission Factor (lbs/ton)	tons/year
PM ⁽¹⁾	0.2	3.9
PM ₁₀	0.2	3.9
PM _{2.5}	0.2	3.9
VOC ⁽²⁾	2.00	38.6
Notes:		
1. No specific emissions factors for particulate matter (PM/PM ₁₀ /PM _{2.5}) are available for this process. A conservative factor was used to ensure the facility does not exceed the significant emission rate for these pollutants. The factor is considered conservative because most emission points are controlled by fabric filters rated at 99.99% efficiency and emission factors for similar processes do not suggest there are expected emissions at this level. VOC will trigger additional permitting requirements before particulate matter.		
2. EMEP/EEA air pollutant emission inventory guidebook — 2009 Chapter 2.D.2 Food and drink Page 16 Table 3-18 Cakes, Biscuits and Breakfast Cereals (NMVOC EF: 1 kg/Mg = 2 lb/ton)		

Natural Gas Emission Units Calculations

Pollutant	NG Emission Factor (lb/MMCF) ⁽¹⁾	NG Emission Factor Units	Potential Hourly Emissions (lbs/hr)	Potential Annual Emissions (TPY)
PM/PM ₁₀ /PM _{2.5}	7.6	lbs/MMCF	0.35	1.55
Carbon Monoxide	84	lbs/MMCF	3.91	17.12
Nitrogen Oxides	100	lbs/MMCF	4.65	20.38
Sulfur Dioxide	2.6	lbs/MMCF	0.12	0.53
VOC	5.5	lbs/MMCF	0.26	1.12
GHGs (CO ₂ equiv.)	120,143	lbs/MMCF	5,591	24,491
Notes:				
1. Emission Factors are based on DEQ Emission Factors Gas Fired Boilers (AQ-EF05), Revised 08/01/11				
2. GHG emissions are based on 40 CFR 98, Tables C-1 and C-2				

HAP Emissions: Natural Gas Emission Units Calculations

Pollutant	NG Emission Factor (lb/MMCF)	Potential Hourly Emissions (lbs/hr)	Potential Annual Emissions (TPY)	Federal HAP	CAO Air Toxic
Organics ⁽¹⁾					
Acetaldehyde	4.30E-03	2.0E-04	8.77E-04	Yes	Yes
Acrolein	2.70E-03	1.3E-04	5.50E-04	Yes	Yes
Benzene	8.00E-03	3.7E-04	1.63E-03	Yes	Yes
Benzo[a]pyrene	1.20E-06	5.6E-08	2.45E-07	Yes	Yes
Ethyl Benzene	9.50E-03	4.4E-04	1.94E-03	Yes	Yes
Formaldehyde	1.70E-02	7.9E-04	3.47E-03	Yes	Yes
Hexane	6.30E-03	2.9E-04	1.28E-03	Yes	Yes
Naphthalene	3.00E-04	1.4E-05	6.12E-05	Yes	Yes
Total PAHs (exc. Nap.)	1.00E-04	4.7E-06	2.04E-05	Yes	Yes
Toluene	3.66E-02	1.7E-03	7.46E-03	Yes	Yes
Xylenes	2.72E-02	1.3E-03	5.54E-03	Yes	Yes
Inorganic Gases					
Ammonia	3.2	1.5E-01	6.52E-01	No	Yes
Metals ⁽²⁾					
Arsenic	2.0E-04	9.3E-06	4.08E-05	Yes	Yes
Barium	4.4E-03	2.0E-04	8.97E-04	No	Yes
Beryllium	1.2E-05	5.6E-07	2.45E-06	Yes	Yes
Cadmium	1.1E-03	5.1E-05	2.24E-04	Yes	Yes
Chromium, Hexavalent ⁽³⁾	1.4E-03	6.5E-05	2.85E-04	Yes	Yes
Cobalt	8.4E-05	3.9E-06	1.71E-05	Yes	Yes
Copper	8.5E-04	4.0E-05	1.73E-04	No	Yes
Lead ⁽⁴⁾	5.0E-04	2.3E-05	1.02E-04	Yes	Yes
Manganese	3.8E-04	1.8E-05	7.75E-05	Yes	Yes
Mercury	2.6E-04	1.2E-05	5.30E-05	Yes	Yes
Molybdenum Trioxide ⁽⁵⁾	1.7E-03	7.7E-05	3.36E-04	No	Yes
Nickel	2.1E-03	9.8E-05	4.28E-04	Yes	Yes
Selenium	2.4E-05	1.1E-06	4.89E-06	Yes	Yes
Vanadium	2.3E-03	1.1E-04	4.69E-04	No	Yes
Zinc	2.9E-02	1.3E-03	5.91E-03	No	Yes
		Total (TPY) =	0.68	0.02	0.68

Notes:

1. Non-metal toxic emission factors based on SCAQMD AB 2588 - Default Emission Factors for Fuel Combustion, Table B-1
2. Metal toxic emission factors are based on US EPA WebFIRE/AP-42 Section 1.4
3. Chromium assumed to be hexavalent form
4. Lead is lead compounds other than elemental lead
5. Molybdenum assumed to be present as a trioxide compound