LANE REGIONAL AIR PROTECTION AGENCY
1010 Main Street, Springfield, Oregon 97477
(541) 736-1056

REVIEW REPORT

Aurora Innovations, LLC
29862 East Enid Road
Eugene, Oregon 97402
https://www.aurorainnovations.com/

Permit No. 200053

Source Information:

Primary SIC	2875 – Fertilizers, Mixing Only
Secondary SIC	3295 – Minerals and Earths, Ground or Otherwise Treated (Perlite Expansion)
Primary NAICS	325314 – Fertilizer (Mixing Only) Manufacturing
Secondary NAICS	327992 – Ground or Treated Mineral and Earth Manufacturing

Source Categories (LRAPA title 37, Table 1)	B. 75 – All other sources not listed herein which would have actual emissions, if the source were to operate uncontrolled, of 5 or more tons per year of direct $PM_{2.5}$ or PM_{10} located in a $PM_{2.5}$ or PM_{10} non-attainment or maintenance area.
Public Notice Category	Category II

Compliance and Emissions Monitoring Requirements:

Unassigned emissions	NA
Emission credits	NA
Special Conditions	NA
Compliance schedule	NA

Source test [date(s)]	Within 180 days of permit issuance
COMS	NA
CEMS	NA
Ambient monitoring	NA

Reporting Requirements:

Annual report (due date)	February 15
NSPS Report (due date)	NA
Monthly report (due dates)	NA

Excess emissions report	Yes
Other reports	NA

Air Programs:

NSPS (list subparts)	UUU
NESHAP (list subparts)	ZZZZ
CAM	NA
Regional Haze (RH)	NA
Synthetic Minor (SM)	NA
SM-80	NA
Part 68 Risk Management	NA
Title V	NA
ACDP (SIP)	NA
Major HAP source	NA
Federal major source	NA
New Source Review (NSR)	NA

Prevention of Significant Deterioration (PSD)	NA
Acid Rain	NA
Clean Air Mercury Rule	NA
TACT	NA
>20 Megawatts	NA

Permittee Identification

1. Aurora Innovations, LLC ('Aurora' or 'the facility') operates a fertilizer manufacturing facility located at 29862 East Enid Road in Eugene, Oregon.

General Background Information

2. The facility operates two (2) natural gas-fired perlite expansion furnaces each controlled by a cyclone and baghouse (EU: F1 and F2), a soil mixing line in Building B controlled by a baghouse (EU: SM1), a soil mixing line in Building A controlled by three (3) dust collectors that emit into the interior of the building (EU: DC1, DC2, & DC3) and a natural gas-fired evaporator (EU: E1). Fugitive emissions are generated during raw material transfer from storage piles into open hoppers (EU: HP1-5) located outside Building B. The outdoor raw material storage piles are covered on three sides by high tunnels to minimize fugitive emissions.

Reasons for Permit Action and Fee Basis

3. This permit action is a renewal of an existing Simple Air Contaminant Discharge Permit (Simple ACDP) which was originally issued on May 12, 2016 and was scheduled to expire on May 12, 2021. A timely renewal application was submitted on December 16, 2020, and an addendum to the administratively extended permit was issued on May 21, 2021, for modifications to the soil mixing line operations. On October 3, 2022 the permittee submitted a transfer application form requesting a name change from Aurora Innovations, Inc. to Aurora Innovations LLC. Modifications from the permit addendum and the name change request have been incorporated into this renewal.

4. The facility is subject to the Simple "low" fee because the facility operates a process listed in LRAPA title 37, Table 1, Part B, Category 75 (All other sources, both stationary and portable, not listed herein which would have actual emissions, if the source were to operate uncontrolled, of 5 or more tons per year of direct $PM_{2.5}$ or PM_{10} if located in a $PM_{2.5}$ or PM_{10} nonattainment or maintenance area, or 10 or more tons of any single criteria pollutant in any part of Lane County).

Attainment Status

5. The facility is located in an attainment area for $PM_{2.5}$, SO_2, NO_2, VOC (ozone), and Lead (Pb), and in the Eugene Springfield Air Quality Maintenance Area for PM_{10} and CO.

Permitting History

6. LRAPA has reviewed and issued the following permit actions to this facility:

Issue Date	Permit Action Type	Description
December 18, 2012	Basic ACDP	Initial air permit
May 12, 2016	Simple ACDP	Source changed to Simple ACDP
May 21, 2021	Addendum No. 1	Modifications to soil mixing line

Compliance History

7. On July 12, 2013, LRAPA issued NON 3442 to Aurora Innovations for failing to comply with the requirements of LRAPA tile 37 pertaining to operation of an air contaminant source at an adjunct facility without an approved Land Use Compatibility Statement. NCP 13-3442 (NON 3442) was

issued on September 19, 2013, in the amount of $2,500. Aurora submitted a request to reduce the penalty amount on October 10, 2013. The request was approved, and the penalty amount was reduced to $1,250. Payment for the reduced penalty amount was received on November 14, 2013.

Source Testing

8. The facility is required to comply with the emission limitations and performance testing requirements for calciners (including expansion furnaces) in accordance with 40 CFR Part 60 Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries. Subpart UUU requires performance testing of the expansion furnaces in accordance with 40 CFR 60.8 and establishes timelines for the initial performance test. Since the requirements of this subpart are newly incorporated with this renewal, the performance test is being required within 180 days of renewal permit issuance.

Emission Unit Description

9. The facility has the following emission units:

EU ID	Emission Unit Description	Pollution Control Device (PCD)
F1 & F2	Perlite Furnaces #1 and #2	2 Cyclones and 2 Baghouses
SM1	Soil Mixing Line (Building B)	1 Baghouse
HP1-5	Raw Material Hoppers	None
Insignificant Activities, including:		
Soil Mixing Line (Building A)		3 Dust Collectors – DC1, DC2 & DC3
Evaporator		None
Emergency Generator		None

9.a. Soil Mixing Line (Building A) [DC1-3] are dust collectors controlling particulate matter (PM) emissions from the soil mixing line in Building A. DC1-3 exhaust inside the building, therefore, PM emissions to atmosphere are expected to be negligible.

9.b. The evaporator is used to evaporate residual rinse water from the liquid fertilizer mixing operations in Building B. A review of the safety data sheets concluded that a majority of the chemicals present in the liquid fertilizer products are organic extracts, amino acids, inorganic salts, and chelating ingredients. Therefore, it is expected that the evaporator does not emit quantifiable emissions of regulated air pollutants. The permit includes a requirement to develop an operations and maintenance plan for minimizing odorous emissions from the evaporator due to historic odor complaints and because some of the liquid residuals may contain odorous ingredients (such as ammonia-containing compounds and guano extracts). In addition, the natural gas burner meets the definition of a categorically insignificant activity and is excluded from PSEL compliance monitoring.

9.c. The emergency generator meets the definition of a categorically insignificant activity and is excluded from PSEL compliance monitoring. [LRAPA 42-0035(5)]

Specific Emission Limitations

10. The perlite expansion furnaces (F1 and F2) are subject to the visible emission limitations under 40 CFR 60.732(b). These emission units may not have visible emissions equal to or greater than 10% opacity on a six-minute block average basis.

11. The soil mixing baghouse (SM1) is subject to the visible emission limitations under LRAPA 32-010(3). This emission unit may not have visible emissions equal to or greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour.

12. F1 and F2 are subject to particulate matter emission limitations under 40 CFR 60.732(a). For calciners (including expansion furnaces), the particulate matter emission limit is 0.040 grains per dry standard cubic foot.

13. SM1 is subject to particulate matter emission limitations under LRAPA 32-015(2)(b)(B). For sources installed, constructed or modified on or after June 1, 1970 but prior to April 16, 2015 for which there are no representative compliance source test results, the particulate matter emission limit is 0.14 grains per dry standard cubic foot.

Typically Achievable Control Technology (TACT)

14. LRAPA 32-008 requires that an existing emission unit at a source meet TACT if the emission unit also meets the following criteria: the emissions of criteria pollutants are greater than five (5) tons per year of particulate or greater than ten (10) tons per year of any gaseous pollutant, the emissions unit is not subject to the emissions standards under LRAPA title 30, title 32, title 33, title 38, title 39, or title 46 for the pollutants emitted, and the source is required to have a permit.

    14.a. No emission units at the facility currently emit more than 10 tons of CO, NOx, SO_2, or VOC per year and are therefore not required to meet TACT for any gaseous pollutants.

    14.b. No emission units at the facility currently emit more than 5 tons of PM per year, however, the particulate generating emission units at the facility are subject to the grain loading and visible emissions emission standards in title 32. For these reasons, the emission units are not required to meet TACT. However, the type of controls used by the facility are considered TACT by LRAPA.

Plant Site Emission Limits (PSELs)

15. Provided below is a summary of the baseline emission rate, netting basis, and PSELs for this facility. No changes to the previous values are proposed with this renewal permit.

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis (NB)		Plant Site Emission Limit (PSEL)			Significant Emission Rate (tons/yr)
		Previous (tons/yr)	Proposed (tons/yr)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	Increase Over NB (tons/yr)	
PM	0	0	0	24	24	24	25
PM_{10}	0	0	0	14	14	14	15
$PM_{2.5}$	NA	0	0	9	9	9	10
CO	0	0	0	99	99	99	100
NOx	0	0	0	39	39	39	40
SO_2	0	0	0	NA	NA	NA	40
VOC	0	0	0	NA	NA	NA	40
GHG	NA	0	0	74,000	74,000	74,000	75,000

15.a. The baseline emission rate (BER) has been set at zero (0) tons per year for all pollutants except greenhouse gas (GHG) since the facility was not in operation during the 1978 baseline year. The BER for GHG was not established because the facility did not exist during the GHG baseline period (2000-2010).

15.b. The netting basis for all pollutants is set at zero (0) in accordance with LRAPA 42-0040(3).

15.c. The PSELs are set at the generic PSEL levels in accordance with LRAPA 42-0040. No PSELs are set for SO_2 or VOCs in accordance with LRAPA 42-0020(3) because these pollutants are emitted facility-wide below the de minimis, as defined in LRAPA title 12.

15.d. The PSEL increase over the netting basis is less than the SER, as defined in LRAPA title 12, therefore, no further air quality analysis is required.

Federal Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants (TACs)

16. The facility does not currently have a PSEL for federal HAPs in accordance with LRAPA 42-0020(3), because facility-wide HAPs are emitted below the de minimis, as defined in LRAPA title 12.

17. 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 existing 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 2020 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in the rule. All 187 hazardous air pollutants are on the list of approximately 600 toxic air contaminants. The hazardous air pollutants and toxic air contaminants listed below were reported by the source in 2020 and verified by LRAPA. 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.

Toxic Air Contaminant	CAS No. or DEQ ID	HAP?	2020 Annual Emissions (lb/yr)
Benzene	71-43-2	Yes	0.115
Formaldehyde	50-00-0	Yes	0.245
Polycyclic aromatic hydrocarbons (PAHs)	401	Yes	0.001
Benzo[a]pyrene	50-32-8	No	1.7E-05
Naphthalene	91-20-3	Yes	0.004
Acetaldehyde	75-07-0	Yes	0.062
Acrolein	107-02-8	Yes	0.039
Ammonia	7664-41-7	No	46.15
Arsenic and compounds	7440-38-2	Yes	0.003
Barium and compounds	7440-39-3	No	0.063
Beryllium and compounds	7440-41-7	Yes	1.7E-04
Cadmium and compounds	7440-43-9	Yes	0.016
Chromium VI	18540-29-9	Yes	0.020
Cobalt and compounds	7440-48-4	Yes	0.001

Toxic Air Contaminant	CAS No. or DEQ ID	HAP?	2020 Annual Emissions (lb/yr)
Copper and compounds	7440-50-8	No	0.012
Ethyl benzene	100-41-4	Yes	0.137
Hexane	110-54-3	Yes	0.091
Lead and compounds	7439-92-1	Yes	0.007
Manganese and compounds	7439-96-5	Yes	0.005
Mercury and compounds	7439-97-6	Yes	0.004
Molybdenum trioxide	1313-27-5	No	0.024
Nickel compounds, insoluble	365	No	0.030
Selenium and compounds	7782-49-2	Yes	3.5E-04
Toluene	108-88-3	Yes	0.528
Vanadium (fume or dust)	7440-62-2	No	0.033
Xylene (mixture)	1330-20-7	Yes	0.392
Zinc and compounds	7440-66-6	No	0.418
Total TACs (lb/yr)			**48.40**
Total HAPs (lb/yr)			**1.67**

Toxic Release Inventory

18. 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 thresholds must submit annual TRI reports on each chemical.

    This facility has not reported to the TRI program.

New Source Performance Standards (NSPS)

19. 40 CFR Part 60, Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries is applicable to the facility because the facility operates a calciner at a mineral processing plant that commenced construction after April 23, 1986. Calciners are defined as equipment used to remove combined (chemically bound) water and/or gases from mineral material through direct or indirect heating and include expansion furnaces. The facility meets the definition of a mineral processing plant because it processes and produces perlite.

    19.a. The opacity and particulate matter emission standards required by 40 CFR 60.732 have been incorporated into the permit. Performance testing to demonstrate compliance with the

opacity and particulate matter standards for the expansion furnaces is being required within 180 days of permit issuance.

19.b. The facility is exempt from the monitoring requirements of 40 CFR 60.734 because the affected facility is a perlite expansion furnace using a dry control device.

20. 40 CFR Part 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants is not applicable because the facility does not use equipment to crush or grind any nonmetallic mineral.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

21. 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is applicable to the facility since the emergency generator was manufactured on May 12, 2005. Although the unit was constructed on-site when facility operations began (approximately 2012), the unit was not reconstructed as defined in 40 CFR 63.2 at the time of installation. Since the definition of construction excludes the relocation of affected sources, the unit is not considered a “new” engine and is not subject to the New Source Performance Standards for internal combustion engines.

New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

22. This facility is not a federal major source because it is not a listed source and proposed PSELs for all criteria pollutants are below the Significant Emission Rates (SERs) established in LRAPA title 12.

Recordkeeping Requirements

23. The facility is required to keep and maintain a record of the information in permit Condition 27 for a period of at least five (5) years.

Reporting Requirements

24. The facility is required to submit an annual report by February 15th each year including calculations demonstrating compliance with the PSELs established in the permit, and other information required by permit Condition 28.

Public Notice

25. The draft permit was on public notice from November 14, 2022 to December 14, 2022. Pursuant to LRAPA 37-0064(4), issuance of a renewed Simple ACDP requires public notice as a Category II permit action in accordance with LRAPA 31-0030(3)(b), which requires LRAPA to provide notice of the proposed permit action and a minimum of 30 days for interested persons to submit written comments.

No comments were received during the public comment period.

During the public comment period, it was noted that the methods required during performance testing needed clarification. Conditions 17, 17.a, and 17.a.i. have been updated to reflect the intent of the required performance testing is two-fold: (1) to demonstrate compliance with NSPS emission standards using EPA Method 5, and (2) to verify emission factors using DEQ Method 5, or EPA Methods 5 and 202.

CG/rr 12/15/2022

Total Plant Site Emissions		
Pollutant	**Annual Potential to Emit (tons/yr)**	**Proposed PSEL (tons/yr)**
PM	5.56	24
PM_{10}	5.51	14
$PM_{2.5}$	5.47	9
CO	2.33	99
NOx	2.77	39
SO_2	0.05	--
VOC	0.15	--
GHG (CO_2e)	13,258	74,000
Total HAP	3.44E-03	--

Perlite Furnace Natural Gas Combustion Emissions				
Pollutant	**Emission Factor (lb/MMscf)**	**Emission Factor Reference**	**Annual Emissions per Furnace [1] (tons/yr)**	**Total Annual Emissions [2] (tons/yr)**
$PM/PM_{10}/PM_{2.5}$	2.5	DEQ AQ-EF05	0.03	0.07
CO	84	DEQ AQ-EF05	1.16	2.33
NOx	100	DEQ AQ-EF05	1.39	2.77
SO_2	1.7	DEQ AQ-EF05	0.02	0.05
VOC	5.5	DEQ AQ-EF05	0.08	0.15
GHG (CO_2e)	120,142	40 CFR Part 98	1,666	3,332

Notes:

1. Annual Emissions per Furnace (tons/yr) = maximum hourly natural gas usage per furnace (scf/hr) x emission factor (lb/MMscf) x 8,760 (hours/yr) / 1,000,000 (scf/MMscf) / 2,000 (lb/ton)

   Maximum hourly natural gas usage per furnace (scf/hr) = 3,166
2. Represents the total annual emissions from two natural gas fired perlite expansionfurnaces.

Perlite Furnace Processing Emissions				
Pollutant	**Emission Factor [3] (lb/ton perlite expanded)**	**Emission Factor Reference**	**Annual Emissions per Furnace [4] (tons/yr)**	**Total Annual Emissions [2] (tons/yr)**
$PM/PM_{10}/PM_{2.5}$	0.29	AP-42 Chapter 11.30	1.69	3.39
GHG (CO_2e)	850	AP-42 Chapter 11.30	4,963	9,926

3. Emission factors from AP-42 Chapter 11.30, Table 11.30-1: Emission Factors for Perlite Processing. Representative of an expansion furnace with cyclone and baghouse, as applicable. Assumes PM_{10} is equal to PM and $PM_{2.5}$.
4. Annual Emissions per Furnace (tons/yr) = maximum hourly perlite processing per furnace (lb expanded perlite/hr) / 2,000 (lb/ton) x 8,760 (hrs/yr) x emission factor (lb/ton expanded perlite) / 2,000 (lb/ton)

   Maximum hourly perlite processing per furnace (lb/hr) = 2,666

Soil Mixing Emission Estimates (SM1) [1]			
Pollutant	**Emission Factor [2] (gr/dscf)**	**Baghouse Flow Rate (dscfm)**	**Annual Emissions [3] (tons/yr)**
$PM/PM_{10}/PM_{2.5}$	0.008	6,700	2.01

Notes:

1. Represents emissions from SM1 (the baghouse controlling emissions from soil mixing operations in Building B). Emissions from dust collectors controlling emissions from soil mixing operations in Building A (DC 1-3) are considered negligible since they exhaust inside the building.
2. San Diego Air Pollution Control District Mineral Products Industry Aggregate Transfer Points guidance dated June 7, 1993. Assumes a filter emission rate of 0.008 gr/dscf for central and insertable filters on aggregate transfer points in the mineral product industry in absence of manufacturer provided data.
3. Annual emissions estimate (tons/yr) = emission factor (gr/dscf) x baghouse flow rate (dscf/min) / 7,000 (gr/lb) x 60 (min/hr) x 8,760 (hrs/yr) / 2,000 (lb/ton)

Hopper Loading Emission Estimates (Fugitive) [4]			
Pollutant	**Emission Factor [5] (lb/ton)**	**Transfer Activity Annual Emissions [6] (tons/yr)**	**Total Annual Emissions [7] (tons/yr)**
PM	0.00015	0.04	0.09
PM_{10}	0.00007	0.02	0.04
$PM_{2.5}$	0.00001	0.00	0.01

Notes:

4. Represents fugitive emissions from loading raw materials into outdoor hoppers for dosing onto the conveyor belt, based on San Diego Air Pollution Control District and AP-42 Chapter 13.2.4 for emissions from Aggregate Transfer Points.
5. Emission Factor (lb/ton) = [particle size multiplier x 0.0032 x (mean wind speed/5)$^{1.3}$ / (material moisture content/2)$^{1.4}$]

PM particle size multiplier =	0.74	
PM_{10} particle size multiplier =	0.35	
$PM_{2.5}$ particle size multiplier =	0.053	
Mean wind speed (mph) =	7	
Minimum material moisture content (%) =	20	(conservative estimate)

6. Transfer activity annual emission estimate (tons/yr) = emission factor (lb/ton) x total annual material throughput (tons/yr) / 2,000 (lb/ton)

Total annual material throughput (tons/yr) = 600,000

7. Total annual emissions represent emissions from two transfer point activities; (1) loading of material into hoppers and (2) dispensing of material from hoppers onto the conveyor belt.

Evaporator Natural Gas Combustion Emissions			
Pollutant	**Emission Factor (lb/MMscf)**	**Emission Factor Reference**	**Annual Emissions [1] (tons/yr)**
$PM/PM_{10}/PM_{2.5}$	2.5	DEQ AQ-EF05	0.004
CO	84	DEQ AQ-EF05	0.15
NOx	100	DEQ AQ-EF05	0.17
SO2	1.7	DEQ AQ-EF05	0.003
VOC	5.5	DEQ AQ-EF05	0.01
GHG (CO_2e)	120,142	40 CFR Part 98	207.86

Notes:

1. Annual Emissions (tons/yr) = maximum hourly natural gas usage (scf/hr) x emission factor (lb/MMscf) x 8,760 (hours/yr) / 1,000,000 (scf/MMscf) / 2,000 (lb/ton)

   Maximum hourly natural gas usage (scf/hr) = 395
2. Based on a review of safety data sheets, emissions of regulated criteria pollutants from evaporating rinse water are negligible. In addition, the evaporator natural gas burner meets the definition of a categorically insignificant activity and emissions are excluded from the PSEL.

Natural Gas Combustion HAP Emissions (Furnaces and Evaporator)			
Pollutant	**Emission Factor (lb/MMscf)**	**Emission Factor Reference**	**Total Annual Emissions [3] (tons/yr)**
Acetaldehyde	0.0043	CAO NG Ext. Comb. (a)	1.27E-04
Acrolein	0.0027	CAO NG Ext. Comb. (a)	7.96E-05
Benzene	0.008	CAO NG Ext. Comb. (a)	2.36E-04
Ethyl benzene	0.0095	CAO NG Ext. Comb. (a)	2.80E-04
Formaldehyde	0.017	CAO NG Ext. Comb. (a)	5.01E-04
Hexane	0.0063	CAO NG Ext. Comb. (a)	1.86E-04
Toluene	0.0366	CAO NG Ext. Comb. (a)	1.08E-03
Xylenes (isomers and mixture)	0.0272	CAO NG Ext. Comb. (a)	8.01E-04
Polycyclic aromatic hydrocarbons (PAHs)	0.0001	CAO NG Ext. Comb. (a)	2.95E-06
Naphthalene	0.0003	CAO NG Ext. Comb. (a)	8.84E-06
Arsenic Compounds	0.0002	CAO NG Ext. Comb. (a)	5.89E-06
Beryllium Compounds	0.000012	CAO NG Ext. Comb. (a)	3.54E-07
Cadmium Compounds	0.0011	CAO NG Ext. Comb. (a)	3.24E-05
Cobalt Compounds	0.000084	CAO NG Ext. Comb. (a)	2.47E-06
Lead Compounds	0.0005	CAO NG Ext. Comb. (a)	1.47E-05
Manganese Compounds	0.00038	CAO NG Ext. Comb. (a)	1.12E-05
Mercury Compounds	0.00026	CAO NG Ext. Comb. (a)	7.66E-06
Nickel Compounds	0.0021	CAO NG Ext. Comb. (a)	6.19E-05
Selenium Compounds	0.000024	CAO NG Ext. Comb. (a)	7.07E-07
Total HAP			**3.44E-03**

Notes:

3. Represents the total annual emissions from two natural gas fired perlite expansion furnaces and one natural gas fired evaporator. Total annual emissions (tons/yr) = total maximum hourly natural gas usage (scf/hr) x emission factor (lb/MMscf) x 8,760 (hours/yr) / 1,000,000 (scf/MMscf) / 2,000 (lb/ton)

   Total maximum hourly natural gas usage (scf/hr) = 6,727
4. Based on a review of safety data sheets, emissions of HAPs from evaporating rinse water are negligible.