

*Alabama Department of Environmental Management  
2024 Air Emissions Report*

210-0005 Sanders Lead Co

*Plant-Wide Total Emissions*

<b>Pollutant</b>	<b>Emissions (tons)</b>
106990 1,3-Butadiene	0.96
542756 1,3-Dichloropropene	0.03
75070 Acetaldehyde	0.49
98862 Acetophenone	0.10
107028 Acrolein	0.21
107131 Acrylonitrile	0.01
SBC Antimony Compounds	0.04
ASC Arsenic Compounds (inorganic Including Arsine)	0.00
BZ Benzene (includes Benzene From Gasoline)	0.44
BEC Beryllium Compounds	0.00
92524 Biphenyl	0.53
117817 Bis(2-Ethylhexyl)phthalate [DEHP]	1.12
CDC Cadmium Compounds	0.00
75150 Carbon Disulfide	12.57
CO Carbon Monoxide	5,701.95
CL Chlorine	0.04
108907 Chlorobenzene	0.12
67663 Chloroform	0.01
CRC Chromium Compounds	0.00
98828 Cumene (aka Isopropylbenzene)	0.01
132649 Dibenzofurans	0.42
84742 Dibutylphthalate	0.01
100414 Ethyl Benzene (aka Phenylethane)	0.31
50000 Formaldehyde	0.03
110543 Hexane	0.31
HCL Hydrochloric Acid (aka Hydrogen Chloride)	21.90
PB Lead (not reported in other categories)	0.36
MNC Manganese Compounds	0.00
HGC Mercury Compounds	0.00
74839 Methyl Bromide (Bromomethane)	0.09
74873 Methyl Chloride (Chloromethane)	0.07
74884 Methyl Iodide (Iodomethane)	0.07
75092 Methylene Chloride (Dichloromethane)	0.07
91203 Naphthalene	0.19
NIC Nickel Compounds	0.01
NOX Nitrogen Oxides	126.90
95476 o-Xylenes (aka 1,2-Dimethylbenzene)	0.13

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PM-CON	Particulate Matter - Condensable	11.57
PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable	35.34*
PM2.5	Particulate Matter <2.5 microns - Filterable	31.94*
PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable	35.37
108952	Phenol	0.31
SEC	Selenium Compounds	0.01
100425	Styrene (aka Ethenylbenzene)	1.92
SO2	Sulfur Dioxide	663.70
108883	Toluene (aka Methylbenzene)	1.42
VOC	Volatile Organic Compounds (not reported in other categories)	206.23
1330207	Xylenes (Isomers And Mixtures)	0.42

\* PT is inclusive of PM 10 and PM2.5; therefore, these values are not counted for the purposes of calculating plantwide emissions.

**Plantwide Total: 6,790.44**

**AEERS Total: 6,857.72**

**A Detailed Summary of Reported Emissions follows:**

**Emission Source: Stack 001 - Blast Furnaces1,2 and Reverb Baghouse**

**No pollutants reported.**

**Emission Source: Stack 004 - Sanitary System**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000590	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000136	BEC	Beryllium Compounds
0.000200	CDC	Cadmium Compounds
0.000360	CRC	Chromium Compounds
0.000220	HGC	Mercury Compounds
0.000520	MNC	Manganese Compounds
0.001240	NIC	Nickel Compounds
0.039000	PB	Lead (not reported in other categories)
0.060000	PM-CON	Particulate Matter - Condensable
0.280000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
0.250000	PM2.5	Particulate Matter <2.5 microns - Filterable
0.280000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.007800	SBC	Antimony Compounds
0.000780	SEC	Selenium Compounds
3.850000	VOC	Volatile Organic Compounds (not reported in other categories)

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**Emission Source: Stack 004a - Sanitary System Baghouse 2**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000170	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000038	BEC	Beryllium Compounds
0.000056	CDC	Cadmium Compounds
0.000100	CRC	Chromium Compounds
0.000061	HGC	Mercury Compounds
0.000150	MNC	Manganese Compounds
0.000350	NIC	Nickel Compounds
0.011000	PB	Lead (not reported in other categories)
0.080000	PM-CON	Particulate Matter - Condensable
0.420000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
0.380000	PM2.5	Particulate Matter <2.5 microns - Filterable
0.420000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.002200	SBC	Antimony Compounds
0.000220	SEC	Selenium Compounds
3.850000	VOC	Volatile Organic Compounds (not reported in other categories)

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**Emission Source: Stack 005 - Blast Furnaces 3,4 and Alloying Pots Baghouse**

**No pollutants reported.**

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**Emission Source: Stack 010 - Slag Treatment Facility**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000180	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000101	BEC	Beryllium Compounds
0.000111	CDC	Cadmium Compounds
0.000270	CRC	Chromium Compounds
0.000092	HGC	Mercury Compounds
0.000630	MNC	Manganese Compounds
0.002300	NIC	Nickel Compounds
0.007900	PB	Lead (not reported in other categories)
0.120000	PM-CON	Particulate Matter - Condensable
0.610000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
0.550000	PM2.5	Particulate Matter <2.5 microns - Filterable
0.610000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable

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**Emission Source: Stack 011 - Canopy Hoods (stack 11)**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000800	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000180	BEC	Beryllium Compounds
0.000270	CDC	Cadmium Compounds
0.000490	CRC	Chromium Compounds
0.000290	HGC	Mercury Compounds
0.000700	MNC	Manganese Compounds
0.001700	NIC	Nickel Compounds
0.053000	PB	Lead (not reported in other categories)
1.180000	PM-CON	Particulate Matter - Condensable
6.080000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
5.510000	PM2.5	Particulate Matter <2.5 microns - Filterable
6.080000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.011000	SBC	Antimony Compounds
0.001100	SEC	Selenium Compounds

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**Emission Source: Stack 012 - Battery Breaker and Shredder Building Vent (stack 12)**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000650	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000150	BEC	Beryllium Compounds
0.000220	CDC	Cadmium Compounds
0.000400	CRC	Chromium Compounds
0.000240	HGC	Mercury Compounds
0.000570	MNC	Manganese Compounds
0.001400	NIC	Nickel Compounds
0.043000	PB	Lead (not reported in other categories)
0.330000	PM-CON	Particulate Matter - Condensable
1.670000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
1.510000	PM2.5	Particulate Matter <2.5 microns - Filterable
1.670000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.009000	SBC	Antimony Compounds
0.000900	SEC	Selenium Compounds

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**Emission Source: Stack 013 - Raw Material Storage Building (stack 13)**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000370	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000085	BEC	Beryllium Compounds
0.000130	CDC	Cadmium Compounds
0.000230	CRC	Chromium Compounds
0.000140	HGC	Mercury Compounds
0.000330	MNC	Manganese Compounds
0.000780	NIC	Nickel Compounds
0.025000	PB	Lead (not reported in other categories)
0.250000	PM-CON	Particulate Matter - Condensable
1.290000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
1.170000	PM2.5	Particulate Matter <2.5 microns - Filterable
1.290000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.004900	SBC	Antimony Compounds
0.000490	SEC	Selenium Compounds

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**Emission Source: Stack 014 - Refining Kettles (stack 14)**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.000660	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000150	BEC	Beryllium Compounds
0.000230	CDC	Cadmium Compounds
7.950000	CO	Carbon Monoxide
0.000400	CRC	Chromium Compounds
0.000250	HGC	Mercury Compounds
0.000580	MNC	Manganese Compounds
0.001400	NIC	Nickel Compounds
84.800000	NOX	Nitrogen Oxides
0.044000	PB	Lead (not reported in other categories)
0.350000	PM-CON	Particulate Matter - Condensable
1.800000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
1.630000	PM2.5	Particulate Matter <2.5 microns - Filterable
1.800000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.008800	SBC	Antimony Compounds
0.000880	SEC	Selenium Compounds
0.530000	VOC	Volatile Organic Compounds (not reported in other categories)

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**Emission Source: Stack 018 - Soda Ash Silo**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.100000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
0.100000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable

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**Emission Source: Stack 034 - Ammonia Injection Scrubber (Stack 15)**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.310000	100414	Ethyl Benzene (aka Phenylethane)
1.920000	100425	Styrene (aka Ethenylbenzene)
0.960000	106990	1,3-Butadiene
0.210000	107028	Acrolein
0.010800	107131	Acrylonitrile
1.420000	108883	Toluene (aka Methylbenzene)
0.119000	108907	Chlorobenzene
0.310000	108952	Phenol
0.310000	110543	Hexane
1.120000	117817	Bis(2-Ethylhexyl)phthalate [DEHP]
0.420000	132649	Dibenzofurans
0.420000	1330207	Xylenes (Isomers And Mixtures)
0.026000	50000	Formaldehyde
0.030000	542756	1,3-Dichloropropene
0.012900	67663	Chloroform
0.088000	74839	Methyl Bromide (Bromomethane)
0.068000	74873	Methyl Chloride (Chloromethane)
0.068000	74884	Methyl Iodide (Iodomethane)
0.490000	75070	Acetaldehyde
0.068000	75092	Methylene Chloride (Dichloromethane)
12.570000	75150	Carbon Disulfide
0.005200	84742	Dibutylphthalate
0.190000	91203	Naphthalene
0.530000	92524	Biphenyl
0.129000	95476	o-Xylenes (aka 1,2-Dimethylbenzene)
0.014600	98828	Cumene (aka Isopropylbenzene)
0.099000	98862	Acetophenone
0.001120	ASC	Arsenic Compounds (inorganic Including Arsine)
0.000093	BEC	Beryllium Compounds
0.440000	BZ	Benzene (includes Benzene From Gasoline)
0.000670	CDC	Cadmium Compounds
0.038000	CL	Chlorine
5,694.000000	CO	Carbon Monoxide
0.000070	CRC	Chromium Compounds
21.900000	HCL	Hydrochloric Acid (aka Hydrogen Chloride)
0.000123	MNC	Manganese Compounds
0.000170	NIC	Nickel Compounds
42.100000	NOX	Nitrogen Oxides
0.123000	PB	Lead (not reported in other categories)
9.200000	PM-CON	Particulate Matter - Condensable
23.090000	PM10	Particulate Matter <10 microns (includes PM2.5) - Filterable
20.940000	PM2.5	Particulate Matter <2.5 microns - Filterable
23.090000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable
0.000280	SBC	Antimony Compounds
0.000650	SEC	Selenium Compounds
663.700000	SO2	Sulfur Dioxide
198.000000	VOC	Volatile Organic Compounds (not reported in other categories)

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**Emission Source: Stack 099 - Other Misc Sources**

<u>Tons Emitted</u>	<u>Pollutant Code</u>	<u>Pollutant Description</u>
0.009200	PB	Lead (not reported in other categories)
0.026000	PT	Particulate Matter Total (includes PM10 and PM2.5) - Filterable

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**Report signed by:**

Name: Chris Rutherford

Title: Manager of Environmental Services

Organization: Sanders Lead Company, Inc.

Date: 6/17/2025 1:31:25 PM

## 2024 AEERS Reporting Year

### Warning Report - 210-0005 Sanders Lead Co.

#### Stack 011

Particulate Matter <10 microns (includes PM2.5) - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Particulate Matter <2.5 microns - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Particulate Matter - Condensable is 31% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Particulate Matter Total (includes PM10 and PM2.5) - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

#### Stack 012

Particulate Matter <10 microns (includes PM2.5) - Filterable is 48% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

Particulate Matter <2.5 microns - Filterable is 48% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

Particulate Matter Total (includes PM10 and PM2.5) - Filterable is 48% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

#### Stack 013

Particulate Matter <10 microns (includes PM2.5) - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Particulate Matter <2.5 microns - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Particulate Matter Total (includes PM10 and PM2.5) - Filterable is 30% less than previous year

- In 2024, a decrease in PM emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

#### Stack 014

Particulate Matter <10 microns (includes PM2.5) - Filterable is 37% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

Particulate Matter <2.5 microns - Filterable is 37% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

Particulate Matter Total (includes PM10 and PM2.5) - Filterable is 37% greater than previous year

- In 2024, an increase in PM emissions was observed during 2024 stack testing, resulting in an increase in emissions.

[Stack 034](#)

Styrene (aka Ethenylbenzene) is 29% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Toluene (aka Methylbenzene) is 29% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Bis(2-Ethylhexyl)phthalate [DEHP] is 29% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Methyl Chloride (Chloromethane) is 99% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Carbon Disulfide is 29% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

Volatile Organic Compounds (not reported in other categories) is 29% less than previous year

- In 2024, a decrease in THC emissions was observed during 2024 stack testing, resulting in a decrease in emissions.

**TABLE A - 2024 ANNUAL FEE REPORT  
EMISSIONS SUMMARY [TONS]**

Stack ID	Description	PM	PM10	PM2.5	PM-CON	SO2	NOX	CO	Pb	Other Metals	VOC	HCl	TOTAL
Stack 4	Sanitary Baghouse	0.28 <sup>9</sup>	0.28 <sup>18</sup>	0.25 <sup>18</sup>	0.06 <sup>19</sup>	---	---	---	0.039 <sup>1</sup>	0.012 <sup>30</sup>	3.85 <sup>26</sup>	---	
Stack 4a	Sanitary Baghouse	0.42 <sup>10</sup>	0.42 <sup>18</sup>	0.38 <sup>18</sup>	0.08 <sup>19</sup>	---	---	---	0.011 <sup>2</sup>	0.0033 <sup>30</sup>	3.85 <sup>27</sup>	---	
Stack 10	Slag Treatment Building	0.61 <sup>11</sup>	0.61 <sup>20</sup>	0.55 <sup>19</sup>	0.12 <sup>19</sup>	---	---	---	0.0079 <sup>3</sup>	0.0037 <sup>30</sup>	---	---	
Stack 11	Canopy Hoods/General Ventilation for Furnace and Refining Building	6.08 <sup>12</sup>	6.08 <sup>20</sup>	5.51 <sup>19</sup>	1.18 <sup>19</sup>	---	---	---	0.053 <sup>4</sup>	0.016 <sup>30</sup>	---	---	
Stack 12	Battery Breaker and Shedder Building General Ventilation	1.67 <sup>13</sup>	1.67 <sup>20</sup>	1.51 <sup>19</sup>	0.33 <sup>19</sup>	---	---	---	0.043 <sup>5</sup>	0.013 <sup>30</sup>	---	---	
Stack 13	General Ventilation – Raw Material Building	1.29 <sup>14</sup>	1.29 <sup>20</sup>	1.17 <sup>19</sup>	0.25 <sup>19</sup>	---	---	---	0.025 <sup>6</sup>	0.0075 <sup>30</sup>	---	---	
Stack 14	Refining Kettles	1.80 <sup>15</sup>	1.80 <sup>20</sup>	1.63 <sup>19</sup>	0.35 <sup>19</sup>	0.057 <sup>23</sup>	103.3 <sup>23</sup>	7.95 <sup>23</sup>	0.044 <sup>7</sup>	0.013 <sup>30</sup>	0.53 <sup>23</sup>	---	
Stack 15	Ammonia Scrubber	23.09 <sup>16</sup>	23.09 <sup>19</sup>	20.94 <sup>21</sup>	9.20 <sup>31</sup>	663.7 <sup>22</sup>	42.1 <sup>24</sup>	5,694.0 <sup>25</sup>	0.123 <sup>8</sup>	0.0032 <sup>30</sup>	198.0 <sup>28</sup>	21.9 <sup>29</sup>	
EP018	Soda Ash Silo	0.10	0.10	ND	ND	---	---	---	---	---	---	---	
NO28	Fugitive	0.026 <sup>17</sup>	ND	ND	ND	---	---	---	0.0092	---	---	---	
	<b>TOTAL</b>	<b>35.4</b>	<b>35.3</b>	<b>31.9</b>	<b>11.6</b>	<b>663.8</b>	<b>145.4</b>	<b>5,702.0</b>	<b>0.35</b>	<b>0.07</b>	<b>206.2</b>	<b>21.9</b>	<b>6,854</b>

<sup>1)</sup> Based on 0.0089 lb/hr (from 10/2024 Test)

<sup>2)</sup> Based on 0.0025 lb/hr (from 2/2024 Test)

<sup>3)</sup> Based on 0.0018 lb/hr (from 10/2024 Test)

<sup>4)</sup> Based on 0.012 lb/hr (from 10/2024 Test)

<sup>5)</sup> Based on 0.0098 lb/hr (from 2/2024 Test)

<sup>6)</sup> Based on 0.0056 lb/hr (from 2/2024 Test)

<sup>7)</sup> Based on 0.010 lb/hr (from 2/2024 Test)

<sup>8)</sup> Based on 0.028 lb/hr (from 10/2024 Test)

<sup>9)</sup> Based on 0.072 lb/hr (from 2/2024 Test) (PM less Pb)

<sup>10)</sup> Based on 0.099 lb/hr (from 2/2024 Test) (PM less Pb)

<sup>11)</sup> Based on 0.14 lb/hr (from 10/2024 Test) (PM less Pb)

<sup>12)</sup> Based on 1.4 lb/hr (from 10/2024 Test) (PM less Pb)

<sup>13)</sup> Based on 0.39 lb/hr (from 2/2024 Test) (PM less Pb)

<sup>14)</sup> Based on 0.30 lb/hr (from 2/2024 Test) (PM less Pb)

<sup>15)</sup> Based on 0.42 lb/hr (from 2/2024 Test) (PM less Pb)

<sup>16)</sup> Based on 7.4 lb/hr (from 10/2024 Test) (PM less Pb)

<sup>17)</sup> Estimate (PM less metal HAPs, measured as elemental metal)

<sup>18)</sup> Assumed PM<sub>10</sub> = 100% of PM & PM<sub>2.5</sub> = 89.0% of PM per EPA PM2.5 Calculator for Lead Production Tapping Hood Operations. PM<sub>10</sub> and PM<sub>2.5</sub> were not figured into the total emissions to avoid double counting. HAP metals are excluded.

<sup>19)</sup> Assumed PM<sub>10</sub> = 100% of PM & PM<sub>2.5</sub> = 90.7% of PM per EPA PM2.5 Calculator for Blast Furnace Operations. PM<sub>10</sub> and PM<sub>2.5</sub> were not figured into the total emissions to avoid double counting. HAP metals are excluded. PMCON = Total PM - PM-FIL

<sup>20)</sup> Estimated that PM = PM10

<sup>21)</sup> Assumed PM<sub>2.5</sub> = 71% per AP-42 Background Report AP-42 Section 12-11 Secondary Lead Processing Table 2.3-4

<sup>22)</sup> Based on 151.53 lb/hr (from 2024 Avg SO2 CEMS data)

<sup>23)</sup> AP-42 Natural Gas Emission Factor Estimates [refer to Basis for Emission Estimates]

<sup>24)</sup> Based on 9.6 lb/hr per Permit Allowable

<sup>25)</sup> Based on 1,300 lb/hr per Permit Allowable

<sup>26)</sup> Based on 0.88 lb/hr per Permit Allowable (THC and not VOC)

<sup>27)</sup> Based on 0.88 lb/hr per Permit Allowable

<sup>28)</sup> Based on 45.2 lb/hr per 10/2024 Stack Test (THC, as Propane)

<sup>29)</sup> Based on 5.0 lb/hr per Permit Allowable

<sup>30)</sup> Refer to Tables C through F

<sup>31)</sup> Based on 2.1 lb/hr PM-CON per 10/2024 Test

**TABLE B**

**SANDERS LEAD COMPANY  
2024 Annual Organic HAP Emissions**

**Stack #15 THC** 198.0 Tons/yr  
45.2 lb/hr, measured on 10/23/2024

<b>Hazardous Air Pollutant</b>		<b>Emission Factor</b>	<b>HAP Stack #15 Tons/Yr</b>	
PCDD/PCDF TEQ	3	1.48E-09	2.93E-07	3
Diethylhexylphthalate	1	0.005640	1.12	1
di-n-butylphthalate	1	0.000026	0.0052	1
Acetaldehyde	1	0.002450	0.49	1
Acetophenone	1	0.000501	0.099	1
Acrolein	1	0.001060	0.210	1
Acrylonitrile	1	0.000055	0.0108	1
Benzene	1	0.002212	0.44	2
Biphenyl	1	0.002690	0.53	1
Bromomethane	1	0.000446	0.088	1
1,3-Butadiene	1	0.004867	0.96	2
Carbon disulfide	1	0.063500	12.57	1
Chlorine	1	0.000193	0.038	1
Chlorobenzene	1	0.000603	0.119	1
Chloroethane	1	0.005830	1.15	1
Chloroform	1	0.000065	0.0129	1
Chloromethane	1	0.021800	4.32	1
Cumene	1	0.000074	0.0146	1
Dibenzofuran	1	0.002130	0.42	1
trans-1,3-Dichloropropene	1	0.000153	0.030	1
Ethylbenzene	1	0.001580	0.31	1
Formaldehyde	1	0.000132	0.026	1
n-Hexane	1	0.001560	0.31	1
Iodomethane	1	0.000342	0.068	1
Methylene chloride	1	0.000342	0.068	1
2-Methylphenol	1	0.000230	0.046	1
Naphthalene	1	0.000973	0.19	2
Phenol	1	0.001560	0.31	1
Styrene	1	0.009710	1.92	1
Toluene	1	0.007160	1.42	1
m-/p-Xylene	1	0.002110	0.42	1
o-Xylene	1	0.000651	0.129	1

<sup>1</sup> Designates Organic HAP to THC Ratio based on stack testing during MACT Rule development in 1997 from another facility

<sup>2</sup> Designates Organic HAP to THC Ratio based on 2010 ICR testing

<sup>3</sup> Designates Organic HAP to THC Ratio based on stack testing in 10/2019 and 10/2020 for THC and D/F







**TABLE F**

**SANDERS LEAD COMPANY  
2024 Annual Metal HAP Emissions from Stacks 11, 12, 13, 14**

<b>Stack No. 11</b>	<b>0.053</b>	Tons/yr
	<b>0.012</b>	lb/hr, measured from 10/24/2024 Stack Test
<b>Stack No. 12</b>	<b>0.043</b>	Tons/yr
	<b>0.0098</b>	lb/hr, measured from 2/22/2024 Stack Test
<b>Stack No. 13</b>	<b>0.025</b>	Tons/yr
	<b>0.0056</b>	lb/hr, measured from 2/22/2024 Stack Test
<b>Stack No. 14</b>	<b>0.044</b>	Tons/yr
	<b>0.010</b>	lb/hr, measured from 2/21/2024 Stack Test

<b>Metal Hazardous Air Pollutant</b>		<b>Sanitary Stack Emission Factor</b>	<b>Metal HAP Stack 11 Tons/Yr</b>	<b>Metal HAP Stack 12 Tons/Yr</b>	<b>Metal HAP Stack 13 Tons/Yr</b>	<b>Metal HAP Stack 14 Tons/Yr</b>
Antimony	<sup>1</sup>	0.20	0.011	0.009	0.0049	0.0088
Arsenic	<sup>2</sup>	0.015	0.00080	0.00065	0.00037	0.00066
Beryllium	<sup>2</sup>	0.0035	0.00018	0.00015	0.000085	0.00015
Cadmium	<sup>2</sup>	0.0052	0.00027	0.00022	0.00013	0.00023
Chromium	<sup>2</sup>	0.009	0.00049	0.00040	0.00023	0.00040
Lead		1.00	0.053	0.043	0.025	0.044
Manganese	<sup>2</sup>	0.013	0.00070	0.00057	0.00033	0.00058
Mercury	<sup>2</sup>	0.0056	0.00029	0.00024	0.00014	0.00025
Nickel	<sup>2</sup>	0.032	0.0017	0.0014	0.00078	0.0014
Selenium	<sup>1</sup>	0.020	0.0011	0.0009	0.00049	0.00088
			0.069	0.056	0.032	0.0571

<sup>1</sup> Designates Metal Constituent to Lead ratio based on stack testing during MACT Rule development in 1997 from another facility

<sup>2</sup> Designates Metal Constituent to Lead ratio based on 2010 ICR testing on Stack 4a

<b>Stack No. 11</b>	<b>Less Lead</b>	0.016
<b>Stack No. 12</b>	<b>Less Lead</b>	0.013
<b>Stack No. 13</b>	<b>Less Lead</b>	0.0075
<b>Stack No. 14</b>	<b>Less Lead</b>	0.013

**SANDERS LEAD COMPANY**  
**2024 Annual Fugitive Metal Emissions**  
(Tons/Yr from Annual Emission Fee Report)

**Lead Emissions**            **0.0092**            Tons/yr, from 2025 Revised Fugitive Calcs  
[refer to Attachment A]

<b>Metal Hazardous Air Pollutant</b>	<b>Weighted Emission Factor</b>	<b>Metal Tons/Yr</b>	<b>Metal Pounds/Yr</b>
Lead	1.00	0.0092	18.4
Antimony	0.0039	0.000035	0.1
Arsenic	0.0156	0.00014	0.3
Cadmium	0.0053	0.000049	0.1
		0.0094	18.9

**BASIS FOR EMISSION ESTIMATES  
SANDERS LEAD COMPANY  
CALENDAR YEAR 2024**

**Fugitive Lead Emissions**

Please refer to Attachment A for a summary of calculations.

Source	Description	lbs/hr	tons/yr
Roadway 2	Material to Slag Treatment building	0.00031	0.0013
Roadway 4	Delivery of raw coke, limestone and scrap iron	0.00064	0.0028
Roadway 5	Delivery of batteries to Breaker	0.00115	0.0050
		<b>Total</b>	<b>0.0092</b>

**Fugitive PM Emissions**

(Assume average Lead concentration 26%)

PM = 0.0092 divided by 0.26 = 0.35 Tons/Yr or **0.026 Tons/Yr (PM-Lead)**

**NOx**

**STACK 14 – Refining Kettles**

NOx Emission Factor Stack 14 Fluxing

0.1522 Lb NO<sub>2</sub>/Lb NaNO<sub>3</sub>

**2024 NaNO<sub>3</sub> Usage = 616.5 Tons (1,232,955 Lbs)**

0.1522 Lb NO<sub>2</sub>/Lb NaNO<sub>3</sub> X 1,232,955 Lb NaNO<sub>3</sub> X 1 T/2000 Lb = **93.8 T NOx/Yr**

**STACK 14 – Refining Kettles**

NOx Emission Factor

Based on 21,600 CF/Hr Natural Gas Consumption from Kettle Burners and

AP-42 Emission Factor

21,600 Ft<sup>3</sup>/Hr X 100 Lb/10<sup>6</sup> Ft<sup>3</sup> = 2.16 Lb/Hr @8760 Hr/Yr = **9.46 T/yr**

Total Stack 14 NOx = 93.8 + 9.46 = **103.3 T/Yr**

**STACK 15 –Ammonia Scrubber (combined Stack 1 & Stack 5)**

3/31/99 Test Data (from Stack 1)

NOx – 5.10 Lb/Hr @ 8760 Hr/Yr = 22.3 T/Yr

3/31/99 Test Data (from Stack 5)

NOx – 4.51 Lb/Hr @ 8760 Hr/Yr = 19.8 T/Yr

Total Stack 15 NOx = 22.3 + 19.8 = **42.1 T/Yr**

**Plant Total NOx = 93.8 + 9.46 + 42.1 = 145.4 Tons/year**

### **SO<sub>x</sub>**

#### **STACK 14 – Refining Kettles**

SO<sub>2</sub> Emission Factor

Based on 21,600 CF/Hr Natural Gas Consumption from Kettle Burners and AP-42 Emission Factor

$$21,600 \text{ Ft}^3/\text{Hr} \times 0.6 \text{ Lb}/10^6 \text{ Ft}^3 = 0.0130 \text{ Lb}/\text{Hr} @ 8760 \text{ Hr}/\text{Yr} = \mathbf{0.057 \text{ T/yr}}$$

### **CO**

#### **STACK 14 – Refining Kettles**

CO Emission Factor

Based on 21,600 CF/Hr Natural Gas Consumption from Kettle Burners and AP-42 Emission Factor

$$21,600 \text{ Ft}^3/\text{Hr} \times 84 \text{ Lb}/10^6 \text{ Ft}^3 = 1.81 \text{ Lb}/\text{Hr} @ 8760 \text{ Hr}/\text{Yr} = \mathbf{7.95 \text{ T/yr}}$$

### **VOC**

#### **STACK 14 – Refining Kettles**

VOC Emission Factor

Based on 21,600 CF/Hr Natural Gas Consumption from Kettle Burners and AP-42 Emission Factor

$$21,600 \text{ Ft}^3/\text{Hr} \times 5.5 \text{ Lb}/10^6 \text{ Ft}^3 = 0.12 \text{ Lb}/\text{Hr} @ 8760 \text{ Hr}/\text{Yr} = \mathbf{0.53 \text{ T/yr}}$$

**NO<sub>x</sub> OZONE SEASON EMISSION ESTIMATES  
MAY 1 – SEPTEMBER 30, 2024**

**NO<sub>x</sub>**

**STACK 14 – Refining Kettles**

NO<sub>x</sub> Emission Factor Stack 14 Fluxing

0.1522 Lb NO<sub>2</sub>/Lb NaNO<sub>3</sub>

2024 NaNO<sub>3</sub> Usage = 263.6 Tons (527,130 Lbs)

0.1522 Lb NO<sub>2</sub>/Lb NaNO<sub>3</sub> X 422,650 Lb NaNO<sub>3</sub> X 1 T/2000 Lb = **40.1 T NO<sub>x</sub>/Yr**

**STACK 14 – Refining Kettles**

Based on 21,600 CF/Hr Natural Gas Consumption from Kettle Burners and  
AP-42 Emission Factor

21,600 Ft<sup>3</sup>/Hr X 100 Lb/10<sup>6</sup> Ft<sup>3</sup> = 2.16 Lb/Hr @ 3672 Hr/Yr = **4.0 T/yr**

**STACK 15 – Ammonia Scrubber**

3/31/99 Test Data

NO<sub>x</sub> – 9.6 Lb/Hr @ 3,672 Hr/Season = **17.6 T/Season interfered**

**Plant Total NO<sub>x</sub> = 40.1 + 4.0 + 17.6 = 61.7 T/Season**

**SANDERS LEAD**  
**Basis for Emission Estimates - Calender Year 2024**

STACK 4 <i>Sanitary Baghouse</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		2/20/2024		Total	(PM-Pb)
	PM	0.072	8,760	0.32	0.28
	Pb	0.0089	8,760	0.039	

STACK 4a <i>Sanitary Baghouse</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		2/20/2024		Total	(PM-Pb)
	PM	0.099	8,760	0.43	0.42
	Pb	0.0025	8,760	0.011	

STACK 10 <i>Slag Treatment Building</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		10/24/2024		Total	(PM-Pb)
	PM	0.14	8,760	0.61	0.61
	Pb	0.0018	8,760	0.0079	

STACK 11 <i>Canopy Hoods/General Ventilation for Furnace and Refining Building</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		10/24/2024		Total	(PM-Pb)
	PM	1.40	8,760	6.13	6.07
	Pb	0.012	8,760	0.053	

STACK 12 <i>Battery Breaker and Shredder Building General Ventilation</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		2/22/2024		Total	(PM-Pb)
	PM	0.39	8,760	1.71	1.67
	Pb	0.0098	8,760	0.043	

STACK 13 <i>General Ventilation - Raw Material Building</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		2/22/2024		Total	(PM-Pb)
	PM	0.30	8,760	1.31	1.28
	Pb	0.0056	8,760	0.025	

STACK 14 <i>Refining Kettles</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		2/21/2024		Total	(PM-Pb)
	PM	0.42	8,760	1.84	1.80
	Pb	0.010	8,760	0.044	

STACK 15 <i>Ammonia Scrubber</i>	Pollutant	Test Data [lb/hr]	Hours	Emissions (T/Yr)	
		10/23/2024		Total	(PM-Pb)
	PM	7.40	8,760	32.41	32.29
	Pb	0.028	8,760	0.123	

FUGITIVE EMISSIONS FOR SANDERS LEAD

Trip ID:	Route 1	Route 2	Route 3	Route 4	Route 5	
Particle Size Multiplier ( <b>k</b> ):	0.011	0.011	0.011	0.011	0.011	based on AP-42 Table 13.2.1-1
Average Vehicle Weight ( <b>W</b> ) (tons):	10	6	10	15	15	provided by Sanders
Road Surface Silt Loading ( <b>sL</b> ) (g/m <sup>2</sup> ):	0.60	0.60	0.60	0.60	0.60	based on AP-42 Table 13.2.1-2
Days/Year with at least 0.01 inches of Precipitation ( <b>P</b> ):	120	120	120	120	120	based on AP-42 Figure 13.2.1-2
Number of days in averaging period ( <b>N</b> ):	365	365	365	365	365	365 for annual, 91 for seasonal, 30 for monthly
Lead Content of PM on Roadways (%):	26%	26%	26%	26%	26%	Baghouse dust Pb content shown to range from 4 to 48%
Control Factor (efficiency %):	80%	80%	80%	80%	80%	based on AP-42 Table 13.2.2

SOURCE OF EMISSION FACTOR:	EQUATION	PARAMETERS
The emission factor is taken from Equation 2 in AP-42, 13.2.1, Paved Roads.	$E_{ext} = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$	k = from AP-42 Table 13.2.1-1 sL = from AP-42 Table 13.2.1-2 W = average vehicle weight (tons)

EMISSIONS CALCULATIONS						
ROUTES	Pollutant	Emission Factor (lb/VMT)	VMT/hr	VMT/yr	Actual Emissions (lbs/hr)	Actual Emissions (Tons/Yr)
Route 2	Pb	0.039	0.15	1,314	0.00031	0.0013
Route 4	Pb	0.100	0.12	1,073	0.00064	0.0028
Route 5	Pb	0.100	0.22	1,927	0.00115	0.0050
TOTAL (tons/yr)					<b>0.0092</b>	