COUNTY OF ALLEGHENY

RICH FITZGERALD
COUNTY EXECUTIVE

Air Quality Program

301 39th Street, Clack Health Center Building 7, Pittsburgh, PA 15201-1811
ph: 412.578.8103 • 24-hr: 412.687.ACHD (2243) • ***www.alleghenycounty.us/healthdepartment***

SUBMISSION FORM – AIR POLLUTION MITIGATION PLAN

APPLICANT INFORMATION

The Air Pollution Mitigation Plan is submitted by affected facilities to meet the requirements of Allegheny County regulations found in §2106.06 (Mon Valley Air Pollution Episode) of Article XXI.

01 Facility Information

Name of Facility	**Mid-Continent Coal and Coke Company - Clairton Screening Plant**		
Address	**Route 837, Peters Creek Road**		
City State Zip+4	**Clairton, PA 15025**		
Permit #	**#0611-OP19**	Phone	**412-298-1190**

02 Environmental Contact Information (Person to contact regarding technical details of this mitigation plan)

Name/Title	**Joe Neumann - Plant Manager**		
Address	**PO Box 309**		
City State Zip+4	Clairton PA 15025-0309		
Email	**jneumann@midcontinentcoke.com**	Phone	**412-298-1190**

03 Responsible Official Information

Name/Title	**Chad Rhodes - Vice President**		
Address	**20600 Chagrin Blvd, Suite 850**		
City State Zip+4	Cleveland OH 44122-5341		
Email	**crhodes@midcontinentcoke.com**	Phone	**216-283-5700**

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04 **AFFIDAVIT**

I certify that, subject to the penalties of Title 18Pa. C.S.A. Section 4904 and 35 P.S. Section 4009(b)(2), I am the responsible official having primary responsibility for the operation of the facilities to which this air pollution mitigation plan applies and that the information provided in this mitigation plan is true, accurate and complete to the best of my knowledge, information and belief formed after reasonable inquiry.

Signature: [signature] **Date** 12/16/2021

Typed/Printed Name: CHAD RHODES

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SUBMISSION FORM – AIR POLLUTION MITIGATION PLAN

05 List all equipment or processes at your facility that emit PM_{10} and/or $PM_{2.5}$

Primary Screener – P001
Portable Screener (Mobile) – P002
Paved and Unpaved Roadways – F003

WATCH PHASE OF MITIGATION PLAN

06 How will your facility ensure that equipment which produces particulate emissions is operating in a manner consistent with optimal engineering practices?

Operation crews will be notified of the Watch Phase by radio during the shift. Operating procedures to reduce emissions will be reviewed during a meeting at the beginning of the shift on days when the Watch Phase has been implemented. Observations for fugitive dust emissions will be conducted. If necessary, application of fugitive dust controls will be implemented (application of water). An additional employee may be called in to assist in activities to reduce particulate emissions.

07 How will your facility ensure that air pollution control equipment is maintained in optimal working condition?

Create and follow a periodic maintenance plan for the water truck. Regularly inspect and maintain the water trailer. Keep the Water Pump house locked between each use of the water trailer and water truck. Winterize the water truck and water trailer after August and before the first freeze of each year. Turn on heater in Water Pump House in September of each year. Inspect P001 at the beginning of each shift and periodically during the shift.

08 How will your facility ensure that actions taken in blocks 05 and 06 are properly monitored, recorded, and reported to the Health Department?

Operating hours and production of P001 will be recorded on a daily sheet. "Watch Phase" will be noted on the daily Visual Emissions Report. Actions taken during the Watch Phase are reported to the ACHD if requested.

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WARNING PHASE OF MITIGATION PLAN

09 How will your facility ensure that procedures are in place so enough staff and resources are available to implement the Mon Valley Air Pollution Warning Phase within 24 hours of the notification from ACHD?

Operation crews will be notified of the Warning Phase by radio during the shift. Operating procedures to reduce emissions will be reviewed during a meeting at the beginning of the shift on days when the Warning Phase has been implemented. More frequent observations for fugitive dust emissions will be conducted. If necessary, application of fugitive dust controls will be implemented (application of water). An additional employee will be called in to assist in activities to reduce particulate emissions.

10 For every process and piece of equipment, list all available methods to reduce $PM_{2.5}$/PM_{10} emissions from your four-year hourly average. During an actual warning phase, the actions to reduce emissions must last the length of the episode.

Portable Screener P002 will not be operated during the entire Warning episode period to prevent any unnecessary fugitive dust emissions.

Primary Screener P001 production will be reduced by at least 20% from normal operating conditions during the Warning period, such as reduced operating hours.

When the temperature is above 35 degrees F, water will be applied to all unpaved roads with a mobile water trailer or truck.

11 For each piece of equipment and process, determine which emission reduction methods are feasible. List whether each method is feasible or infeasible and provide a justification for your determination.

Note that the Mid-Continent facility receives materials from the neighboring cokemaking facility, which operates 24 hrs/day and 7 days/week. Mid-Continent facility roadways are thus used 24/7. Mid-Continent staffs the facility during daylight hours. Fugitive dust observations occur during daylight hours.

P001 – Reduction in production by 20% from normal operating condition

P002 – Portable screener not operated

F003 – Road dust emissions – visible observations and application of water if necessary

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SUBMISSION FORM – AIR POLLUTION MITIGATION PLAN

12 How will your facility ensure that actions taken in block 10 are properly monitored, recorded, and reported to the Health Department?

Operating hours and production of P001 will be recorded on a daily sheet. "Warning Phase" will be noted on the daily Visual Emissions Report. Actions taken during the Warning Phase are reported to the ACHD if requested.

13 Provide an active spreadsheet containing the following:

- Calculations of your facility's $PM_{2.5}$ and PM_{10} emissions for each of the past four years (2017-2020) in tons/year for every piece of equipment and process;
- Calculation of average four year emissions of $PM_{2.5}$ and PM_{10} in lbs/hr for each piece of equipment and process;
- Feasible $PM_{2.5}$ and PM_{10} emission reductions in lbs/hr that will occur during a warning phase for every piece of equipment and process as well as the facility total; and
- Feasible $PM_{2.5}$ and PM_{10} emission reductions in percent reduced from the hourly four year average for every piece of equipment and process as well as the facility total percent reduction.

This spreadsheet will be used to calculate actual emission reductions that will be reported to the Health Department after warning phases have ended.

SEE ATTACHMENTS 1 AND 2

14 How much time will be required for your facility to implement the emission reductions in block 10?

Mid-Continent can implement the production activities within 1 hour of notification of Warning Phase.

Additional employee assistance may require 4 hours notice.

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INSTRUCTIONS Submission Form for the Air Pollution Mitigation Plan	
Block 01 Facility Information	The facility name for the operation at that particular address should be used and not the name of the larger corporation. Use the address for the actual facility and not the company headquarters, if different. The most recent permit number should be included. If it is not known, it can be left blank.
Block 02 Environmental Contact Information	Fill in the contact information of the individual (e.g. employee or consultant) who will be contacted to provide environmental technical information for the Air Pollution Mitigation Plan
Block 03 Responsible Official Information	This address and phone number are for the office where the responsible official works the majority of the time. See block 04 instructions for information regarding the responsible official.
Block 04 Affidavit	This affidavit must be signed by the responsible official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. CORPORATION – President, Vice President, Secretary, Treasurer, or duly authorized person BUSINESS – Sole Proprietor or General Partner GOVERNMENT ENTITY – Ranking elected official or principal executive officer

Blocks 05–08
Watch Phase of Mitigation Plan
	The responses that you provide in blocks 05 through 08 will be specific to your equipment and facility. Below are some general ideas that may help you in how to approach these requirements.
	• Staff related
	  • Review procedures with employees to ensure all equipment is properly operating in a way to minimize air emissions.
	  • Schedule additional or on-call employees for upcoming shifts to ensure facility is fully staffed for a warning phase.
	  • Conduct a shift meeting(s) to remind employees to prioritize the environmental impact of their operations to reduce emissions.
	  • Share any other procedures which would help ensure sufficient staff levels and available resources to implement a warning phase.
	• Equipment related

SUBMISSION FORM – AIR POLLUTION MITIGATION PLAN

	• Inspect any equipment or processes which may have a potential to increase emissions to ensure proper operation and maintenance. • Implement improved operation and maintenance practices beyond standard operating procedures. • Ensure the facility is following the idling requirements under Act 124 of the PA Department of Environmental Protection regulations. • Conduct maintenance on all pollution control equipment. • Share any other procedures which help ensure the facility is operating in a manner consistent with good engineering practices. • Share any other procedures which help ensure the air pollution control equipment is maintained in good working condition.
Block 09 Warning Phase of Mitigation Plan	A good starting point in completing this block is to refer to the table found in section II of your facility's air quality permit titled "Emission Unit Identification" and identify which units emit particulate matter. There may be other equipment, not listed in the section II table, that can be included in the block 09 list.
Block 10 Warning Phase of Mitigation Plan	Block 10 should explain what actions the facility could possible take to ensure that hourly emissions are reduced. Possible methods include: • Reduction in material throughput • Reduction in operating time • Increased use of controls or suppression equipment • Changes in raw materials Examples of possible actions include: • Reduce production by a certain percentage or rate from normal operating conditions. A reduction from a potential maximum production rate will not be accepted if it is too high compared to normal operating rates for the relevant time period, thereby not resulting in an actual reduction in pollution. • Reduce usage of diesel fuel or other $PM_{2.5}$ or PM_{10} creating fuel types or switch fuel types to lower $PM_{2.5}$ or PM_{10} as allowed by the relevant permits. • Bring in additional employees to allow the facility to operate in the best environmentally responsible manner. • Delay production to a future day when a mitigation plan is not needed. • Delay any non-essential activities to a future day when a mitigation plan is not needed.

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	• Fully or partially enclose material movement and other work activities which produce dust and other particulate matter ($PM_{2.5}$ or PM_{10} emissions).
	• Modify work practices to decrease $PM_{2.5}$ or PM_{10} emissions such as:
	  ○ Slowing material handling
	  ○ Fully or partially enclose material movement and other work activities which produce dust and other particulate matter ($PM_{2.5}$ or PM_{10} emissions).
	• Stop or decrease unnecessary transportation activities and reduce travel speed on necessary transportation.
	• Employ additional roadway wetting or other activities to minimize road dust creation.
	• Add any other measures which reduce $PM_{2.5}$ or PM_{10} emissions.

Block 11 Warning Phase of Mitigation Plan	Emission reduction methods that are feasible can be eliminated from consideration for other reasons as long as adequate justification is given.
Block 12 Warning Phase of Mitigation Plan	The Health Department will require a report, submitted after the warning phase has ended, itemizing what actions were taken to meet the requirements of the warning phase.
Block 13 Warning Phase of Mitigation Plan	The spreadsheet must include actual plant emissions of $PM_{2.5}$ and PM_{10} for all equipment listed in block 09 for each of the past four years (2017-2020) in tons/year. These calculations can be copied directly from the spreadsheets submitted to the Health Department for emissions inventories. For each piece of equipment and process, emissions from the last four years must be provided in tons/year. For each piece of equipment and process, proposed feasible emission reductions must be provided in lbs/hr. The hourly average will be calculated for each unit and process by adding yearly emissions together and dividing by the total number of hours that the unit emitted over four years. In the case of a batch process, calculations will need to take into account the number of hours in each batch and the number of batches in a year.

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Block 14 Warning Phase of Mitigation Plan	Section 2106.06 of county air quality regulations requires that an affected facility is able to implement the requirements of the warning phase within 24 hours.

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SUBMISSION FORM – AIR POLLUTION MITIGATION PLAN

Mitigation Plan Checklist

The following checklist is provided as a list of items required for a complete mitigation plan submission. If at any time you have questions about your application, please call JoAnn Truchan 412-578-7981 or Jayme Graham 412-578-8129.

- ☐ Has the responsible official signed and dated the first page (block 04)?
- ☐ Have you provided an active spreadsheet showing actual emissions for every piece of equipment and process of $PM_{2.5}$ and PM_{10} for the past four years in tons per year?
- ☐ Does the spreadsheet include the average actual $PM_{2.5}$ and PM_{10} emissions from every piece of equipment and process for the past four years in lbs/hr?
- ☐ Does the spreadsheet include the PM_{10} and $PM_{2.5}$ reduction that will be achieved from every piece of equipment and process in lbs/hr and % from the four year hourly average during the warning phase?
- ☐ Have you provided a complete response for each of the fourteen blocks?

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Table 2. Actual Emissions Inventory, Calculations, Inputs
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Clairton Plant		
Year	Inbound Shipments (NT)	Outbound Shipments (NT)
2017	177,552	165,117
2018	184,591	166,741
2019	171,208	124,562
2020	106,530	89,091

Hours of Operation: Screening Operations		
10	hrs/day	
6	days/week	
52	weeks/yr	
3120	hrs/yr	

Hours of Operation: Storage Piles, Truck Traffic		
24	hrs/day	
7	days/week	
52	weeks/yr	
8760	hrs/yr	

Portable Screener Throughput, TPY		
5500	tons/yr	(assumed)

Table 3. Actual Emissions Inventory, Calculations, Emissions from Coke Screening Operations
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year	**2020**	
Coke Breeze Processed	**106,530**	tons/yr
Coke Products Shipped	**89,091**	tons/yr
Annual Hours of Operation	**3120**	hrs (10 hrs/day; 6 days/week)

Process	ID	Maximum [1] Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
P001 - Transfer Points and Screens													
Truck Dump (Batch Dump)		120	106,530	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.2290	0.2290	0.00073	0.00073
Loader Dump to Hopper		120	106,530	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.2290	0.2290	0.00073	0.00073
Conveyer to Screen #1	CTP1	120	106,530	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0055	0.0016	0.0025	0.0007	0.00001	0.00000
Screen #1		120	106,530	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0888	0.0060	0.0394	0.0027	0.00013	0.00001
Conveyer to Coke Breeze Pile	CTP2	55	48,826	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0025	0.0007	0.0011	0.0003	0.00000	0.00000
Conveyer to Screen #2	CTP3	65	57,704	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0030	0.0008	0.0013	0.0004	0.00000	0.00000
Screen #2		65	57,704	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0481	0.0033	0.0214	0.0014	0.00007	0.00000
Conveyor to Oversize Pile	CTP4	10	8,877	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0005	0.0001	0.0002	0.0001	0.00000	0.00000
Conveyor to Nut Coke Pile	CTP5	5	4,439	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0002	0.0001	0.0001	0.0000	0.00000	0.00000
Conveyer to Screen #3	CTP6	50	44,387	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0010	0.0003	0.00000	0.00000
Screen #3		50	44,387	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0370	0.0025	0.0164	0.0011	0.00005	0.00000
Conveyor to Coke Piles	CTP7	2.5	2,219	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0001	0.0000	0.0001	0.0000	0.00000	0.00000
Conveyor to Coke Piles	CTP8	47.5	42,168	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0022	0.0006	0.0010	0.0003	0.00000	0.00000
Truck Load (Batch Load)		120	89,091	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.1915	0.1915	0.00061	0.00061
							TOTAL:	**1.7382**	**1.5644**	**0.7341**	**0.6569**	**0.00235**	**0.00211**

[1] *Truck Dump operates 24 hours per day; 7 days per week. Actual screening hours are less.*

[2] *Truck Dump emission factor is from AP-42 Chapter 12.5. Material Processing emission factors are from AP-42 Chapter 11.19.2.*

Process	ID	Maximum Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
Portable Screener*													
Loader Dump to Hopper		100	5,500	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.4300	0.4300	0.0118	0.0118	0.00004	0.00004
Conveyer to Portable Screener	CTP9	100	5,500	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0046	0.0013	0.0001	0.0000	0.00000	0.00000
Portable Screener		100	5,500	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0740	0.0050	0.0020	0.0001	0.00001	0.00000
Conveyer to Coke Pile	CTP10	50	2,750	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0001	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP11	35	1,925	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0016	0.0005	0.0000	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP12	15	825	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0007	0.0002	0.0000	0.0000	0.00000	0.00000
							TOTAL:	**0.5132**	**0.4376**	**0.0141**	**0.0120**	**0.00005**	**0.00004**

** NOTE: Portable Screener is used as backup.*

CTP = Conveyor Transfer Point

OVERALL TOTAL:	**2.2514**	**2.0020**	**0.7482**	**0.6689**	**0.00240**	**0.00214**

2/17/2022

Table 4. Actual Emissions Inventory, Calculations, Emissions from Coke Screening Operations
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year	**2019**	
Coke Breeze Processed	**171,208**	tons/yr
Coke Products Shipped	**124,562**	tons/yr
Annual Hours of Operation	**3120**	hrs (10 hrs/day; 6 days/week)

Process	ID	Maximum [1] Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
P001 - Transfer Points and Screens													
Truck Dump (Batch Dump)		120	171,208	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3681	0.3681	0.00118	0.00118
Loader Dump to Hopper		120	171,208	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3681	0.3681	0.00118	0.00118
Conveyer to Screen #1	CTP1	120	171,208	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0055	0.0016	0.0039	0.0011	0.00001	0.00000
Screen #1		120	171,208	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0888	0.0060	0.0633	0.0043	0.00020	0.00001
Conveyer to Coke Breeze Pile	CTP2	55	78,470	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0025	0.0007	0.0018	0.0005	0.00001	0.00000
Conveyer to Screen #2	CTP3	65	92,738	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0030	0.0008	0.0021	0.0006	0.00001	0.00000
Screen #2		65	92,738	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0481	0.0033	0.0343	0.0023	0.00011	0.00001
Conveyor to Oversize Pile	CTP4	10	14,267	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0005	0.0001	0.0003	0.0001	0.00000	0.00000
Conveyor to Nut Coke Pile	CTP5	5	7,134	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0002	0.0001	0.0002	0.0000	0.00000	0.00000
Conveyer to Screen #3	CTP6	50	71,337	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0016	0.0005	0.00001	0.00000
Screen #3		50	71,337	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0370	0.0025	0.0264	0.0018	0.00008	0.00001
Conveyor to Coke Piles	CTP7	2.5	3,567	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0001	0.0000	0.0001	0.0000	0.00000	0.00000
Conveyor to Coke Piles	CTP8	47.5	67,770	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0022	0.0006	0.0016	0.0004	0.00000	0.00000
Truck Load (Batch Load)		120	124,562	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.2678	0.2678	0.00086	0.00086
							TOTAL:	**1.7382**	**1.5644**	**1.1397**	**1.0157**	**0.00365**	**0.00326**

[1] *Truck Dump operates 24 hours per day; 7 days per week. Actual screening hours are less.*

[2] *Truck Dump emission factor is from AP-42 Chapter 12.5. Material Processing emission factors are from AP-42 Chapter 11.19.2.*

Process		Maximum Throughput (tons/hr)	Act Estimated Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
Portable Screener*													
Loader Dump to Hopper		100	5,500	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.4300	0.4300	0.0118	0.0118	0.00004	0.00004
Conveyer to Portable Screener	CTP9	100	5,500	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0046	0.0013	0.0001	0.0000	0.00000	0.00000
Portable Screener		100	5,500	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0740	0.0050	0.0020	0.0001	0.00001	0.00000
Conveyer to Coke Pile	CTP10	50	2,750	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0001	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP11	35	1,925	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0016	0.0005	0.0000	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP12	15	825	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0007	0.0002	0.0000	0.0000	0.00000	0.00000
							TOTAL:	**0.5132**	**0.4376**	**0.0141**	**0.0120**	**0.00005**	**0.00004**
							OVERALL TOTAL:	**2.2514**	**2.0020**	**1.1538**	**1.0277**	**0.00370**	**0.00329**

** NOTE: Portable Screener is used as backup.*

CTP = Conveyor Transfer Point

Table 5. Actual Emissions Inventory, Calculations, Emissions from Coke Screening Operations
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year	**2018**	
Coke Breeze Processed	**184,591**	tons/yr
Coke Products Shipped	**166,741**	tons/yr
Annual Hours of Operation	**3120**	hrs (10 hrs/day; 6 days/week; 312 days/yr)

Process	ID	Maximum [1] Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
P001 - Transfer Points and Screens													
Truck Dump (Batch Dump)		120	184,591	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3969	0.3969	0.00127	0.00127
Loader Dump to Hopper		120	184,591	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3969	0.3969	0.00127	0.00127
Conveyer to Screen #1	CTP1	120	184,591	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0055	0.0016	0.0042	0.0012	0.00001	0.00000
Screen #1		120	184,591	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0888	0.0060	0.0683	0.0046	0.00022	0.00001
Conveyer to Coke Breeze Pile	CTP2	55	84,604	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0025	0.0007	0.0019	0.0005	0.00001	0.00000
Conveyer to Screen #2	CTP3	65	99,987	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0030	0.0008	0.0023	0.0006	0.00001	0.00000
Screen #2		65	99,987	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0481	0.0033	0.0370	0.0025	0.00012	0.00001
Conveyor to Oversize Pile	CTP4	10	15,383	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0005	0.0001	0.0004	0.0001	0.00000	0.00000
Conveyor to Nut Coke Pile	CTP5	5	7,691	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0002	0.0001	0.0002	0.0000	0.00000	0.00000
Conveyer to Screen #3	CTP6	50	76,913	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0018	0.0005	0.00001	0.00000
Screen #3		50	76,913	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0370	0.0025	0.0285	0.0019	0.00009	0.00001
Conveyor to Coke Piles	CTP7	2.5	3,846	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0001	0.0000	0.0001	0.0000	0.00000	0.00000
Conveyor to Coke Piles	CTP8	47.5	73,067	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0022	0.0006	0.0017	0.0005	0.00001	0.00000
Truck Load (Batch Load)		120	166,741	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3585	0.3585	0.00115	0.00115
							TOTAL:	**1.7382**	**1.5644**	**1.2985**	**1.1648**	**0.00416**	**0.00373**

[1] *Truck Dump operates 24 hours per day; 7 days per week. Actual screening hours are less.*

[2] *Truck Dump emission factor is from AP-42 Chapter 12.5. Material Processing emission factors are from AP-42 Chapter 11.19.2.*

Process	ID	Maximum Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
Portable Screener*													
Loader Dump to Hopper		100	5,500	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.4300	0.4300	0.0118	0.0118	0.00004	0.00004
Conveyer to Portable Screener	CTP9	100	5,500	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0046	0.0013	0.0001	0.0000	0.00000	0.00000
Portable Screener		100	5,500	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0740	0.0050	0.0020	0.0001	0.00001	0.00000
Conveyer to Coke Pile	CTP10	50	2,750	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0001	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP11	35	1,925	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0016	0.0005	0.0000	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP12	15	825	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0007	0.0002	0.0000	0.0000	0.00000	0.00000
							TOTAL:	**0.5132**	**0.4376**	**0.0141**	**0.0120**	**0.00005**	**0.00004**

** NOTE: Portable Screener is used as backup.*

CTP = Conveyor Transfer Point

OVERALL TOTAL:	**2.2514**	**2.0020**	**1.3127**	**1.1769**	**0.00421**	**0.00377**

Table 6. Actual Emissions Inventory, Calculations, Emissions from Coke Screening Operations
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year	**2017**		
Coke Breeze Processed	**177,552**	tons/yr	
Coke Products Shipped	**165,117**	tons/yr	
Annual Hours of Operation	**3120**	hrs	(10 hrs/day; 6 days/week)

Process	ID	Maximum [1] Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
P001 - Transfer Points and Screens													
Truck Dump (Batch Dump)		120	177,552	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3817	0.3817	0.00122	0.00122
Loader Dump to Hopper		120	177,552	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3817	0.3817	0.00122	0.00122
Conveyer to Screen #1	CTP1	120	177,552	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0055	0.0016	0.0041	0.0012	0.00001	0.00000
Screen #1		120	177,552	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0888	0.0060	0.0657	0.0044	0.00021	0.00001
Conveyer to Coke Breeze Pile	CTP2	55	81,378	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0025	0.0007	0.0019	0.0005	0.00001	0.00000
Conveyer to Screen #2	CTP3	65	96,174	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0030	0.0008	0.0022	0.0006	0.00001	0.00000
Screen #2		65	96,174	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0481	0.0033	0.0356	0.0024	0.00011	0.00001
Conveyor to Oversize Pile	CTP4	10	14,796	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0005	0.0001	0.0003	0.0001	0.00000	0.00000
Conveyor to Nut Coke Pile	CTP5	5	7,398	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0002	0.0001	0.0002	0.0000	0.00000	0.00000
Conveyer to Screen #3	CTP6	50	73,980	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0017	0.0005	0.00001	0.00000
Screen #3		50	73,980	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0370	0.0025	0.0274	0.0018	0.00009	0.00001
Conveyor to Coke Piles	CTP7	2.5	3,699	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0001	0.0000	0.0001	0.0000	0.00000	0.00000
Conveyor to Coke Piles	CTP8	47.5	70,281	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0022	0.0006	0.0016	0.0005	0.00001	0.00000
Truck Load (Batch Load)		120	165,117	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.3550	0.3550	0.00114	0.00114
							TOTAL:	**1.7382**	**1.5644**	**1.2592**	**1.1306**	**0.00404**	**0.00362**

[1] *Truck Dump operates 24 hours per day; 7 days per week. Actual screening hours are less.*

[2] *Truck Dump emission factor is from AP-42 Chapter 12.5. Material Processing emission factors are from AP-42 Chapter 11.19.2.*

Process	ID	Maximum Throughput (tons/hr)	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Actual Emissions (lb/hr) PM-10	PM-2.5	Actual Emissions (tons/yr) PM-10	PM-2.5	Daily Actual Emission Rate Tons/Day PM-10	PM-2.5
Portable Screener*													
Loader Dump to Hopper		100	5,500	ton coke/yr	4.30E-03	4.30E-03	lb/ton coke	0.4300	0.4300	0.0118	0.0118	0.00004	0.00004
Conveyer to Portable Screener	CTP9	100	5,500	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0046	0.0013	0.0001	0.0000	0.00000	0.00000
Portable Screener		100	5,500	ton coke/yr	7.40E-04	5.00E-05	lb/ton coke	0.0740	0.0050	0.0020	0.0001	0.00001	0.00000
Conveyer to Coke Pile	CTP10	50	2,750	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0001	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP11	35	1,925	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0016	0.0005	0.0000	0.0000	0.00000	0.00000
Conveyer to Coke Pile	CTP12	15	825	ton coke/yr	4.60E-05	1.30E-05	lb/ton coke	0.0007	0.0002	0.0000	0.0000	0.00000	0.00000
							TOTAL:	**0.5132**	**0.4376**	**0.0141**	**0.0120**	**0.00005**	**0.00004**

** NOTE: Portable Screener is used as backup.*

CTP = Conveyor Transfer Point

OVERALL TOTAL:	**2.25**	**2.00**	**1.27**	**1.14**	**0.00408**	**0.00366**

Table 7. Actual Emissions Inventory, Calculations, Emissions from Coke Storage Piles
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year	2020										
Process	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	lb/hr PM-10	PM-2.5	TPY PM-10	PM-2.5	Daily Actual Emission Rate[3] Tons/Day PM-10	PM-2.5
F002 - Coke Storage Piles											
Wind Erosion of Coke Storage Piles	**106,530**	ton coke/yr	0.0007	0.0007	lb/ton coke	**0.0789**	**0.0789**	**0.035**	**0.035**	0.00010	0.00010
	120	tons/hr									

Year	2019										
Process	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	lb/hr PM-10	PM-2.5	TPY PM-10	PM-2.5	Daily Actual Emission Rate[3] Tons/Day PM-10	PM-2.5
F002 - Coke Storage Piles											
Wind Erosion of Coke Storage Piles	**171,208**	ton coke/yr	0.0007	0.0007	lb/ton coke	**0.0789**	**0.0789**	**0.056**	**0.056**	0.00015	0.00015
	120	tons/hr									

Year	2018										
Process	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	lb/hr PM-10	PM-2.5	TPY PM-10	PM-2.5	Daily Actual Emission Rate[3] Tons/Day PM-10	PM-2.5
F002 - Coke Storage Piles											
Wind Erosion of Coke Storage Piles	**184,591**	ton coke/yr	0.0007	0.0007	lb/ton coke	**0.0789**	**0.0789**	**0.061**	**0.061**	0.00017	0.00017
	120	tons/hr									

Year	2017										
Process	Annual Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	lb/hr PM-10	PM-2.5	TPY PM-10	PM-2.5	Daily Actual Emission Rate[3] Tons/Day PM-10	PM-2.5
F002 - Coke Storage Piles											
Wind Erosion of Coke Storage Piles	**177,552**	ton coke/yr	0.0007	0.0007	lb/ton coke	**0.0789**	**0.0789**	**0.058**	**0.058**	0.00016	0.00016
	120	tons/hr									

1 Maximum hourly throughput rates taken from operating permit application

2 Emission factor was derived using the following equation contained in AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, 11/06

$$\text{Emission factor (lb/ton processed)} = (k*0.0032*(U/5)^{1.3}))/(M/2)^{1.4}$$

Where: k = Particle Size Multiplier, 0.35 for PM10 and PM 2.5
U = Mean wind speed, 8.9 mph
M = Moisture content or material, 5%

3 Assumes 365 day/yr operation.

Table 1. Actual Emissions Inventory, Calculations, Summary of Emissions
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

ACTUAL EMISSIONS - Tons/Yr

2020	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	0.734	0.014	0.035	1.176	0.174	2.133
PM2.5	0.657	0.012	0.035	0.118	0.017	0.839
2019	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.140	0.014	0.056	1.778	0.263	3.251
PM2.5	1.016	0.012	0.056	0.178	0.026	1.288
2018	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.299	0.014	0.061	2.112	0.312	3.798
PM2.5	1.165	0.012	0.061	0.211	0.031	1.480
2017	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.259	0.014	0.058	2.060	0.304	3.696
PM2.5	1.131	0.012	0.058	0.206	0.030	1.437

2017-2020 Actual Average Annual Emissions - Tons/yr

	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	1.108	0.014	0.053	1.781	0.263	3.219
PM2.5	0.992	0.012	0.053	0.178	0.026	1.261

ACTUAL EMISSIONS - Tons/Day

2020	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	0.00235	0.00005	0.00010	0.00322	0.00056	0.00627
PM2.5	0.00211	0.00004	0.00010	0.00032	0.00006	0.00262
2019	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	0.00365	0.00005	0.00015	0.00487	0.00084	0.00956
PM2.5	0.00326	0.00004	0.00015	0.00049	0.00008	0.00402
2018	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	0.00416	0.00005	0.00017	0.00579	0.00100	0.01116
PM2.5	0.00373	0.00004	0.00017	0.00058	0.00010	0.00462
2017	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	0.00404	0.00005	0.00016	0.00564	0.00098	0.01086
PM2.5	0.00362	0.00004	0.00016	0.00056	0.00010	0.00448

2017-2020 Actual Average Daily Emissions - Tons/Day

	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	0.00355	0.00005	0.00014	0.00488	0.00084	0.00946
PM2.5	0.00318	0.00004	0.00014	0.00049	0.00008	0.00393

ACTUAL EMISSIONS - Lbs/hr

2020	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	1.7382	0.5132	0.0789	0.2685	0.1114	2.7101
PM2.5	1.5644	0.4376	0.0789	0.0268	0.0111	2.1188
2019	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.7382	0.5132	0.0789	0.4059	0.1684	2.9046
PM2.5	1.5644	0.4376	0.0789	0.0406	0.0168	2.1383
2018	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.7382	0.5132	0.0789	0.4822	0.2000	3.0125
PM2.5	1.5644	0.4376	0.0789	0.0482	0.0200	2.1490
2017	**P001**	**P002**	**F002**	**F003**	**F003**	**TOTAL**
PM10	1.7382	0.5132	0.0789	0.4703	0.1951	2.9957
PM2.5	1.5644	0.4376	0.0789	0.0470	0.0195	2.1474

2017-2020 Actual Average Hourly Emissions - Lbs/hr

	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	1.7382	0.5132	0.0789	0.4067	0.1687	2.9057
PM2.5	1.5644	0.4376	0.0789	0.0407	0.0169	2.1384

Table 8. Actual Emissions Inventory,Calculations, Emissions from Trucks, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2020**	
Coke Processed:	106,530	tons/yr
Coke Sent Out:	89,091	tons/yr
	22	tons/truckload
Truckloads:	8,892	truckloads/yr
	0.4	miles/roundtrip
Vehicle Miles:	3,557	miles/yr
Days of Operation	365	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Emission Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	21.00	150	1.32	3,557	50	1.17596			
									TOTAL	**1.1760**	**0.26848**	**0.00322**	**0.00032**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	
	k	a	b	s	W	P						
Truckloads	0.15	0.90	0.45	7.1	21.00	150	0.13	3,557	50	0.11760		0.1175963
									TOTAL	**0.1176**	**0.02685**	

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365]$ *Equation (1a and 2)*

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 9. Actual Emissions Inventory,Calculations, Emissions from Trucks, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2019**	
Coke Processed:	171,208	tons/yr
Coke Sent Out:	124,562	tons/yr
	22	tons/truckload
Truckloads:	13,444	truckloads/yr
	0.4	miles/roundtrip
Vehicle Miles:	5,378	miles/yr
Days of Operation	365	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Emission Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	21.00	150	1.32	5,378	50	1.77800			
									TOTAL	**1.7780**	**0.40594**	**0.00487**	**0.00049**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	21.00	150	0.13	5,378	50	0.17780	
									TOTAL	**0.1778**	**0.04059**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 10. Actual Emissions Inventory,Calculations, Emissions from Trucks, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2018**	
Coke Processed:	184,591	tons/yr
Coke Sent Out:	166,741	tons/yr
	22	tons/truckload
Truckloads:	15,970	truckloads/yr
	0.4	miles/roundtrip
Vehicle Miles:	6,388	miles/yr
Days of Operation	365	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	21.00	150	1.32	6,388	50	2.11200			
									TOTAL	**2.1120**	**0.48219**	**0.00579**	**0.00058**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	21.00	150	0.13	6,388	50	0.21120	
									TOTAL	**0.2112**	**0.04822**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365]$$ *Equation (1a and 2)*

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 11. Actual Emissions Inventory,Calculations, Emissions from Trucks, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2017**	
Coke Processed:	177,552	tons/yr
Coke Sent Out:	165,117	tons/yr
	22	tons/truckload
Truckloads:	15,576	truckloads/yr
	0.4	miles/roundtrip
Vehicle Miles:	6,230	miles/yr
Days of Operation	365	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	21.00	150	1.32	6,230	50	2.05993			
									TOTAL	**2.0599**	**0.47030**	**0.00564**	**0.00056**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	21.00	150	0.13	6,230	50	0.20599	
									TOTAL	**0.2060**	**0.04703**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 12. Actual Emissions Inventory,Calculations, Emissions from Loaders, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2020**	
Coke Processed:	106,530	tons/yr
Coke Sent Out:	89,091	tons/yr
	6	tons/load
Loader Trips:	32,604	loads/yr
	0.02	miles/roundtrip
Vehicle Miles:	652	miles/yr
Number of Loaders:	3	
Days of Operation	312	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Emission Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Loaders	1.5	0.90	0.45	7.1	13.00	150	1.07	652	50	0.17374			
									TOTAL	**0.1737**	**0.11137**	**0.00056**	**0.00006**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Loaders	0.15	0.90	0.45	7.1	13.00	150	0.11	652	50	0.01737	
									TOTAL	**0.0174**	**0.01114**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365]$ *Equation (1a and 2)*

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 13. Actual Emissions Inventory,Calculations, Emissions from Loaders, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2019**	
Coke Processed:	171,208	tons/yr
Coke Sent Out:	124,562	tons/yr
	6	tons/load
Loader Trips:	49,295	loads/yr
	0.02	miles/roundtrip
Vehicle Miles:	986	miles/yr
Number of Loaders:	3	
Days of Operation	312	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	13.00	150	1.07	986	50	0.26269			
									TOTAL	**0.2627**	**0.16839**	**0.00084**	**0.00008**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	13.00	150	0.11	986	50	0.02627	
									TOTAL	**0.0263**	**0.01684**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k^*(s/12)^a (W/3)^b [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 14. Actual Emissions Inventory,Calculations, Emissions from Loaders, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2018**	
Coke Processed:	184,591	tons/yr
Coke Sent Out:	166,741	tons/yr
	6	tons/load
Loader Trips:	58,555	loads/yr
	0.02	miles/roundtrip
Vehicle Miles:	1,171	miles/yr
Number of Loaders:	3	
Days of Operation	312	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	13.00	150	1.07	1,171	50	0.31204			
									TOTAL	**0.3120**	**0.20003**	**0.00100**	**0.00010**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	13.00	150	0.11	1,171	50	0.03120	
									TOTAL	**0.0312**	**0.02000**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 15. Actual Emissions Inventory,Calculations, Emissions from Loaders, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year:	**2017**	
Coke Processed:	177,552	tons/yr
Coke Sent Out:	165,117	tons/yr
	6	tons/load
Loader Trips:	57,111	loads/yr
	0.02	miles/roundtrip
Vehicle Miles:	1,142	miles/yr
Number of Loaders:	3	
Days of Operation	312	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)	Daily Actual Emission Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	13.00	150	1.07	1,142	50	0.30435			
									TOTAL	**0.3043**	**0.19509**	**0.00098**	**0.00010**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Annual VMT	Control Efficiency (%)	Annual Emissions (Tons/yr)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	13.00	150	0.11	1,142	50	0.03043	
									TOTAL	**0.0304**	**0.01951**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k^*(s/12)^a (W/3)^b [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 1. Summary of Estimated Emissions Reductions During Air Quality Episodes
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

2017-2020 Actual Average Daily Emissions - Tons/Day

Actual Average	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads* F003	Loader Operation* F003	TOTAL
PM10	0.0036	0.00005	0.00014	0.00579	0.00100	0.0105
PM2.5	0.0032	0.00004	0.00014	0.00058	0.00010	0.0040

*2018 Maximum throughput used

Emissions During Episode (reduced operation) - Tons/Day

Episode	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	0.0030	0.00000	0.0001	0.0058	0.0009	0.0098
PM2.5	0.0027	0.00000	0.0001	0.0006	0.0001	0.0036

Estimated Emissions Reduction During Air Quality Event - Tons/Day

Estimated Reduction	Coke Screening Operations P001	Portable Screener P002	Coke Storage Piles F002	Unpaved Roads F003	Loader Operation F003	TOTAL
PM10	0.0005	0.00005	0.0000	0.0000	0.0001	0.0007
PM2.5	0.0004	0.00004	0.0000	0.0000	0.0000	0.0005

Table 2. Assumptions For Hourly and Daily Emissions Calculations During Air Quality Episodes
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Clairton Plant		
Year	Inbound Shipments (NT)	Outbound Shipments (NT)
2017	177,552	165,117
2018	184,591	166,741
2019	171,208	124,562
2020	106,530	89,091
Maximum	**184,591**	**166,741**
Daily Maximum Average	**506**	**457**

Daily Episode Hours of Operation: Screening Operations

8	hrs/day	(Reduced from 10 hrs/day; 20% reduction)
404.6	NT	Reduced Daily Avg Throughput
0	NT	No Portable Screening Operations

Daily Episode Hours of Operation: Storage Piles

24	hrs/day	No change; however additional observations of storage piles will be implemented and fugitive emissions control (water) applied if necessary.

Daily Episode Hours of Operation: Truck Traffic

24	hrs/day	No change; however additional observations of unpaved roads will be implemented and fugitive emissions control (water) applied if necessary.

Daily Episode Operation: Loaders

2 Loaders in Operation (one loader will be idled during the air quality episode)

Table 3. Emissions Calculations During Air Quality Episode, Emissions from Coke Screening Operations
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Coke Breeze Processed	**506**	tons/day	Normal Maximum
	405	tons/day	Reduced Throughput During Air Quality Episode (20% reduction)
Daily Hours of Operation	**10**	hrs	Normal
Daily Hours of Operation	**8**	hrs	Reduced Hours of Operation During Air Quality Episode (20% reduction)
Portable Screener Operation	**0**	hrs	Portable Screener Not Operating During Air Quality Episode

Process	ID	Maximum Throughput (tons/hr) [1]	Daily Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Episode Hourly Emissions (lb/hr) PM-10	PM-2.5	Episode Daily Emissions (tons/day) PM-10	PM-2.5
P001 - Transfer Points and Screens											
Truck Dump (Batch Dump)		120	405	ton coke/day	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.0009	0.0009
Loader Dump to Hopper		120	405	ton coke/day	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.0009	0.0009
Conveyer to Screen #1	CTP1	120	405	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0055	0.0016	0.0000	0.0000
Screen #1		120	405	ton coke/day	7.40E-04	5.00E-05	lb/ton coke	0.0888	0.0060	0.0001	0.0000
Conveyer to Coke Breeze Pile	CTP2	55	185	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0025	0.0007	0.0000	0.0000
Conveyer to Screen #2	CTP3	65	219	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0030	0.0008	0.0000	0.0000
Screen #2		65	219	ton coke/day	7.40E-04	5.00E-05	lb/ton coke	0.0481	0.0033	0.0001	0.0000
Conveyor to Oversize Pile	CTP4	10	34	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0005	0.0001	0.0000	0.0000
Conveyor to Nut Coke Pile	CTP5	5	17	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0002	0.0001	0.0000	0.0000
Conveyer to Screen #3	CTP6	50	169	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0023	0.0007	0.0000	0.0000
Screen #3		50	169	ton coke/day	7.40E-04	5.00E-05	lb/ton coke	0.0370	0.0025	0.0001	0.0000
Conveyor to Coke Piles	CTP7	2.5	8	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0001	0.0000	0.0000	0.0000
Conveyor to Coke Piles	CTP8	47.5	160	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0022	0.0006	0.0000	0.0000
Truck Load (Batch Load)		120	457	ton coke/day	4.30E-03	4.30E-03	lb/ton coke	0.5160	0.5160	0.0010	0.0010
							TOTAL:	**1.7382**	**1.5644**	**0.0030**	**0.0027**

[1] *Truck Dump operates 24 hours per day; 7 days per week. Actual screening hours are less.*

[2] *Truck Dump emission factor is from AP-42 Chapter 12.5. Material Processing emission factors are from AP-42 Chapter 11.19.2.*

Process		Maximum Throughput (tons/hr)	Daily Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	Episode Emissions (lb/hr) PM-10	PM-2.5	Episode Emissions (tons/day) PM-10	PM-2.5
Portable Screener*											
Loader Dump to Hopper		100	0	ton coke/day	4.30E-03	4.30E-03	lb/ton coke	0.0000	0.0000	0.0000	0.0000
Conveyer to Portable Screener	CTP9	100	0	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0000	0.0000	0.0000	0.0000
Portable Screener		100	0	ton coke/day	7.40E-04	5.00E-05	lb/ton coke	0.0000	0.0000	0.0000	0.0000
Conveyer to Coke Pile	CTP10	50	0	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0000	0.0000	0.0000	0.0000
Conveyer to Coke Pile	CTP11	35	0	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0000	0.0000	0.0000	0.0000
Conveyer to Coke Pile	CTP12	15	0	ton coke/day	4.60E-05	1.30E-05	lb/ton coke	0.0000	0.0000	0.0000	0.0000
							TOTAL:	**0.0000**	**0.0000**	**0.0000**	**0.0000**

** NOTE: Portable Screener is used as backup.*

CTP = Conveyor Transfer Point

OVERALL TOTAL:	**1.7382**	**1.5644**	**0.0030**	**0.0027**

Table 4. Actual Emissions Inventory, Calculations, Emissions from Coke Storage Piles
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

NO Changes from Daily Emissions During Air Quality Episode

Process	Daily Throughput	units	Emission Factors [2] PM-10	PM-2.5	units	lb/hr PM-10	PM-2.5	Tons/day PM-10	PM-2.5
F002 - Coke Storage Piles									
Wind Erosion of Coke Storage Piles	**506**	ton coke/day	0.0007	0.0007	lb/ton coke	**0.0789**	**0.0789**	**0.001**	**0.001**
	120	tons/hr							

1 Maximum hourly throughput rates taken from operating permit application
2 Emission factor was derived using the following equation contained in AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, 11/06

$$\text{Emission factor (lb/ton processed)} = (k*0.0032*(U/5)^{1.3}))/(M/2)^{1.4}$$

Where: k = Particle Size Multiplier, 0.35 for PM10 and PM 2.5
U = Mean wind speed, 8.9 mph
M = Moisture content or material, 5%

3 Assumes 365 day/yr operation.

Table 5. Actual Emissions Inventory,Calculations, Emissions from Trucks, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Year: **NO Changes from Daily Truck Operations During Air Quality Episode**

Coke Processed:	506	tons/day
Coke Sent Out:	457	tons/day
	22	tons/truckload
Truckloads:	44	truckloads/day
	0.4	miles/roundtrip
Vehicle Miles:	18	miles/day

PM10

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Daily VMT	Control Efficiency (%)	Daily Emissions (Tons/day)	Estimated Emissions (lb/hr)	Daily Actual Emission Tons/Day	
	k	a	b	s	W	P						PM-10	PM-2.5
Truckloads	1.5	0.90	0.45	7.1	21.00	150	1.32	18	50	0.00579			
									TOTAL	**0.0058**	**0.4822**	**0.0058**	**0.0006**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor[1] (lb/VMT)	Total Daily VMT	Control Efficiency (%)	Daily Emissions (Tons/day)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Truckloads	0.15	0.90	0.45	7.1	21.00	150	0.13	18	50	0.00058	
									TOTAL	**0.0006**	**0.0482**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$E = k*(s/12)^{a} (W/3)^{b} [(365-P)/365]$ *Equation (1a and 2)*

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation

Table 6. Actual Emissions Inventory,Calculations, Emissions from Loaders, Unpaved Roadways
Mid-Continent Coal and Coke Company, Clairton, Pennsylvania

Coke Processed:	506	average tons/day	normal operations
Coke Sent Out:	457	average tons/day	normal operations
	6	tons/load	
Loader Trips:	160	loads/day	
	0.02	miles/roundtrip	
Vehicle Miles:	3	miles/day	
Number of Loaders:	2	(One loader not operating during air quality episode)	

PM10

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Daily VMT	Control Efficiency (%)	Daily Emissions (Tons/day)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Loaders	1.5	0.90	0.45	7.1	13.00	150	1.07	3	50	0.00085	
									TOTAL	**0.0009**	**0.0712**

PM2.5

Vehicle	Emission Estimation Parameters						Emission Factor (lb/VMT)	Total Daily VMT	Control Efficiency (%)	Daily Emissions (Tons/day)	Estimated Emissions (lb/hr)
	k	a	b	s	W	P					
Loaders	0.15	0.90	0.45	7.1	13.00	150	0.11	3	50	0.00009	
									TOTAL	**0.0001**	**0.0071**

Notes:

1. *Emission factors are derived using the equations and constants contained in AP-42, Section 13.2.2, Unpaved Roads, 11/2006, as follows:*

$$E = k^*(s/12)^a (W/3)^b [(365-P)/365] \qquad \text{Equation (1a and 2)}$$

Where: *E = Emission factor (lb/VMT) Miles Traveled*
k, a, b = empirical constants
s = surface material silt content (%)
W = mean vehicle weight, tons
P = number of days in a year with at least 0.01 in of precipitation