



AIR QUALITY PROGRAM
301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1811


Federally Enforceable Installation Permit
For 1-Hour SO₂ NAAQS


Issued To: U. S. Steel Mon Valley Works
Edgar Thomson Plant
13th Street and Braddock Avenue
Braddock, PA 15104

ACHD Permit#: 0051-1006

Date of Issuance: September 14, 2017

Expiration Date: (See Section III.12)

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II. FACILITY DESCRIPTION

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The U. S. Steel Mon Valley Works Edgar Thomson Plant (ET) is an iron and steel making facility that produces mainly steel slabs. Raw materials such as coke, iron-bearing materials, and fluxes are charged to blast furnaces in the iron making process. Molten metal (iron) is tapped from the blast furnace at the casthouse into transfer ladles. The hot metal is then transferred to a hot metal mixer or direct pour station in preparation for desulfurization. For desulfurization, a reagent is added to the hot metal, causing sulfur and other impurities to form and rise to the surface. Desulfurized hot metal is then introduced into the basic oxygen process (BOP), where the hot metal is transformed into molten steel. Scrap, alloys, fluxes, and oxygen are also introduced at the BOP. The liquid steel is tapped from the BOP vessels and transferred to the ladle metallurgy facility (LMF) or Vacuum Degasser, where the properties of the steel can be more precisely refined according to customer specifications. To achieve this additional refining at the LMF or Vacuum Degasser, specific alloying materials are added to the process. The refined liquid steel is then charged to the dual strand continuous caster mold. The steel slabs are formed in the continuous caster and are cut to length, ground, slit as necessary, and shipped offsite. There are three Riley Boilers at ET, which are used to generate steam, heat, and electricity for the plant. The three primary fuels for the boilers are Blast Furnace Gas (BFG), Coke Oven Gas, (COG), and Natural Gas (NG).

The facility has two (2) processes that are operated by an outside contractor:

1. BOP Slag Processing; and
2. Waste Product Recycling and Briquetting.

The BOP slag handling system is being operated by Tube City IMS, LLC, while the Waste Product Recycling and Briquette is operated by Braddock Recovery Inc, a division of Harsco Corporation.

Both Tube City IMS, Inc. and Braddock Recovery Inc. are located on U .S. Steel Edgar Thomson property and are considered Title V facilities by ACHD. These facilities are part of the same major source, acting as support facilities to Edgar Thomson Plant, and will be obtaining their own Title V operating permit in the near future.

In addition, BOC Gases (Linde) is another support facility that is located outside U. S. Steel Edgar Thomson compound but supplies oxygen to U. S. Steel Edgar Thomson Plant. BOC Gases is also supplying gases to other companies and is therefore not considered a co-located Title V facility at this time.

The facility, which is located in Braddock, Pennsylvania, is a major source of particulate matter less than 10 microns in diameter (PM₁₀), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOC), and Hazardous Air Pollutants (HAPs), as defined in Section 2101.20 of Article XXI.

INSTALLATION DESCRIPTION

As part of the attainment demonstration for Sulfur Dioxide, U. S. Steel has agreed to reduced sulfur dioxide emission limits. These limits will be federally enforceable upon issuance of this permit and incorporated into the Allegheny County portion of the Pennsylvania State Implementation Plan (SIP). In addition, the Edgar Thomson Plant will replace the three existing Riley Boiler stacks with a single stack at a minimum height of 70 meters.

The emission units regulated by this permit are summarized in Table II-1:

TABLE II-1: Emission Unit Identification

I.D.	SOURCE DESCRIPTION	SO ₂ CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
P001a	Blast Furnace No. 1 Casthouse	NA	1,752,000 TPY (Production)	Coke, Iron- Bearing Materials, Fluxes	S002
P001b	Blast Furnace No. 1 Stoves	NA	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S001
P002a	Blast Furnace No. 3 Casthouse	NA	1,752,000 TPY (Production)	Coke, Iron- Bearing Materials, Fluxes	S002
P002b	Blast Furnace No. 3 Stoves	NA	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S004
P003	Basic Oxygen Process (BOP) Shop	NA	3, 467,500 TPY (Production)	Hot Metal (Iron), Fluxes, Scrap, Alloy Additives	S005- S008
P005	Dual Strand Caster	NA	3, 467,500 TPY (Production)	Steel (Liquid), Fluxes	N/A
B001	Riley Boiler No. 1	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S012
B002	Riley Boiler No. 2	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S013
B003	Riley Boiler No. 3	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S014

with good industrial practice and safe operating procedures, designed to reduce emissions of air contaminants during air pollution episodes. Such plans shall meet the requirements of Article XXI §2106.02.

26. New Source Performance Standards (§2105.05)

- a. It shall be a violation of this permit giving rise to the remedies provided by §2109.02 of Article XXI for any person to operate, or allow to be operated, any source in a manner that does not comply with all requirements of any applicable NSPS now or hereafter established by the EPA, except if such person has obtained from EPA a waiver pursuant to Section 111 or Section 129 of the Clean Air Act or is otherwise lawfully temporarily relieved of the duty to comply with such requirements.
- b. Any person who operates, or allows to be operated, any source subject to any NSPS shall conduct, or cause to be conducted, such tests, measurements, monitoring and the like as is required by such standard. All notices, reports, test results and the like as are required by such standard shall be submitted to the Department in the manner and time specified by such standard. All information, data and the like which is required to be maintained by such standard shall be made available to the Department upon request for inspection and copying.

27. SO₂ Compliance Monitoring

The permittee shall not operate, or allow to be operated, any source in such manner that unburned coke oven gas is emitted into the open air. In addition, the permittee shall not flare, mix, or combust coke oven gas, or allow such gas to be flared, mixed or combusted unless the concentration of sulfur compounds, measured as hydrogen sulfide, in such gas is less than or equal to 35 grains per hundred dry standard cubic feet of coke oven gas produced by the Clairton Plant, when all sulfur emissions from the Claus Sulfur Recovery Plant and the tail gas cleaning equipment thereon, expressed as equivalent H₂S are added to the measured H₂S. The concentration of sulfur compounds specified shall include the tail-gas sulfur, measured as hydrogen sulfide, emitted from sulfur removal equipment. [§2105.21.h].

28. SO₂ Compliance

The restrictions and requirements in Section V.A will become effective on or before October 4, 2018.

V. EMISSION UNIT LEVEL TERMS AND CONDITIONS

A. SO₂ Limits

The permittee is subject to the following conditions:

1. Restrictions:

- a. The combustion units listed in Table V-A-1 shall only combust natural gas, blast furnace gas, and coke oven gas.
- b. The permittee shall construct a new stack consisting of combined flue systems for Riley Boilers 1, 2, and 3. All three Riley boilers shall exhaust at all times to the new stack, constructed to a minimum release height of 70 meters.
- c. SO₂ emissions from the following sources shall not exceed the limitations in Tables V-A-1 and V-A-2 below: [§2102.04.b.6, §2105.21.h.4]

TABLE V-A-1: Combustion Unit Emission Limitations

PROCESS/EQUIPMENT	MAXIMUM ALLOWABLE SO ₂ EMISSION RATE (lb/hr)
Riley Boiler 1	556.91 (On a combined stack basis)
Riley Boiler 2	
Riley Boiler 3	
Blast Furnace 1 Stoves	98.50
Blast Furnace 3 Stoves	90.00

TABLE V-A-2: Emission Limitations (Non-Combustion)

PROCESS/EQUIPMENT	MAXIMUM ALLOWABLE SO ₂ EMISSION RATE (lb/hr)
Blast Furnace 1 Casthouse (roof & fume suppression)	2.01
Blast Furnace 3 Casthouse (roof & fume suppression)	1.69
BOP Process (roof)	6.64
Continuous Casting (roof)	5.25
Casthouse Baghouse	45.10

2. Testing Requirements:

- a. The permittee shall have sulfur dioxide (SO₂) emissions stack tests performed on the boiler combined stacks within 6 months of completion of equipment installation. Emissions testing of the boiler combined stack and emission units listed in Table V-A-1 shall be tested at least once every two years. SO₂ emission tests shall be conducted according to Article XXI, §2108.02. The permittee shall submit a stack test protocol to the Department for approval at least 45 days prior to the test date(s). [§2108.02.b and §2108.02.e]
- b. The Department reserves the right to require additional emissions testing, sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with §2108.02. (§2103.12.h.1)

3. Monitoring Requirement:

- a. The permittee shall determine the hourly H₂S concentration of the gas, per conditions V.A.3.b and V.A.3.c, and the amount of fuel combusted in each emission unit listed in Tables V-A-1 and V-A-2. [§2102.04.b.6; §2103.12.i]
- b. The permittee shall determine the H₂S content of the blast furnace gas combusted at the facility at least once every calendar quarter. The sulfur content of BFG shall be determined by obtaining and analyzing samples of BFG produced at the blast furnaces at a sample location downstream of the gas cleaning system but prior to a combustion source. [§2102.04.b.6; §2103.12.i]
- c. Except for monitor malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), the permittee shall continuously monitor and record the H₂S concentration (in grains(gr)/100 dscf) of the COG combusted and the fuel flow rate. Continuously shall be defined as at least once every 15 minutes. Under the current operating scenario, coke oven gas measurements are taken at the Clairton Plant. [§2102.04.b.6; §2103.12.i]

4. Record Keeping Requirements:

- a. The permittee shall keep records of fuel combusted on an hourly basis in each of the emission units listed in Table V-A-1. [§2103.12.j]
- b. The permittee shall record all instances of non-compliance with the conditions of this permit upon occurrence along with corrective action taken to restore compliance. [§2103.12.j]
- c. All records shall be retained by the facility for at least five (5) years. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.i]

5. Reporting Requirements:

- a. The permittee shall report to the Department semi-annually, in accordance with General Condition III.15, all instances of non-compliance with the conditions of this permit along with all corrective action taken to restore the subject equipment to compliance. If all the terms and conditions of this permit are complied with during the reporting period, then no report is necessary under this permit condition. [§2103.12.k]

- b. Reporting instances of non-compliance in accordance with condition V.A.5.a above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. Work Practice Standards:

None except as otherwise provided.

7. Additional Requirements:

None except as otherwise provided.