

**CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT**

**Steel Dynamics, Inc.
4500 County Road 59
Butler, Indiana 46721**

is hereby authorized to construct

The equipment as listed on page 2 of this permit.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1, 326 IAC 2-2, 40 CFR 52.21, 40 CFR 52.780 and 40 CFR 124, with conditions listed on the attached pages.

Construction Permit No.: CP-033-9187-00043	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

- (a) One (1) submerged arc furnace (SAF), utilizing direct reduced iron (DRI) pellets from the rotary hearth furnace (RHF), coke, and lime to produce liquid hot metal (pig iron) with a maximum capacity of 106 tons of pig iron per hour. The DRI pellets are stored in a bin above the SAF, where the coke and lime are added before being charged through tubes into the SAF. SAF emissions are exhausted through a hole in the stationary lid, with particulate matter (PM) controlled by a wet venturi scrubber and carbon monoxide (CO) controlled by a thermal oxidizer. This process is exhausted to one (1) stack, designated as No. 18.
- PM emissions from the DRI bins, slag pots, and tapping associated with the SAF are captured by a canopy hood, with PM controlled by a baghouse and exhausted to one (1) stack, designated as No. 18;
- (b) One (1) desulfurization station, utilizing lime to remove sulfur in the pig iron produced at the SAF, with a capacity of 106 tons of pig iron per hour. Emissions are captured by a canopy hood, with PM controlled by a baghouse and exhausted to one (1) stack, designated as No. 18;
- (c) A new exhaust and control system for the existing two (2) continuous casters and the ladle metallurgical facility (LMF) which includes four (4) ladle metallurgical stations (LMS) and two (2) argon stir stations. Particulate matter will be captured by a side hood and controlled by one (1) baghouse which is exhausted to one (1) stack, designated as No. 17. The maximum throughput of the LMS will remain 400 tons of steel per hour;
- (d) A new exhaust and control system for the drop point at the previously permitted railcar unloading station. Particulate matter will be captured by a side hood and controlled by one (1) baghouse which is exhausted to two (2) stacks, designated as 19a and 19b. The shed will also have an exhaust system that is controlled by the same baghouse and exhausted to stacks 19a and 19b;
- (e) One (1) storage pile for fluxstone (lime dolomite), with a storage capacity of 30,000 tons and a pile acreage of 0.5 acres, and exhausting to the ambient air; and
- (f) One (1) storage bin, with a capacity of 7,970 cubic feet, with emissions controlled by a bin vent filter, and exhausting through one (1) vent.

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).
2. That this permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to 40 CFR Parts 124.15, 124.19 and 124.20, this permit becomes effective upon its issuance.
4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:
 - (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
 - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
 - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
 - (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).
 - (e) The Permittee has submitted their Part 70 permit on January 13, 1997 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.
7. That when the facilities are constructed and placed into operation the following operation conditions shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:
 - (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
 - (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
 - (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):
 - (a) In the event that ownership of the SAF, LMF, or other associated equipment is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
 - (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
 - (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:
 - (a) Violation of any conditions of this permit.
 - (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
 - (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, (local agency if applicable) or other public official having jurisdiction.

Performance Testing

7. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for PM/PM₁₀, SO₂, NO_x, CO, and VOC from the LMF and SAF stacks within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. The stack test for SO₂ from the LMF shall be conducted simultaneously with a stack test for SO₂ from the EAF to assure compliance with the combined emission limit in Operation Condition No. 17. These tests shall be performed according to 326 IAC 3-2.1 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
 - (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
 - (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
 - (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.
 - (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Malfunction Condition

8. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):
- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
 - (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as

practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Annual Emission Reporting

9. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Fugitive Dust Emissions

10. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].
11. That pursuant to 326 IAC 2-1-3(i)(8), visible emissions escaping the capture hoods for the LMF, continuous casters, desulfurization station, DRI bins, slag pots, and tapping associated with the SAF shall be minimized by operating the fan associated with each baghouse according to manufacturer specifications such that capture efficiency of the hoods are maximized.

Opacity Limitations

12. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) Visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
 - (b) Visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

The more stringent opacity limitations in Operation Condition Nos. 16, 27, 28 and 33 shall satisfy the requirements of 326 IAC 5-1-2.

Best Available Control Technology (BACT)

13. That pursuant to 326 IAC 2-2-3 (BACT), the PM/PM₁₀ emissions from the continuous caster shall be captured by a canopy hood and exhausted to the LMF baghouse.
14. That pursuant to 326 IAC 2-2-3 (BACT), the PM/PM₁₀ emissions from the LMS and stir stations shall be captured by a side draft hood and exhausted to the LMF baghouse.
15. That pursuant to 326 IAC 2-2-3 (BACT), the PM/PM₁₀ emissions from the LMF stack (No. 17) shall not exceed 0.0032 grains per dry standard cubic foot. At a maximum air flow rate of 200,000 standard cubic feet per minute, this limit is equivalent to 5.49 pounds of PM/PM₁₀ per hour. Compliance with this limit will satisfy the requirements of 326 IAC 6-3 (Process Operations).
16. That pursuant to 326 IAC 2-2-3 (BACT), visible emissions from the LMF stack (No. 17) shall not exceed three percent (3%) opacity determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).
17. That pursuant to 326 IAC 2-2-3 (BACT), the SO₂ emissions from the LMF stack (No. 17) and the existing EAF stack (permitted in CP033-8091) combined shall not exceed 0.2 pounds per ton. At a maximum process throughput of 400 tons per hour, this limit is equivalent to 80 pounds of SO₂ per hour.
18. That pursuant to 326 IAC 2-2-3 (BACT), the NO_x emissions from the LMF stack (No. 17) shall not exceed 0.025 pounds per ton. At a maximum process throughput of 400 tons per hour, this limit is equivalent to 10 pounds of NO_x per hour.
19. That pursuant to 326 IAC 2-2-3 (BACT), the CO emissions from the LMF stack (No. 17) shall not exceed 0.1 pounds per ton. At a maximum process throughput of 400 tons per hour, this limit is equivalent to 40 pounds of CO per hour.
20. That pursuant to 326 IAC 2-2 (PSD), the VOC emissions from the LMF stack (No. 17) shall not exceed 0.013 pounds per ton. At a maximum process throughput of 400 tons per hour, this limit is equivalent to 5.21 pounds of VOC per hour. Compliance with this condition along with Operation Condition No. 26 makes 326 IAC 2-2 not applicable.
21. That pursuant to 326 IAC 2-2-3 (BACT), the PM/PM₁₀ emissions from the desulfurization station, DRI bins, slag pots, and tapping associated with the SAF shall be captured by a canopy hood and exhausted to the SAF baghouse.
22. That pursuant to 326 IAC 2-2-3 (BACT), the PM/PM₁₀ emissions from the SAF stack (No. 18) shall not exceed 0.0032 grains per dry standard cubic foot. At a maximum air flow rate of 200,000 standard cubic feet per minute, this limit is equivalent to 5.49 pounds of PM/PM₁₀ per hour. Compliance with this limit will satisfy the requirements of 326 IAC 6-3 (Process Operations).
23. That pursuant to 326 IAC 2-2 (BACT), the SO₂ emissions from the SAF stack (No. 18) shall not exceed 0.084 pounds per ton. At a maximum process throughput of 106 tons per hour, this limit is equivalent to 1.6 pounds of SO₂ per hour.
24. That pursuant to 326 IAC 2-2-3 (BACT), the NO_x emissions from the SAF stack (No. 18) shall not exceed 0.117 pounds per ton. At a maximum process throughput of 106 tons per hour, this limit is equivalent to 12.4 pounds of NO_x per hour.

25. That pursuant to 326 IAC 2-2-3 (BACT), the CO emissions from the SAF stack (No. 18) shall not exceed 1.26 pounds per ton. At a maximum process throughput of 106 tons per hour, this limit is equivalent to 133.5 pounds of CO per hour.
 26. That pursuant to 326 IAC 2-2 (PSD), the VOC emissions from the SAF stack (No. 18) shall not exceed 0.035 pounds per ton. At a maximum process throughput of 106 tons per hour, this limit is equivalent to 3.7 pounds of VOC per hour. Compliance with this condition along with Operation Condition No. 20 makes 326 IAC 2-2 not applicable.
 27. That pursuant to 326 IAC 2-2-3 (BACT), visible emissions from the SAF stack (No. 18) shall not exceed three percent (3%) opacity determined by a six (6) minute average.
 28. That pursuant to 326 IAC 2-2-3 (BACT), visible emissions from any building opening, shed or storage silo shall not exceed three percent (3%) opacity determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).
 29. That pursuant to 326 IAC 2-2-3 (BACT), the coal and iron ore receiving shall be conducted in a shed. The shed shall have closure material over the door openings with air pressure in the shed maintained at a level to ensure that particulate material does not escape through the doors. The drop point and shed shall each have capture systems for particulate matter which are exhausted to one (1) baghouse for control. Particulate matter emissions shall be limited to 0.5 pounds per hour. This condition shall supersede Operation Condition No. 31 in CP-033-8091.
 30. That pursuant to 326 IAC 2-2-3 (BACT), the material reclaim hoppers used by the front end loaders to transport material from the storage piles to the conveying system shall be located above ground. The discharge dropping distance shall be less than three (3) feet. This condition shall supersede Operation Condition No. 33 in CP-033-8091.
 31. That pursuant to 326 IAC 2-2-3 (BACT), water shall be applied to the storage piles to minimize fugitive dust. Water shall be applied continuously during stacking. The material dropping distance shall be maintained at less than three (3) feet.
 32. That pursuant to 326 IAC 2-2-3 (BACT), the visible emissions from all transfer and discharge points shall be limited to three percent (3%) opacity determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).
 33. That pursuant to 326 IAC 2-2-3 (BACT), the opacity of fugitive particulate emissions from the storage piles shall not exceed ten percent (10%) opacity determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A). These limitations may not apply during periods when application of fugitive particulate control measures are either ineffective or unreasonable due to sustained very high wind speeds. During such periods, the Permittee must continue to implement all reasonable fugitive particulate control measures.
- Baghouse Operating Condition
34. That all baghouses shall be operated at all times when any of its associated equipment is in operation.
 - (a) The Permittee shall monitor and record the total static pressure drop across all baghouses, at least once per shift while its associated equipment is in operation.

- (b) Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouses shall be maintained within the range of 4 and 10 inches of water.
- (c) The Preventive Maintenance Plan for these baghouses shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.
- (d) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.
- (e) The gauge employed to take the pressure drop across the baghouses or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.
- (f) An inspection shall be performed each calendar quarter of the all the baghouses. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.
- (g) In the event that a bag's failure has been observed:
 - (i) The affected compartments will be shut down immediately until the failed units have been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Scrubber Operating Condition

35. That the wet venturi scrubber shall be operated at all times when the SAF is in operation.

- (a) The Permittee shall monitor and record the pressure drop and flow rate of the scrubber at least once per shift while the SAF is in operation.
- (b) Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the venturi constriction and the water flow rate of the scrubber shall be maintained within the ranges of 75 to 80 inches of water and 25 to 30 gallons of water per minute, respectively.
- (c) The Preventive Maintenance Plan for the scrubber shall contain troubleshooting contingency and corrective actions for when the pressure drop and flow rate readings are outside of the normal range for any one reading.
- (d) The instruments used for determining the pressure drop and flow rate shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.
- (e) The gauge employed to take the pressure drop across the scrubber or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument

shall be quality assured and maintained as specified by the vendor.

- (f) An inspection shall be performed each calendar quarter of the scrubber. Defective scrubber part(s) shall be replaced. A record shall be kept of the results of the inspection and the number of scrubber part(s) replaced.
- (g) In the event that the scrubber's failure has been observed:
 - (i) The affected process will be shut down immediately until the failed unit has been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Thermal Oxidizer Operating Condition

36. That the thermal oxidizer system shall be operated at all times when the SAF is in operation.

- (a) The Permittee shall continuously monitor and record the operating temperature of the thermal oxidizer.
- (b) The thermal oxidizer shall maintain a minimum operating temperature of 1,650° F until a temperature, fan amperage and duct velocity can be determined in a stack test (described in Operation Condition No. 7) which demonstrates compliance with the emission limit in Operation Condition No. 24.
- (c) The Preventive Maintenance Plan for the thermal oxidizer shall contain troubleshooting contingency and corrective actions for when the temperature, fan amperage, and duct velocity are outside of the normal range for any one reading.
- (d) The instruments used for determining the temperature shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

Compliance with this condition will satisfy the requirements of 326 IAC 9-1-2 (Carbon Monoxide Emission Limits).

Visible Emission Notations

37. That visible emission notations of all exhaust to the atmosphere from the LMF stack (No. 17) and the railcar unloading station stacks (Nos. 19a and 19b) shall be performed once per working shift during daylight hours while the associated equipment is operating. A trained employee will record whether emissions are normal or abnormal.

- (a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time, the process is in operation, not counting start up or shut down time.
- (b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.
- (c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

- (d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

SAF Monitoring

38. That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 3-1.1-1(a)(5), the Permittee shall either:

- (a) Install, calibrate, operate, and maintain a continuous monitoring system for measuring opacity at the exhaust from the SAF stack (No. 18) in accordance with 326 IAC 3-1.1-2 and 40 CFR 60, Appendix B. The Permittee shall record the output of the system and shall provide record keeping and reporting pursuant to 326 IAC 3-1.1-3; or
- (b) (i) Have a certified visible emission observer observe opacity of the visible emissions from the SAF stack (No. 18) at least once per day when the SAF is operating. These observations shall be taken in accordance with 40 CFR 60, Appendix A, Method 9 for at least three six minute averages. Records shall be maintained of the visible emission observations; and
- (ii) Install, calibrate, operate, and maintain continuous monitoring systems for measuring and recording:
- (A) the pressure loss through the venturi constriction of the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate within ± 1 inch water; and
- (B) the water supply pressure to the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate ± 5 percent of the design water supply pressure. The monitoring device's pressure sensor or pressure tap must be located close to the water discharge point. The OAM, Compliance Data Section must be consulted for approval in advance of selecting alternative locations for the pressure sensor or tap.

All scrubber monitoring devices shall use chart recorders which are operated at a minimum chart speed of 1.5 inches per hour.

Compliance with section (b)(ii) of this condition shall satisfy the requirements of sections (a) and (e) of Operation Condition No. 35.

Post Construction Ambient Monitoring

39. That pursuant to 326 IAC 2-2-4, the Permittee shall collect ambient concentrations for PM₁₀, NO₂ and meteorological data as described in (a) through (h). These sites shall begin collecting valid data prior to the commencement of operation of the SAF.

- (a) The monitoring must be performed using U.S. EPA approved methods, procedures, and quality assurance programs and be in accordance with plan and protocol approved by OAM.
- (b) The Quality Assurance Plan and Protocol shall be updated and submitted to OAM Ambient Monitoring Section, ninety (90) calendar days in advance of the start of monitoring.
- (c) The Quality Assurance Plan and Protocol must be approved by OAM prior to

commencement of monitoring.

- (d) The monitoring sites shall meet the operating and maintenance criteria outlined in IDEM, OAM Quality Assurance Manual.
- (e) IDEM, OAM reserves the authority to require the Permittee to monitor for compliance with the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ in the event that such information is necessary to demonstrate compliance with the standard.
- (f) The monitoring sites shall measure the following meteorological parameters:
 - (i) wind direction,
 - (ii) wind speed, and
 - (iii) temperature.
- (g) A quarterly summary of the monitoring data shall be submitted to:

Indiana Department of Environmental Management
Ambient Monitoring Section, Office of Air Management
2525 North Shadeland Avenue
Indianapolis, Indiana 46219

- (h) The Permittee may petition for the removal of the monitoring requirements, if it is established to the satisfaction of the Commissioner, that ambient PM_{10} and NO_2 levels will continue to comply with the NAAQS with an adequate margin of safety. The monitoring requirements may be continued if there exists a threat to the NAAQS or if determined to be warranted by IDEM, OAM.

Record Keeping Requirements

40. That a log of information necessary to document compliance with Operation Permit Condition Nos. 34, 35, 36, 37, and 38 shall be maintained. These records shall be kept for at least the past 60 month period and be made available upon request to the Office of Air Management (OAM).

- (a) The records shall include the following information, at a minimum, for operation condition:
 - (i) No. 34 - Records of baghouse pressure drops; quarterly baghouse inspections, semi-annual instrument calibrations, durations of excursions from the parametric values, and corrective actions taken as a result of an excursion from the parametric values.
 - (ii) No. 35 - Records of scrubber pressure drop and flow rates (if applicable), quarterly scrubber inspections, semi-annual instrument calibrations, durations of excursions from the parametric values, and corrective actions taken as a result of an excursion from the parametric values.
 - (iii) No. 36 - Records of continuous temperature monitoring and semi-annual instrument calibration.

- (iv) No. 37 - Records of visible emission notations, durations of abnormal emissions, and corrective actions taken as a result of abnormal emissions.
- (v) No. 38 - Records of continuous opacity monitoring (if applicable); or records of continuous scrubber pressure loss and water supply pressure monitoring, daily visible emission observations, and manufacturer's monitoring device specifications.
- (b) These records shall be kept at the source location and made available within one (1) hour upon verbal request of an IDEM, OAM representative. All records shall be submitted to the IDEM, OAM upon request.

Reporting Requirements

41. That the Permittee shall submit a quarterly excess emissions report, if applicable, based on the continuous opacity monitor (COM) data, pursuant to 326 IAC 3-1.1-3, within thirty (30) calendar days following the end of each calendar quarter. In addition, malfunctions of any facility or emission control equipment which lasts more than one (1) hour shall be reported using the Malfunction Report Forms.

- (a) All reports shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

- (b) Unless otherwise specified in this permit, any notice, report, or other submissions required by this permit shall be timely if:
 - (i) Postmarked on or before the date it is due; or
 - (ii) Delivered by any other method if it is received and stamped by IDEM, OAM, on or before the date it is due.
- (c) The first report shall cover the period commencing the postmarked submission date of the Affidavit of Construction.

Emergency Reduction Plans

42. Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.
- (b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within 180 calendar days from the issuance date of this permit.

- (c) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM, shall supply such a plan.
- (d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (f) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

MALFUNCTION REPORT

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967**

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ? _____, 100 LBS/HR VOC ? _____, 100 LBS/HR SULFUR DIOXIDE ? _____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ? _____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: _____ PHONE NO. () _____

LOCATION: (CITY AND COUNTY) _____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: ____/____/19____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE ____/____/19____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____
INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY:

TITLE: _____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

PAGE 1 OF 2

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 “Malfunction” definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management

Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name: Steel Dynamics, Inc.
Source Location: 4500 County Road 59, Butler, Indiana 46721
County: DeKalb
Construction Permit No.: CP-033-9187-00043
SIC Code: 3312
Permit Reviewer: Bryan Sheets

The Office of Air Management (OAM) has reviewed an application from Steel Dynamics, Inc. (SDI) relating to the construction and operation of a new submerged arc furnace (SAF), desulfurization station, storage pile and storage bin, and modifications for the exhaust systems of the ladle metallurgical facility (LMF) and continuous caster, railcar unloading station, and storage bins. The new emission units consist of the following:

- (a) One (1) submerged arc furnace (SAF), utilizing direct reduced iron (DRI) pellets from the rotary hearth furnace (RHF), coke, and lime to produce liquid hot metal (pig iron) with a maximum capacity of 106 tons of pig iron per hour. The DRI pellets are stored in a bin above the SAF, where the coke and lime are added before being charged through tubes into the SAF. SAF emissions are exhausted through a hole in the stationary lid, with particulate matter (PM) controlled by a wet venturi scrubber and carbon monoxide (CO) controlled by a thermal oxidizer. This process is exhausted to one (1) stack, designated as No. 18.

PM emissions from the DRI bins, slag pots, and tapping associated with the SAF are captured by a canopy hood, with PM controlled by a baghouse and exhausted to one (1) stack, designated as No. 18;

- (b) One (1) desulfurization station, utilizing lime to remove sulfur in the pig iron produced at the SAF, with a capacity of 106 tons of pig iron per hour. Emissions are captured by a canopy hood, with PM controlled by a baghouse and exhausted to one (1) stack, designated as No. 18;
- (c) One (1) storage pile for fluxstone (lime dolomite), with a storage capacity of 30,000 tons and a pile acreage of 0.5 acres, and exhausting to the ambient air; and
- (d) One (1) storage bin, with a capacity of 7,970 cubic feet, with emissions controlled by a bin vent filter, and exhausting through one (1) vent.

The modifications consist of the following:

- (e) A new exhaust and control system for the existing two (2) continuous casters and the ladle metallurgical facility (LMF) which includes four (4) ladle metallurgical stations (LMS) and two (2) argon stir stations. Particulate matter will be captured by a side hood and controlled by one (1) baghouse which is exhausted to one (1) stack, designated as No. 17. The maximum throughput of the LMS will remain 400 tons of steel per hour;
- (f) A new exhaust and control system for the drop point at the previously permitted railcar unloading station. Particulate matter will be captured by a side hood and controlled by one (1) baghouse which is exhausted to two (2) stacks, designated as 19a and 19b. The

shed will also have an exhaust system that is controlled by the same baghouse and exhausted to stacks 19a and 19b;

Also included in this review is: 1) a change in flowrates for the previously permitted (CP033-8091) twelve (12) storage bins which will still each be controlled by bin vents with an outlet grain loading of 0.01 gr/dscf; and 2) a change in elevation for the material reclaim hoppers from below ground to above ground with the dropping distance remaining less than 3 feet.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
17	LMS, continuous caster, stir stations	125	8.5	253,846	200
18	SAF, tapping, slag pots, desulfurization station	125	8.5	253,846	200
19a & b	Railcar unloading station	14	5	67,500	70

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on November 4, 1997, with additional information received on December 16, 1997 and January 26, 1998.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations.

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	53	15,600
Particulate Matter (PM ₁₀)	53	15,600
Sulfur Dioxide (SO ₂)	39	7
Volatile Organic Compounds (VOC)	39	23
Carbon Monoxide (CO)	760	58675
Nitrogen Oxides (NO _x)		98
Single Hazardous Air Pollutant (HAP)		negligible
Combination of HAPs		negligible

(a) Allowable emissions are determined from the applicability of rule 326 IAC 2-2. See

attached spreadsheets for detailed calculations.

- (b) The allowable emissions based on the rules cited are less than the potential emissions, therefore, the allowable emissions are used for the permitting determination.
- (c) Allowable emissions (as defined in the Indiana Rule) of PM, PM₁₀, CO, and NO_x are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. DeKalb County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) DeKalb County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	369
PM ₁₀	346
SO ₂	693
VOC	263
CO	4225
NO _x	1794

- (a) This existing source is a major stationary source because it is in one of the 28 listed source categories and at least one regulated pollutant is emitted at a rate of 100 tons per year or more.
- (b) These emissions were based on CP-033-8091-00043, issued to the source on June 25, 1997.

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (ton/yr)	PM ₁₀ (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Submerged Arc Furnace	24.0 ^(a)	24.0 ^(a)	39.0 ^(b)	16.2 ^(c)	585.0 ^(d)	54.3

Ladle Metallurgical Facility	24.0 ^(e)	24.0 ^(e)	0 ^(f)	22.8	175.2	43.8
Material Handling and Storage	5.0 ^(g)	5.0 ^(g)	–	–	–	–
Net Emissions Increase	53.0	53.0	39.0	39.0	760.2	98.1
PSD Significant Level	25	15	40	40	100	40

This modification to an existing major stationary source is major for PM, PM₁₀, CO, and NO_x because the emissions increases are greater than the PSD significant levels.

- (a) Pursuant to 326 IAC 2-2-3 (BACT), the PM and PM₁₀ emissions from the SAF will be controlled by a scrubber and the DRI bins, desulfurization station, slag pots, and tapping associated with the SAF will be controlled by a baghouse. Both the baghouse and scrubber will be exhausted to one (1) stack with an outlet grain loading of 0.0032 gr/dscf. This limit is equivalent to particulate matter emissions of 24 tons per year.
- (b) SO₂ potential emissions from the SAF are relatively small. However, there are no specific emission factors for SO₂ from this process. Due to this uncertainty, the modification could cause an exceedance of the PSD significant level. Therefore, pursuant to 326 IAC 2-2 (PSD), the SO₂ emissions from the SAF will be limited to 39.0 tons per year to avoid PSD review.
- (b) VOC potential emissions from the SAF are considered negligible. However, a relatively small amount of VOC emissions from this process would cause the modification to exceed the PSD significant level. Therefore, pursuant to 326 IAC 2-2 (PSD), the VOC emissions from the SAF will be limited to 16.2 tons per year to avoid PSD review.
- (c) Pursuant to 326 IAC 2-2-3 (BACT), the CO emissions from the SAF will be controlled by a thermal oxidizer. CO emissions will be limited to 585.0 tons per year.
- (d) Pursuant to 326 IAC 2-2-3 (BACT), the PM and PM₁₀ emissions from the LMF will be controlled by a baghouse. The baghouse will have an outlet grain loading of 0.0032 gr/dscf. This limit is equivalent to particulate matter emissions of 24 tons per year.
- (e) Pursuant to 326 IAC 2-2 (PSD), the SO₂ emissions from the LMF and existing electric arc furnace (EAF) will have a combined limit of 0.2 lbs/ton, such that allowable emissions do not increase from existing levels. Therefore, the requirements of 326 IAC 2-2, PSD, do not apply.
- (f) The PM emissions from material handling reflects new emissions sources, as well as, increases from those units already permitted.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-033-8068-00043) application on January 13, 1997. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) or National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63) applicable to this facility.

State Rule Applicability

326 IAC 1-6 (Malfunctions)

These facilities are subject to the requirements of 326 IAC 1-6 (Malfunctions), because the facilities were required to obtain an operating permit under 326 IAC 2-1-4.

326 IAC 2-2 (Prevention of Significant Deterioration)

This modification is subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) for emissions of PM, PM₁₀, SO₂, CO, and NO_x because the potential to emit for these pollutants exceed the PSD major modification "significant" thresholds. Therefore, the PSD provisions require that this major modification be reviewed to ensure compliance with the National Ambient Air Quality Standard (NAAQS), the applicable PSD air quality increments, and the requirements to apply the Best Available Control Technology (BACT) for the affected pollutants.

The attached modeling analysis (Appendix B) was conducted to show that the major modification does not violate the NAAQS and does not exceed the incremental consumption above eighty percent (80%) of the PSD increment for any affected pollutant. The modeling analysis also demonstrates that the source is above the de minimis monitoring level for PM₁₀ and NO₂. Therefore, there will be a requirement in the permit to perform ambient monitoring of PM₁₀ and NO₂ after construction. Since SDI has previously monitored NO₂ and currently monitors PM₁₀, the condition will not extend the minimum time period for monitoring. Rather, the OAM will consider the air quality data along with the actual and permitted operating practices at SDI when making a decision to allow the monitoring sites to be discontinued.

BACT for the facilities covered in this major modification are determined on a case by case basis by reviewing similar process controls and new available technologies. In addition, economic, energy and environmental impacts are considered in IDEM's final decision. Control technology summaries of the facilities covered in this modification are included in Appendix C.

326 IAC 2-6 (Emission Reporting)

These facilities are subject to the requirements of 326 IAC 2-6 (Emission Reporting), because the source has the potential to emit more than 100 tons/yr of VOC. Pursuant to this rule, the owner/operator of these facilities must annually submit an emission statement of the facilities. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 5-1 (Opacity Limitations)

These facilities are subject to the requirements of 326 IAC 5-1 (Opacity Limitations), because the facilities have visible emissions due to particulate matter. Since the source is not located in an area specified in 326 IAC 5-1-1(c), the opacity shall be limited to the following:

- (a) Visible emissions shall not exceed an average of forty percent (40%) opacity in twenty-four (24) consecutive readings.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

326 IAC 6-3 (Particulate Emissions Limitations for Process Operations)

These facilities are subject to the requirements of 326 IAC 6-3 (Particulate Emissions Limitations for Process Operations), because they are located in an area designated as attainment for particulate matter and the operations are defined as process operations. 326 IAC 6-3-2(c)

requires that the particulate matter (PM) from the LMS, stir stations, and continuous caster be limited to 66.3 pounds per hour while operating at a maximum process weight rate of 400 tons per hour. 326 IAC 6-3-2(c) requires that the particulate matter (PM) from the SAF be limited to 51.9 pounds per hour while operating at a maximum process weight rate of 106 tons per hour. These emission limits were determined using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

The baghouses for the LMF and the scrubber for the SAF shall be in operation at all times the associated facility is in operation, in order to comply with this limit. The requirements of 326 IAC 2-2-3 (BACT) will satisfy these limits. Compliance with the BACT limits of 5.6 pounds per hour for the LMF and SAF exhausts shall satisfy the requirements of 326 IAC 6-3.

326 IAC 6-4 (Fugitive Dust Emissions)

SDI is subject to the requirements of 326 IAC 6-4 (Fugitive Dust Emissions) and shall meet the limitations of 326 IAC 6-4-2.

326 IAC 6-5 (Fugitive Particulate Matter Emissions)

SDI is subject to the requirements of 326 IAC 6-5 (Fugitive Particulate Matter Emissions) and shall continue to comply with the existing Fugitive Particulate Matter Emissions Control Plan.

326 IAC 7-1.1 (Sulfur Dioxide Emission Limitation)

The LMS is subject to the requirements of 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitation) because it has a potential to emit more than 25 tons of SO₂ per year. However, there are no specific limitations that apply to this type of facility.

326 IAC 9-1 (Carbon Monoxide Emission Limits)

The SAF is subject to the requirements of 326 IAC 9-1 (Carbon Monoxide Emission Limits) because it is used to smelt a ferrous metal and has a capacity greater than 10 tons per hour. This rule requires that the carbon monoxide emissions be controlled by an afterburner, boiler, or other approved method. The CO emissions will be controlled by a thermal oxidizer with a control efficiency of 99%. Therefore, this will be an acceptable method for the purposes of 326 IAC 9-1.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) This modification will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.
- (b) See attached spreadsheets for detailed air toxic calculations.

Conclusion

The construction of the SAF and desulfurization station and the exhaust and baghouse systems for the LMF and continuous casters and the railcar unloading station will be subject to the

conditions of the attached proposed **Construction Permit No. CP-033-9187-00043.**

**Appendix A: Emission Calculations
Submerged Arc Furnace**

F. HAP Emissions

Pollutant	Emission Factor (lbs/hr)	Emissions (TPY)
Antimony	3.61E-03	1.58E-02
Arsenic	3.40E-03	1.49E-02
Beryllium	7.01E-04	3.07E-03
Cadmium	7.99E-03	3.50E-02
Chromium	4.29E-02	1.88E-01
Cobalt	1.10E-02	4.83E-02
Manganese	6.12E-01	2.68E+00
Mercury	3.68E-03	1.61E-02
Nickel	4.93E-02	2.16E-01
Selenium	7.21E-05	3.16E-04
TOTAL		3.22E+00

Methodology

HAP emission factors are based on HAP emissions from the rotary hearth furnace
 Emissions (TPY) = Emission Factor (lbs/hr) x 8760 hrs/yr / 2000 lbs/ton

Material Handling

A. Storage Silo

Bentonite:

$$0.01 \text{ gr/dscf} \times 2,000 \text{ dscf/m} \times 60 \text{ m/hr} / 7000 \text{ gr/lb} / 2000 \text{ lbs/ton} \times 8760 \text{ hrs/yr} = 0.75 \text{ tons PM/PM10 per year}$$

Bin	Flow Rate (CFM)	PM Emissions (TPY)	Bin	Flow Rate (CFM)	PM Emissions (TPY)
Silica Sand	1500	0.56	Lime	2000	0.75
Ground Coal	3000	1.13	Coke	2000	0.75
Raw Coal	1000	0.38	Bauxite	2000	0.75
Raw Limestone	1000	0.38	Iron Units	2000	0.75
Raw Iron Ore	1500	0.56	Silica	2000	0.75
Roll Press Feed	1500	0.56	Baghouse Dust	1000	0.38

B. Railcar Unloading

$$0.02 \text{ lbs PM/ton} \times 2500 \text{ tons/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} = 219 \text{ tons PM/PM10 per year}$$

$$219 \text{ tons PM/PM10 per year} \times (1 - 0.99) = 2.19 \text{ ton PM/PM10 per year}$$

C. Storage Pile

Limestone: 0.5 acres
 1 % silt content
 132 days with precipitation greater than 0.01 in.
 18.8 frequency of time that wind exceeds 12 mph

$$\begin{aligned} E \text{ (lb/day/acre)} &= 1.7 \text{ (silt/1.5)} \text{ ((365 - precip.)/235)} \text{ (wind/15)} \\ &= 1.41 \end{aligned}$$

$$\begin{aligned} \text{PM/PM10} &= 1.41 \text{ lb/acre/day} \times 0.5 \text{ acres} \times 365 \text{ days/yr} / 2000 \text{ lbs/ton} \\ &= 0.13 \text{ tons PM/PM10 per year} \end{aligned}$$

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for New Construction and Operation

Source Name: Steel Dynamics, Inc.
Source Location: 4500 County Road 59, Butler, Indiana 46721
County: DeKalb
Construction Permit No.: CP-033-9187-00043
SIC Code: 3312
Permit Reviewer: Bryan Sheets

On February 17, 1998, the Office of Air Management (OAM) had a notice published in the Auburn Evening Star, Auburn, Indiana, stating that Steel Dynamics, Inc. had applied for a construction permit to construct and operate a submerged arc furnace (SAF) with particulate scrubber and thermal oxidizer as control. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Upon further review, OAM has made the following change for clarification (change is bolded for emphasis):

1. Operation Condition No. 38 shall be amended for clarification of how long visible emission readings shall be taken. The condition has been changed from:

That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 3-1.1-1(a)(5), the Permittee shall either:

- (a) Install, calibrate, operate, and maintain a continuous monitoring system for measuring opacity at the exhaust from the SAF stack (No. 18) in accordance with 326 IAC 3-1.1-2 and 40 CFR 60, Appendix B. The Permittee shall record the output of the system and shall provide record keeping and reporting pursuant to 326 IAC 3-1.1-3; or
- (b) (i) Have a certified visible emission observer observe opacity of the visible emissions from the SAF stack (No. 18) at least once per day when the SAF is operating. These observations shall be taken in accordance with 40 CFR 60, Appendix A, Method 9. Records shall be maintained of the visible emission observations; and
- (ii) Install, calibrate, operate, and maintain continuous monitoring systems for measuring and recording:
 - (A) the pressure loss through the venturi constriction of the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate within ± 1 inch water; and
 - (B) the water supply pressure to the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate ± 5 percent of the design water supply pressure. The monitoring device's pressure sensor or pressure tap must be located close to the water discharge point. The OAM, Compliance Data Section must be consulted for approval in advance of selecting alternative locations for the pressure sensor or tap.

All scrubber monitoring devices shall use chart recorders which are operated at a minimum chart speed of 1.5 inches per hour.

Compliance with section (b)(ii) of this condition shall satisfy the requirements of sections (a) and (e) of Operation Condition No. 35.

to be as follows on page 10 of 15 of the final permit:

either: That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 3-1.1-1(a)(5), the Permittee shall

- (a) Install, calibrate, operate, and maintain a continuous monitoring system for measuring opacity at the exhaust from the SAF stack (No. 18) in accordance with 326 IAC 3-1.1-2 and 40 CFR 60, Appendix B. The Permittee shall record the output of the system and shall provide record keeping and reporting pursuant to 326 IAC 3-1.1-3; or
- (b) (i) Have a certified visible emission observer observe opacity of the visible emissions from the SAF stack (No. 18) at least once per day when the SAF is operating. These observations shall be taken in accordance with 40 CFR 60, Appendix A, Method 9 **for at least three six minute averages**. Records shall be maintained of the visible emission observations; and
- (ii) Install, calibrate, operate, and maintain continuous monitoring systems for measuring and recording:
 - (A) the pressure loss through the venturi constriction of the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate within ± 1 inch water; and
 - (B) the water supply pressure to the SAF scrubber. The monitoring device is to be certified by the manufacturer to be accurate ± 5 percent of the design water supply pressure. The monitoring device's pressure sensor or pressure tap must be located close to the water discharge point. The OAM, Compliance Data Section must be consulted for approval in advance of selecting alternative locations for the pressure sensor or tap.

All scrubber monitoring devices shall use chart recorders which are operated at a minimum chart speed of 1.5 inches per hour.

Compliance with section (b)(ii) of this condition shall satisfy the requirements of sections (a) and (e) of Operation Condition No. 35.

This change will require additional monitoring on the part of the source than what was originally stated in the draft permit. The source has been notified of this change and has not objected to the additional monitoring. There were no comments received from the source or public regarding this permit and since this clarification has not relaxed any previous condition, it will not be considered a comment for the purposes of 40 CFR 124.15.

2. Therefore, the effective date of the permit shall be the date of issuance and Construction Condition No. 3 will be changed from:

That pursuant to 40 CFR Parts 124.15 124.19 and 124.20, the effective date of this permit will be thirty-three (33) days from its issuance if comments are received.

to be as follows on page 3 of 15 of the final permit:

That pursuant to 40 CFR Parts 124.15, 124.19 and 124.20, **this permit becomes effective upon its issuance.**