

**CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT**

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

**Inland Steel Company
3210 Watling Street
East Chicago, Indiana 46312**

is hereby authorized to construct

The following pieces of equipment utilized by the HRCC unit, as permitted in CP-089-6919-00316:

- (a) two (2) natural gas-fired turbines, identified as ES501 and ES502, each with a maximum heat input capacity of 1250 MMBtu/hr, each exhausting through one (1) stack, identified as 501 and 502, respectively,
- (b) one (1) coke transfer tower, identified as ES268, with a maximum throughput of 4020 tons of dry coke per day, enclosed and controlled by one (1) baghouse, and exhausting inside the tower, and
- (c) one (1) existing coke transfer point, identified as ES269, with a maximum throughput of 4020 tons of dry coke per day, enclosed and controlled by one (1) baghouse, exhausting inside the tower.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages. This permit, in conjunction with CP-089-9236-00316 and CP-089-9237-00316, will supersede CP-089-6919-00316.

Construction Permit No.: CP-089-9033-00316	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

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 IC 13-15-5-3, 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) That the operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).
 - (e) Inland Steel Company has submitted their Part 70 permit application on September 16, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

NSPS Reporting Requirement

7. That pursuant to the New Source Performance Standards (NSPS), Part 60.7, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

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

and

**IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962**

The application and enforcement of these standards have been delegated to the IDEM-OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

8. 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 natural gas-fired turbines are 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.

Malfunction Condition

7. 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

8. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for these facilities. This statement must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

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

and

**IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962**

The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30.

Opacity Limitations

9. 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 20% 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.

Where this rule establishes a limit less stringent than another applicable limitation, the more stringent of the limitations shall apply.

10. That pursuant to 326 IAC 2-1-3(i)(8), visible emissions from the coke transfer towers controlled by baghouses (Stack IDs 268 and 269) shall not exceed an opacity of five percent (5%) six minute average.

Fugitive Dust Emissions

11. That pursuant to 326 IAC 6-1-11.1, the source shall comply with the requirements of this rule including, but not limited to, the following:
- (a) the average instantaneous opacity of fugitive particulate emissions from batch material transfer shall not exceed ten percent (10%),
 - (b) the opacity of fugitive particulate emissions from continuous transfer of material onto and out of storage piles shall not exceed ten percent (10%) on a three (3) minute average,
 - (c) the opacity of fugitive particulate emissions from storage piles shall not exceed 10 percent (10%) on a six (6) minute average,
 - (d) there shall be a zero (0) percent frequency of visible emission observation of a material during the in plant transportation of material by truck or rail at any time. Material transported by truck or rail that is enclosed and covered shall be considered in compliance with the in plant transportation requirement,
 - (e) the PM₁₀ emissions from building vents shall not exceed twenty-two thousandths (0.022) grains per dry standard cubic foot and ten percent (10%) opacity,
 - (f) the PM₁₀ stack emissions from a material processing facility shall not exceed twenty-two thousandths (0.022) grains per dry standard cubic foot and ten percent (10%) opacity,
 - (g) as required by 326 IAC 6-1-11.1(e), Inland Steel Company shall append and implement their Fugitive Dust Control Plan, such that paved roads, parking lots, unpaved roads, traveled open areas, and storage pile emissions are reduced and comply with applicable rules.

A copy of this rule is enclosed.

12. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), if fugitive dust is visible crossing the boundary or property line of the source, the source is in violation of this fugitive dust rule. 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)].

Emission Offset Minor Source Limit

13. That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, the VOC emissions from the natural gas-fired turbines stacks (Stack IDs 501 and 502) shall each be limited to 2.0 pounds per hour.
14. That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, the VOC emissions from any new ancillary equipment including, but not limited to, combustion units and storage tanks shall be limited to 0.20 tons per month. The Permittee shall notify and obtain approval from the Office of Air Management of any planned new ancillary equipment associated with the HRCC or gas turbine facilities which will have the potential to emit VOC prior to construction of the equipment. Any new ancillary equipment shall be considered part of the HRCC or gas turbine facilities if they are located in or perform some function for any HRCC or gas turbine facilities and are constructed within one (1) year of the commencement of operation of the HRCC or gas turbine facilities.
15. That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, particulate matter (PM) emissions from the natural gas-fired turbines (Stack IDs 501 and 502) shall each be limited to 3.0 pounds per million cubic feet of fuel used. Compliance with this condition will satisfy the requirements of 326 IAC 6-1-2.

Compliance with this condition, Operation Condition Nos. 13 and 14 will ensure that the Emission Offset rules, 326 IAC 2-3, will not apply.

Particulate Matter Limitation

16. That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, particulate matter (PM) emissions from the coal and coke handling equipment shall be limited as follows:
 - (a) the coke transfer tower (Stack ID 268) shall be limited to 0.075 pounds per hour, and
 - (b) the existing coke transfer point (Stack ID 269) shall be limited to 0.092 pounds per hour.

NSPS Limitations

17. That pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:
 - (a) limit nitrogen oxides emissions, as required by 40 CFR 60.332, to:
$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F,$$
where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).
Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peck load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.
F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.
 - (b) limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight;
 - (c) install a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine, as required by 40 CFR 60.334(a);

- (d) monitor the sulfur content and nitrogen content of the fuel being fired in the turbine, as required by 40 CFR 60.334(b); and
- (e) report periods of excess emissions, as required by 40 CFR 334(c).

Baghouse Operating Condition

18. That the baghouses for the coke handling equipment (Stack IDs 268 and 269) shall be operated at all times when its associated process is in operation.

- (a) 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.
- (b) 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.

Visible Emissions Notations

19. Daily visible emission notations of the coke handling stack exhausts (ES268 and ES269) shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

- (a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (b) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest 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 visible emissions for that specific process.
- (d) The Permittee's Preventive Maintenance Plan or Fugitive Dust Control Plan shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

Performance Testing

20. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for VOC, NO_x and PM emissions from the natural gas-fired turbines (Stack ID 501 or 502) within 60 days after the natural gas-fired turbines achieve maximum production rate, but no later than 180 days after initial start-up.

- (a) 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. PM limits include both filterable and condensable particulate matter.

Therefore, PM testing should be performed according to 40 CFR 60, Appendix A, Method 5 and 40 CFR 51, Appendix M, Method 202.

- (b) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
- (c) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
- (d) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
- (e) 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.
- (f) 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.
- (g) After the OAM's evaluation and approval of stack test results, stack tests which demonstrate compliance with VOC emission limitations may be used to request an amendment to revise established VOC emission limitations on the tested HRCC unit operations. Existing VOC emission limitations shall be enforced until an amendment is issued. The Permittee shall specify in the amendment request how the VOC limitations be restructured, but in no case shall the total restructured VOC limitation for the HRCC and gas turbine facilities exceed 39.6 tons per year.

Record Keeping Requirements

21. That a log of information necessary to document compliance with Operation Condition Nos. 17, 18 and 19 shall be maintained. These records shall be kept for at least the past 60 month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:
- (a) No. 17 - Records that the fuel consumption, water to fuel ratio, sulfur content of the fuel, and nitrogen content of the fuel have been monitored;
 - (b) No. 18 - Records that the baghouses have been inspected on a quarterly basis and the number of bags replaced. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented; and
 - (c) No. 19 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented.

PSD and Emission Offset Credit Limits

22. That pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-2, and 326 IAC 2-3, the No. 4 AC Station shall be shutdown prior to the commencement of commercial operation of the HRCC facilities, which

will be defined as 180 days after start-up of the last battery. The Permittee shall adhere to parts (b) through (e) of the following requirements in the phased shutdown plan as submitted to IDEM on December 16, 1996:

- (a) The lime spray dryer and baghouse associated with the waste gas stack (201) shall begin operation within 30 days after start-up of the first coke battery,
- (b) Upon start-up of the third coke battery, Inland Steel Company shall not operate the 4AC Station boilers such that actual emissions from the 4AC Station and coke batteries are greater than the following allowable levels in tons per month:

TSP	PM ₁₀	SO ₂	Lead	H ₂ SO ₄	VOC	NO _x	CO
72.0	48.3	991.7	0.18	31.3	3.3	604.2	73.5

- (c) Within 180 days after start-up of the last coke battery, all boilers in the 4AC Station shall be permanently shutdown.
- (d) The two (2) new natural gas-fired turbines shall not commence operation until boilers 401 through 405 in the 4AC Station are permanently shutdown.
- (e) During the phased start-up and shutdown, records of fuel type and usage for boilers 401 through 405 in the No. 4AC Station, records of emissions calculations necessary to document compliance with part (b), and dates for start-ups and shutdowns shall be kept. These records shall be kept for at least a 36 month period and shall be submitted to IDEM, OAM upon request. Sulfur dioxide actual emissions shall be calculated using CEM output records for boilers 401 through 405. Actual PM₁₀ emissions from:
 - (i) coal or mixed gas combustion shall be calculated using PM₁₀ SIP limits as the emission factor, and
 - (ii) natural gas combustion shall be calculated using AP-42 PM₁₀ emission factor for natural gas combustion.

Actual emissions for all other pollutants shall be calculated using corresponding AP-42 emission factor.

23. That pursuant to 326 IAC 2-2 and 326 IAC 2-3, the requirements in (a), (b), (c), and (d) shall be met to obtain the necessary credits for netting requirements.

- (a) The following facilities must be permanently shutdown:
 - (i) the No. 4 BOF Teeming Facility,
 - (ii) the foundry operations in the Mold Foundry Building,
 - (iii) the No. 3AC Station Boiler 305,
 - (iv) the 76 inch hot strip mill,
 - (v) the 100 inch plate mill,
 - (vi) the No. 4 slabber mill (soaking pits 1-45), and the No. 4 slabber scarfer.

- (b) The pugh car burning operation and the dekishing and debricking operations shall be conducted inside the mold foundry building as required in CP No. 089-2905. The emissions from these operations shall be captured and exhausted to the mold foundry baghouse with particulate emissions not to exceed 26.0 lbs/hr and 0.011 gr/dscf. The iron beaching operation which accompanied these operations has been discontinued and shall remain shutdown.
- (c) The no. 80 furnace at the No. 1 Electric Arc Furnace Shop and the No. 2AC boiler 207-10 shall be permanently shutdown as required in CP No. 089-3630. Also, as required in CP No. 089-3630, the emissions from the No. 1 Electric Arc Furnace Shop shall be limited as follows in tons per year:

TSP	PM ₁₀	SO ₂	Lead	VOC	NO _x	CO
133.2	108.0	336.7	1.23	11.3	159.6	2303.5

- (d) As stated in CP No. 089-3192, the two (2) pusher furnaces and the (2) walking beam furnaces at the 80 inch hot strip mill shall be limited to a combined total heat input of 1371.2 MMBtu/hr and total fuel usage rate of 230 MMCF of natural gas per week.

These requirements do not supersede the conditions listed in any of the permits stated above. If facilities listed in this condition have additional limits in their associated permits, they shall continue to comply with those said limits. This condition along with Operation Condition Nos. 13, 14, 15 and 18 will ensure that the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2, and the Emission Offset rules, 326 IAC 2-3, will not apply.

Reporting Requirements

24. Reports required by 40 CFR 60.334 and a quarterly summary of the information necessary to document compliance with Operation Condition No. 22(b) shall be submitted to:

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

and

**IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962**

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms.

Indiana Department of Environmental Management Office of Air Management Compliance Data Section Quarterly Report

Company Name: Inland Steel Company
 Location: 3210 Watling Street, East Chicago, Indiana
 Permit No.: 089-9033-00316
 Source/Facility: HRCC & 4AC Station
 Limit: As shown in table below

Month: _____ Year: _____

4AC Station Fuel Used		HRCC Coal Used (tons)	Actual Emissions*			Limited Emissions (tons)
Type	Amount		Pollutant	4AC Station (tons)	HRCC Unit (tons)	
			TSP			72.0
			PM ₁₀			48.3
			SO ₂			991.7
			Lead			0.18
			H ₂ SO ₄			31.3
			VOC			3.3
			NO _x			604.2
			CO			73.5

*A copy of the calculations used to determine actual emissions shall be submitted to IDEM, OAM upon request.

Submitted by: _____

Title/Position: _____

Signature: _____

Date: _____

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: _____

REV 3/96

FAX NUMBER - 317233-5967

*SEE NEXT PAGE

**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 a Permit Amendment

Source Background and Description

Company Names: Inland Steel Company, CokEnergy & Indiana Harbor Coke Company
Source Location: 3210 Watling Street, East Chicago, Indiana 46312
County: Lake
Construction Permit Nos.: CP-089-9033-00316, CP-089-9236-00316, & CP-089-9237-00316
SIC Code: 3312
Permit Reviewer: Bryan Sheets

The Office of Air Management (OAM) has reviewed an amendment request from Inland Steel Company, CokEnergy and Indiana Harbor Coke Company relating to the changes in construction permit CP-089-6919-00316, consisting of the following changes:

- (a) replacement of existing coal and coke handling system with a new system which will have PM emissions controlled by improved equipment;
- (b) separating the original permit (CP-089-6919-00316) into three permits for each owner of the various facilities;
- (c) moving the position of the HRCC units;
- (d) correcting some of the original calculations, including PM/PM10 emissions from the main stack, pushing stack and charging stacks, NOx emissions from the charging stack, and CO emissions from the pushing stack; and

These changes result in a decrease in fugitive emissions from the source and meet the national ambient air quality standards as demonstrated by the remainder of this TSD and the modeling analysis attached.

The new coal and coke handling facilities will include the following equipment:

- a) one (1) coal thaw shed/rail car dump, identified as ES210, with a heat input capacity of 25.2 million Btu per hour and a maximum coal throughput of 6067.2 tons of dry coal per day, enclosed with emissions controlled by a chemical dust suppressant, exhausting through one (1) vent, identified as 210,
- (b) three (3) coal transfer towers, identified as ES211, ES213 and ES214, each with a maximum throughput of 6067.2 tons of dry coal per day, each are enclosed with emissions controlled by a chemical dust suppressant, each exhausting through one (1) vent, identified as 211, 213 and 214, respectively,
- (c) one (1) coal storage pile stacking unit, identified as ES212, with a maximum capacity of 6067.2 tons of dry coal per day, with emissions controlled by a chemical dust suppressant, exhausting directly to the air,
- (d) six (6) coal storage piles, identified as ES240 through ES245, each with a pile acreage of approximately 0.96 acres and a storage capacity of 20,000 tons, controlled by a chemical dust suppressant, exhausting directly to the air,
- (e) coal conveying system, with a maximum throughput of 6067.2 tons of dry coal per day. With the exception of the yard belt conveyor #2, all conveyors running above ground are

- covered on top and sides such that emissions generated during conveying are directed to the transfer points where they are controlled by a chemical dust suppressant,
- (f) one (1) coal crusher and screening station, identified as ES230, with a maximum throughput of 6067.2 tons of dry coal per day, enclosed and controlled by one (1) baghouse, exhausting through one (1) stack, identified as 230,
 - (g) one (1) active coal storage pile, with a pile acreage of approximately 0.96 acres and a storage capacity of 15,000 tons, enclosed and controlled by a chemical dust suppressant, exhausting through one (1) stack, identified as 246,
 - (h) two (2) coal weigh belts/diverter gates, identified as ES233 and ES234, with a combined maximum throughput of 6067.2 tons of dry coal per day, each enclosed and controlled by one (1) baghouse, each exhausting through one (1) vent, identified as 233 and 234, respectively,
 - (i) two (2) coal silos, identified as ES231 and ES232, each with a storage capacity of 13,600 cubic feet, each enclosed and controlled by one (1) baghouse, each exhausting through one (1) vent, identified as 231 and 232, respectively,
 - (j) coke conveying system, with a maximum throughput of 4020 tons of dry coke per day. All conveyors running above ground are covered on top and sides such that emissions generated during conveying are directed to the transfer points where they are controlled by a wet dust suppressant,
 - (k) four (4) coke transfer towers with eight (8) transfer points, identified as ES260 through ES264 and ES266 through ES268, each tower has a maximum throughput of 4020 tons of dry coke per hour, with each transfer point enclosed and controlled by one (1) baghouse, and exhausting inside the tower,
 - (l) one (1) run of oven coke storage pile, identified as ES280, with a pile acreage of approximately 0.21 acres and a storage capacity of 450 tons, with emissions controlled by a wet dust suppressant, exhausting directly to the air,
 - (m) one (1) coke crusher and screening station, identified as ES265, with a maximum throughput of 4020 tons of dry coke per day, enclosed and controlled by one (1) baghouse, exhausting through one (1) stack, identified as 265,
 - (n) one (1) coke fines storage pile, identified as ES281, with a pile acreage of approximately 0.21 acres and a storage capacity of 450 tons, with emissions controlled by a wet dust suppressant, exhausting directly to the air,
 - (o) one (1) rail car coke loadout station, identified as ES250, with a maximum throughput of 4020 tons of dry coke per day, controlled by a wet dust suppressant, exhausting directly to the air, and
 - (p) one (1) existing coke transfer point, identified as ES269, with a maximum throughput of 4020 tons of dry coke per hour, enclosed and controlled by one (1) baghouse, exhausting inside the tower.

Source Definition

The HRCC project, including the coke ovens, handling equipment, control equipment, and gas turbines is a joint project between Inland Steel Company, NIPSCO (operating under the name CokEnergy), and Sun Coal and Coke Company (operating under the name Indiana Harbor Coke Company). The partners will each own and have responsibility for the following equipment:

- (a) Inland Steel Company - two (2) natural gas-fired turbines and two (2) coke transfer towers;
- (b) CokEnergy - two (2) lime silos, two (2) FGD product silos, and the desulfurization and baghouse system for Stack ID 201; and
- (c) Indiana Harbor Coke Company - the coal and coke handling equipment, two hundred sixty-eight (268) HRCC coke ovens, two (2) charging/pushing units, two (2) quench towers, and control devices associated with this equipment, excluding the desulfurization and baghouse system for Stack ID 201.

Since the operations are interconnected, have the same SIC codes and are located on common property, they will be considered one (1) source.

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 October 6, 1997.

Although emissions from this project will decrease due to the proposed changes, the changes will require a screening analysis to determine whether existing analyses including netting, ambient impact analysis, limits and monitoring requirements are still accurate. In addition, the application requests three new permits to be issued to each partner, which will supersede CP-089-6919-00316. Therefore, the permits will require the participation of public comments.

Emissions Calculations

See Appendices A and B (Emissions Calculation Spreadsheets) for detailed calculations. Appendix A includes calculations of the HRCC units, gas turbines, and miscellaneous combustion units which were permitted in CP-089-6919-00316. Appendix B includes calculations of the new coal and coke handling system.

Appendix A had the following minor changes in calculations:

- (a) NO_x emission factor for charging was corrected to 0.03 lbs/ton coke produced. In addition, it was assumed that 85% of the NO_x was collected by negative pressure in the ovens instead of 90%. This is more consistent with the difference in emissions between nonrecovery coke ovens and conventional coke ovens demonstrated by stack tests for CO and SO₂. This increased potential emissions from 1.53 to 3.30 tons per year.
- (b) PM/PM₁₀ emission factor for main stack was corrected to 0.008 gr/dscf which is consistent with the permit limit and modeling performed. This decreased controlled PM emissions from 340.8 to 181.7 tons per year and PM₁₀ emissions from 227.2 to 181.7 tons per year.
- (c) The maximum charging rate used in the calculation of SO₂ emissions from pushing was corrected to 232.6 tons per hour. This increased potential emissions from 6.18 to 8.59 tons per year.
- (d) CO emission factor for pushing was corrected to 0.07 lbs/ton coke produced. This increased potential emissions from 25.7 to 51.4 tons per year.

- (e) The calculations for miscellaneous combustion was corrected to determine emissions of regulated pollutants assuming VOC would be limited to 2.4 tons per year. This was changed due to the new combustion source being used at the coal thaw shed.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as severe nonattainment for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (b) A portion of Lake County has been classified as nonattainment for TSP, PM₁₀, SO₂ and CO. Inland Steel Company is located in this area. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (c) Lake County has been classified as attainment or unclassifiable for lead. 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 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/PM ₁₀	1,089
SO ₂	14,595
VOC	4,525
CO	5,434
NO _x	12,009

- (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.

Netting Reevaluation

Netting is performed for those pollutants which have emissions from the project which are greater than the PSD or Emission Offset thresholds. VOC and NO_x emissions are reviewed pursuant to the de minimis rule because Lake County is severe nonattainment for ozone. The de minimis rule does not apply for NO_x because emissions from the project are less than zero. However, VOC emissions from the project are greater than zero; therefore, these emissions are aggregated with VOC increases from the previous five years and compared to the de minimis threshold.

Allowable PSD and Emission Offset emissions (see Appendix A for complete table) from the proposed modification (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity and/or as limited, see **Note** below):

Facilities	TSP/PM	PM ₁₀	SO ₂	VOC	CO	NO _x	H ₂ SO ₄	Lead
Coal Thaw Shed/Rail Car Dump	1.36	1.74	0.06	0.79	4.32	59.4	--	--
Coal Transfer Tower No.1	0.06	0.02						
Coal Piles Stacking Unit	0.06	0.02						
Coal Storage Piles	3.04	1.52						
Coal Crusher and Screening Unit	1.58	1.58						
Active Coal Pile Storage	0.63	0.22						
Coal Transfer Tower No. 2	0.06	0.02						
Coal Transfer Tower No. 3	0.06	0.02						
East and West Coal Silos	0.66	0.66						
Coal Weigh Belts/Diverter Gates	0.66	0.66						
Coke Transfer Tower No. 1	0.99	0.99						
Coke Transfer Tower No. 2	0.66	0.66						
Run of Oven Coke Pile	0.11	0.06						
Coke Crusher/Screening Station	5.87	5.87						
Coke Transfer Tower No. 3	0.66	0.66						
Rail Car Coke Loading	0.93	0.33						
Coke Transfer Tower No. 4	0.33	0.33						
Existing Transfer Point	0.40	0.40						
Lime Storage Silos	0.05	0.02						
FGD Product Storage Silos	0.11	0.04						
Charging	8.25	8.25	6.88	0.03	94.0	3.30	0.077	0.001
Coke Ovens	181.7	181.7	7,255.8	17.8	288.3	1,334.6	82.0	0.835
Pushing	29.3	29.3	8.59	0.08	51.4	4.6	0.07	0.003
Quenching	315.8	30.9	5.4	1.0	--	2.0	0.06	--
Natural Gas-Fired Turbines	32.2	32.2	6.4	17.5	273.8	1095.0	--	--
Miscellaneous Combustion	14.1	14.1	295.3	2.4	52.6	477.4	--	--
Increases from Modification	599.6	312.3	7578.4	39.6	764.4	2976.3	82.2	0.84
Decreases from 4AC Station	-265	-265	-7842.6	-16.3	-172.8	-5783.7	-88.62	-0.38
Net Project Emissions	334.6	47.3	-264.2	23.3	591.6	-2807.4	-6.4	0.46
Contemporaneous Increases								
12" & 14" Mill Shotblaster	3.6	3.6		--	--			
PCI Facilities	10.7	10.7		0.7	9.0			
EAF Shop Ladle Met Rev	0.6	0.6		--	13.5			
No. 1 Normal Preht Replm	0.1	0.1		0.1	0.4			
Normalizer-New Anneal FCE	0.2	0.2		0.4	2.4			
PCI Upgrade	0.3	0.3		--	--			
5 Galv Rad Tube FCE Repl	0.2	0.2		0.4	3.1			
Contemporaneous Decreases								
No. 4 BOF Teeming	-42.3	-18.1			--			
Mold Foundry	-12.1	-6.4			--			
Pugh Ladles & Pig Contro	-55.3	-33.8			--			
EAF Shop 1 FCE Oper	-104.4	-75.0			--			
EAF Shop 2 FCE Oper	--	--			-141.0			
No. 11 Coke Battery	-377.5	--			-134.2			
No. 6, 7, 9, 10 Coke Batteries	--	--			-202.8			
No. 3 AC Station	-37.5	-35.4			-61.7			
76" Hot Strip Mill	-1.4	-1.4			-19.1			
100" Plate Mill	-4.7	-4.1			-7.0			
No. 8 Coke Battery	--	--			-52.0			
80" H/S-2 Pushers	--	--			-10.4			
No. 4 Slabber	-1.2	-1.2			-10.2			

No. 4 Slabber Scarfer	-9.2	-9.2			-0.4			
Net Contemporaneous Emissions	-629.9	-168.9	--	1.6	-610.4	--	--	--
"Net Emissions Increase"	-295.3	-121.6	-264.2	24.9	-18.8	-2807.4	-6.4	0.46
PSD or Offset Significant Level	25	15	40	25	100	100	7	0.6

This modification to an existing major source is not major for PSD because the emissions increase is less than PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

This modification to an existing major source is not major for Emission Offset because the emissions increase is less than Emission Offset significant and de minimis levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Notes: The lead emissions from the HRCC processes have been limited to 0.84 tons/yr, therefore, 326 IAC 2-2 and 40 CFR 52.21 requirements do not apply.

The net VOC emissions from the project are limited to 39.6 tons/yr, therefore, 326 IAC 2-3 requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-089-6577-00316) application on September 16, 1996. The equipment being reviewed under these permits shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

There are no additional New Source Performance Standards (326 IAC 12 and 40 CFR Part 60) or National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63) applicable to these facilities due to the requested changes.

The coal handling equipment is subject to the requirements of 40 CFR 60, Subpart Y (Coal Preparation Plants).

The natural gas-fired turbines (ES501, ES502) are subject to the requirements of 40 CFR 60, Subpart GG (Stationary Gas Turbines).

The nonrecovery coke ovens (ES201) are subject to the requirements of 40 CFR 63, Subpart L (Coke Oven Batteries).

State Rule Applicability

There are no additional State rules applicable to these facilities due to the requested changes.

The following State rules apply to the facilities:

- (a) 326 IAC 2-1 (Construction and Operating Permit Requirements)
- (b) 326 IAC 2-6 (Emissions Reporting)
- (c) 326 IAC 3-1.1 (Continuous Monitoring of Emissions)
- (d) 326 IAC 5-1-2 (Opacity Limitations)
- (e) 326 IAC 6-1-2 (Nonattainment Area Particulate Limitations)
- (f) 326 IAC 6-1-10.2 (Lake County PM₁₀ Coke Battery Emission Requirements)

- (g) 326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements), and
- (h) 326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

Condition Analysis

There are several conditions in the permit that have had wording changed for clarity. Most of these changes are related to the reference of Inland Steel Company as the party responsible for compliance with the condition. These have been changed to reference the Permittee. These types of changes have occurred in the following conditions:

- (a) Operation Condition No. 3 for all three permits - Preventive Maintenance Plan
- (b) Operation Condition No. 4 for all three permits - Transfer of Permit
- (c) Operation Condition No. 8 for all three permits - Annual Emission Reporting
- (d) Operation Condition No.13, 14 and 16 in CP-089-9237-00316, CP-089-9033-00316 and CP-089-9236-00316, respectively - miscellaneous VOC limit
- (e) Operation Condition No. 13 in CP-089-9236-00316 - Fugitive Dust Emissions
- (f) Operation Condition No. 16 in CP-089-9237-00316 - SO₂ monitoring
- (g) Operation Condition No. 18 in CP-089-9237-00316, No. 20 in CP-089-9033-00316, and No. 30 in CP-089-9236-00316 - Performance Testing
- (h) Operation Condition No.21 in CP-089-9236-00316 - Charging Limits
- (i) Operation Condition No. 22 in CP-089-9236-00316 - Pushing Limits
- (j) Operation Condition No. 31 in CP-089-9236-00316 - Duct Temperature Monitoring

In addition to the minor wording changes, there are a few conditions which have had significant wording changes. These changes are not related to emission limits but reflect changes in facility identification and/or responsibility or wording changes consistent with OAM's most recent permits. The following conditions have been changed (new wording bolded for emphasis):

1. Construction Condition No. 8 in CP-089-6919-00316 has been changed from:

“ That when the Phase II facilities are constructed and the Phase I and Phase II facilities are placed into operation the following operation conditions shall be met: “

to be as follows on page 2, 3, and 5 in CP-089-9237-00316 (No. 7), CP-089-9033-00316 (No. 8) and CP-089-9236-00316 (No. 8), respectively:

“ That when the facilities are constructed and placed into operation the following operation conditions shall be met: “

2. Operation Condition No. 6 in CP-089-6919-00316 has been changed from:

“ That a copy of this permit shall be available on the premises of the source. “

to be as follows on page 4, 5, and 7 in CP-089-9237-00316 (No. 6), CP-089-9033-00316 (No. 6) and CP-089-9236-00316 (No. 6), respectively:

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

3. Since coal and coke handling systems have had the control type specified in the amendment request, Operation Condition No. 12 in CP-089-6919-00316 has been changed from:

“ That pursuant to 326 IAC 2-1-3(i)(8), the coal and coke transfer towers, loading and unloading facilities, mixing bins, crushers, screening units, and storage bins shall be controlled by either baghouse or wet suppression to control particulate matter emissions. If baghouses are used, particulate matter emissions shall not exceed an opacity of five percent (5%) six minute average, and the baghouses shall adhere to the requirements set forth in operation condition No. 36. “

to be as follows on page 8 in CP-089-9236-00316 (No. 10):

“ That pursuant to 326 IAC 2-1-3(i)(8), visible emissions from the coal and coke handling system controlled by baghouses (Stack IDs 230 through 234 and 260 through 267) shall not exceed an opacity of five percent (5%) six minute average. Compliance with this opacity limit will satisfy the requirement of 40 CFR 60.250. “

and to be as follows on page 6 in CP-089-9033-00316 (No. 10):

“ That pursuant to 326 IAC 2-1-3(i)(8), visible emissions from the coke transfer towers controlled by baghouses (Stack IDs 268 and 269) shall not exceed an opacity of five percent (5%) six minute average. “

4. Since the VOC emissions from the new coal thaw shed have been quantified, Operation Condition No. 15 in CP-089-6919-00316 has been changed from:

“ That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, the VOC emissions from any new ancillary equipment including, but not limited to, combustion units and storage tanks shall be limited to 0.27 tons per month. Inland Steel Company shall notify and obtain approval from the Office of Air Management of any planned new ancillary equipment associated with the HRCC or gas turbine facilities which will have the potential to emit VOC prior to construction of the equipment. Any new ancillary equipment shall be considered part of the HRCC or gas turbine facilities if they are located in or perform some function for any Phase I or Phase II facilities and are constructed within one (1) year of the commencement of operation of the Phase II facilities. “

to be as follows on page 6, 7, and 9 in CP-089-9237-00316 (No. 13), CP-089-9033-00316 (No. 14), and CP-089-9236-00316 (No. 16):

“ That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-3, the VOC emissions from any new ancillary equipment including, but not limited to, combustion units and storage tanks shall be limited to 0.20 tons per month. The Permittee shall notify and obtain approval from the Office of Air Management of any planned new ancillary equipment associated with the HRCC or gas turbine facilities which will have the potential to emit VOC prior to construction of the equipment. Any new ancillary equipment shall be considered part of the HRCC or gas turbine facilities if they are located in or perform some function for any HRCC or gas turbine facilities and are constructed within one (1) year of the

commencement of operation of the **HRCC or gas turbine** facilities. “

5. Since the coal and coke handling equipment has changed, Operation Condition No. 21 in CP-089-6919-00316 has been changed from:

“ That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-2, particulate matter (PM) emissions from the coal and coke transfer towers (208, 209, 210, 222, and 223) shall each be limited to 0.86 lbs/hr, the coal storage bins (214, 215, 216) shall each be limited to 1.28 lbs/hr, the coke screening unit (224) shall be limited to 4.28 lbs/hr, and the coke crushing unit (225) shall be limited to 2.57 lbs/hr. “

to be as follows on page 10 in CP-089-9236-00316 (No. 19):

“ That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-2, particulate matter (PM) emissions from the coal and coke **handling equipment** shall be limited **as follows**:

- (a) **the coal rail car dump (Stack ID 210) and coal transfer towers (Stack IDs 211, 213 and 214) shall each be limited to 0.01 lbs/hr, averaged over a 24 hour period,**
- (b) **the coal pile stacking unit (Stack ID 212) shall be limited to 0.14 lbs/hr, averaged over a 24 hour period,**
- (c) **the coal crusher and screening station (Stack ID 230) shall be limited to 0.36 lbs/hr,**
- (d) **the east and west coal silos (Stack IDs 231 and 232) and the coal weigh belts/diverter gates (Stack IDs 233 and 234) shall each be limited to 0.075 lbs/hr,**
- (e) **the coke transfer towers (Stack IDs 260 through 264, 266 and 267) shall each be limited to 0.075 lbs/hr,**
- (f) **the coke crusher and screening station (Stack ID 265) shall be limited to 1.34 lbs/hr, and**
- (g) **the rail car coke loadout station (Stack ID 250) shall be limited to 0.42 lbs/hr. “**

and to be as follows on page 7 in CP-089-9033-00316 (No. 16):

“ That pursuant to 326 IAC 2-1-3(i)(8) and 326 IAC 2-2, particulate matter (PM) emissions from the coal and coke **handling equipment** shall be limited **as follows**:

- (a) **the coke transfer tower (Stack ID 268) shall be limited to 0.075 lbs/hr, and**
- (b) **the existing coke transfer point (Stack ID 269) shall be limited to 0.092 lbs/hr. “**

6. Since there will be maintenance on the charging units during the day, most of the charging will occur during the nighttime hours. Therefore, it may be impossible to obtain a full 8 hours of charging opacity data during the winter months. The second paragraph of subsection (b) of Operation Condition No. 26 in CP-089-6919-00316 will be changed from:

“ The Permittee shall have an individual certified to read opacity, and said individual shall observe the opacity of emissions during charging operations for at least 8 hours each day for the first year of operation of the coke batteries. Opacity readings shall be recorded and submitted to the Office of Air Management with the Permittee's Quarterly Report for each period in which observed visible emissions bypassing the capture hood exceed an average of twenty percent (20%) over a three (3) minute period. The report shall describe conditions during the three minute period that may have contributed to the opacity reading (e.g. high winds, moisture content of the coal, etc.). “
to be as follows on page 10 of CP-089-9236-00316 (No. 21):

“ The Permittee shall have an individual certified to read opacity, and said individual shall observe the opacity of **charging emissions escaping the hood during daylight hours** each day for the first year of operation of the coke batteries. Opacity readings shall be recorded and submitted to the Office of Air Management with the Permittee's Quarterly Report for each period in which observed visible emissions bypassing the capture hood exceed an average of twenty percent (20%) over a three (3) minute period. The report shall describe conditions during the three minute period that may have contributed to the opacity reading (e.g. high winds, moisture content of the coal, etc.). “

7. Since the coal and coke handling equipment has the control devices specified in the amendment request, Operation Condition No. 34 in CP-089-6919-00316 has been changed from:

“ That the baghouses associated with the following processes:

- (a) HRCC charging stacks (202 and 203),
- (b) HRCC waste gas stack (201),
- (c) HRCC pushing shed stack (204),
- (d) coal handling stacks (214, 215, 216, 222, and 223) if applicable,
- (e) coke handling stacks (208, 209, 210, and 224) if applicable, and
- (f) coke crusher stack (225),

shall be operated at all times when the associated process is in operation. The pressure drops from each facility shall be maintained within a range determined by Inland Steel Company within the first 60 days of operation. During compliance stack tests, the related baghouse must be operating within these ranges which were established to define acceptable performance and will be contained in Inland Steel Company's Operating and Maintenance Plan. If water pressure drops fall outside of these ranges, corrective action will be taken in accordance with Inland Steel Company's Operation and Maintenance Plan or Fugitive Dust Plan as submitted to IDEM. The company shall document the cause of the out of range reading and take action before the next working shift to correct any problem. Inland Steel Company may submit an alternative compliance plan for the baghouses listed in (d), (e), and (f). This plan shall be submitted to and approved by the Office of Air Management prior to the commencement of operation of Phase II facilities. Failure or partial failure of control devices shall be reported to IDEM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM. “

to be as follows on page 12 in CP-089-9236-00316 (No. 28):

“ That the baghouses **for the coal and coke handling equipment (Stack IDs 230 through 234 and 260 through 267) and the charging and pushing equipment (Stack IDs 202 through 204)**, shall be operated at all times when its associated process is in operation.

- (a) The pressure drop **across the baghouses for Stack IDs 202 through 204, 230 and 265** shall be maintained within a range determined by **the Permittee** within the first 60 days of operation. **The Permittee shall take readings of the total static pressure drop across the baghouses as follows:**
- (i) **Stack IDs 230 and 265 at least once per day;**
 - (ii) **Stack IDs 202 through 204 as required by Operation Condition Nos. 21 and 22.**

If water pressure drops fall outside of these ranges, corrective action will be taken in accordance with **the Permittee's** Preventive Maintenance Plan or Fugitive Dust Plan as submitted to IDEM. The Permittee shall document the cause of the out of range reading and take action before the next working shift to correct any problem. Failure or partial failure of control devices shall be reported to IDEM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM.

- (b) During compliance stack tests, the related baghouse must be operating within the ranges which were established to define acceptable performance and will be contained in **the Permittee's Preventive Maintenance Plan**.
- (c) **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.**
- (d) **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.**
- (e) **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.**
- (f) **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. "**

to be as follows on page 6 in CP-089-9237-00316 (No. 17):

" That the baghouse **for Stack ID 201** shall be operated at all times when the **HRCC unit** is in operation.

- (a) The pressure drop **across the baghouse** shall be maintained within a range determined by **the Permittee** within the first 60 days of operation. **The**

Permittee shall take readings of the total static pressure drop across the waste gas stack baghouse at least once per day. If water pressure drops fall outside of these ranges, corrective action will be taken in accordance with **the Permittee's** Preventive Maintenance Plan or Fugitive Dust Plan as submitted to IDEM. **The Permittee** shall document the cause of the out of range reading and take action before the next working shift to correct any problem. Failure or partial failure of control devices shall be reported to IDEM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM.

- (b) During compliance stack tests, the related baghouse must be operating within these ranges which were established to define acceptable performance and will be contained in **the Permittee's Preventive Maintenance Plan.**
- (c) **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.**
- (d) **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.**
- (e) **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.**
- (f) **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. "**

and to be as follows on page 8 in CP-089-9033-00316 (No. 18):

" That the baghouses **for the coke handling equipment (Stack IDs 268 and 269)**, shall be operated at all times when its associated process is in operation.

- (a) **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.**
- (b) **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. “

8. For those units where pressure drop monitoring is not feasible, visible emissions notations will be necessary to ensure that the equipment is in compliance with the PM limits. The following condition will be added as Operation Condition No. 19 in CP-089-9033-00316 on page 8 and as Operation Condition No. 29 in CP-089-9236-00316 on page 13:

**“ Daily visible emission notations of the coke handling stack exhausts (ES268 and ES269) shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
or in CP-089-9236-00316**

Daily visible emission notations of the coal and coke handling stack exhausts (ES230 through ES234, ES260 through ES264, ES266, ES267) shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

- (a) **For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.**
 - (b) **In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest 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 visible emissions for that specific process.**
 - (d) **The Permittee’s Preventive Maintenance Plan or Fugitive Dust Control Plan shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. “**
9. Operation Condition No. 31 (Lake County SO₂ Requirements) in CP-089-6919-00316 has been removed because it does not apply to any existing equipment described in the permits. If, in the future, a unit would be added to the source which would fall into this category, the condition would be added to the appropriate permit.
10. Operation Condition No. 37 in CP-089-6919-00316 has been changed by removing the following requirement:
- “ No. 15 - Records of fuel or solvent usage for any ancillary equipment requiring a synthetic limit. Prior to their construction a list of all equipment not specifically defined by this permit, but covered by operation condition no.’s 15 and 33, will be described by design capacity and related emissions, and submitted to the OAM as a supplement to this permit assuring the applicable limits have not been exceeded.
“

The requirement to keep records of fuel usage for ancillary equipment is not necessary until a specific unit has been included in the permit which would require record keeping.

11. Since the requirement to keep records of fuel usage for undefined ancillary equipment has

been removed, Operation Condition No. 38 in CP-089-6919-00316 has had the requirement to report fuel usage removed. Operation Condition No. 33 in CP-089-9236-00316 contains the remainder of the requirements.

12. Operation Condition No. 32 in CP-089-9236-00316 has had the following language added to require record keeping for the visible emissions monitoring, baghouse pressure drop monitoring, and quarterly baghouse inspections:

“ (e) No. 28 - Records that the baghouse pressure drops have been monitored on a daily basis and that baghouses have been inspected on a quarterly basis. When pressure drops fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented.

(f) No. 29 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented. “

13. Operation Condition No. 21 in CP-089-9033-00316 has been added to require that records be kept of visible emissions notations and quarterly baghouse inspections as follows:

“ That a log of information necessary to document compliance with Operation Condition Nos. 18 and 19 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:

(a) No. 18 - Records that the baghouses have been inspected on a quarterly basis and the number of bags replaced. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented.

(b) No. 19 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented. “

14. Operation Condition No. 19 in CP-089-9237-00316 has been added to require that records be kept of the monitoring of pressure drops across the coal and coke handling baghouses. The condition will be as follows:

“ That a log of information necessary to document compliance with Operation Condition No. 17 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and shall include information to ensure that the baghouse pressure drops have been monitored daily during HRCC operation. When the pressure drop falls out of the acceptable range, the duration of the exceedance and corrective action taken shall be documented. “

15. Operation Condition No. 24 in CP-089-9033-00316 has been added to require that records of the fuel usage for the 4AC Station and HRCC be reported to ensure compliance with the offset credit limits specified in Operation Condition No. 22. The condition will be as follows:

“ A quarterly summary of the information necessary to document compliance with Operation Condition No. 22(b) shall be submitted to:

**IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962**

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms. “

16. The first paragraph of Operation Condition No. 39 in CP-089-6919-00316 has been changed from:

“ That pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-2, and 326 IAC 2-3, the No. 4 AC Station shall be shutdown prior to the commencement of commercial operation of any Phase II facilities. Inland Steel Company shall adhere to the following requirements in the phased shutdown plan as submitted to IDEM on December 16, 1996: “

to be as follows on page 9 in CP-089-9033-00316 (No. 22):

“ That pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-2, and 326 IAC 2-3, the No. 4 AC Station shall be shutdown prior to the commencement of commercial operation of **the HRCC facilities, which will be defined as 180 days after start-up of the last battery. The Permittee shall adhere to parts (b) through (e)** of the following requirements in the phased shutdown plan as submitted to IDEM on December 16, 1996: “

to be as follows on page 8 in CP-089-9237-00316 (No. 20):

“ That pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-2, and 326 IAC 2-3, the No. 4 AC Station shall be shutdown prior to the commencement of commercial operation of **the HRCC facilities, which will be defined as 180 days after start-up of the last battery. The Permittee shall adhere to part (a)** of the following requirements in the phased shutdown plan as submitted to IDEM on December 16, 1996: “

and to be as follows on page 15 in CP-089-9236-00316 (No. 34):

“ That pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-2, and 326 IAC 2-3, the No. 4 AC Station shall be shutdown prior to the commencement of commercial operation of **the HRCC facilities, which will be defined as 180 days after start-up of the last battery. The Permittee shall adhere to the start-up record keeping requirement in part (e)** of the phased shutdown plan as submitted to IDEM on December 16, 1996: “

Ambient Impact Analysis

A modeling analysis has been performed again to ensure that the requested changes will not cause an exceedance of the National Ambient Air Quality Standards (NAAQS). A copy of the results is attached.

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) No additional air toxics will be emitted from these facilities due to the requested changes.
- (b) See attached spreadsheets for detailed air toxic calculations.

Conclusion

The requested changes will be subject to the conditions of the attached proposed **Construction Permit Nos. CP-089-9033-00316, CP-089-9236-00316 and CP-089-9237-00316.**

APPENDIX A EMISSIONS CALCULATIONS

**Inland Steel Company
Indiana Harbor Coke Company
CokEnergy
3210 Watling Street
East Chicago, Indiana 46312**

CP-089-9033-00316

CP-089-9236-00316

CP-089-9237-00316

Inland Steel Company, Indiana Harbor Coke Company, and CokEnergy have submitted several amendment requests to CP-089-6919-00316. Among those requests are changes in coal and coke handling equipment. These changes consist of adding new equipment and replacing old equipment along with different identification numbers for several units of the handling equipment. The Office of Air Management (OAM) will reevaluate the netting procedure from the original permit. The following emission calculations for the HRCC unit, gas turbines, and miscellaneous combustion are from the original permit calculations with emission factor corrections for PM/PM10 from the main stack, NO_x and PM/PM10 from the charging unit stacks, and CO and PM/PM10 from the pushing stack.

HEAT RECOVERY COAL CARBONIZATION (HRCC) UNIT

I. EMISSIONS FROM CHARGING (Stack IDs 202 and 203)

A) Sulfur Dioxide (SO₂)

Emissions from this process are calculated using an uncontrolled emission factor of 0.8 ppm determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). SO₂ emissions from charging are not controlled.

Converting ppm to mass emission rate:

$$\begin{aligned} \text{Emission Factor (lbs/hr)} &= 8 \text{ parts SO}_2/1,000,000 \times 17.56 \text{ lb mole air/min} \times 64 \text{ lb SO}_2/\text{lb mole} \times 60 \text{ min/hr} \\ &= 0.054 \text{ lbs SO}_2/\text{hr} \end{aligned}$$

Tons of coal charged during test: 192 tons dry coal/ 24 hours

$$\begin{aligned} \text{Emission Factor (lbs/ton dry coal)} &= 0.054 \text{ lbs SO}_2/\text{hr} \times 24 \text{ hours} / 192 \text{ tons dry coal} \\ &= 0.00675 \text{ lbs/ ton dry coal} \end{aligned}$$

Maximum charging rate = 232.6 tons dry coal/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.00675 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 6.88 \text{ tons/yr} \end{aligned}$$

B) Carbon Monoxide (CO)

Emissions from this process are calculated using an uncontrolled emission factor of 25 ppm determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). CO emissions from charging are not controlled.

Converting ppm to mass emission rate:

$$\begin{aligned}\text{Emission Factor (lbs/hr)} &= 25 \text{ parts CO}/1,000,000 \times 17.56 \text{ lb mole air}/\text{min} \times 28 \text{ lb CO}/\text{lb mole} \times 60 \text{ min}/\text{hr} \\ &= 0.738 \text{ lbs CO}/\text{hr}\end{aligned}$$

Tons of coal charged during test: 192 tons dry coal/ 24 hours

$$\begin{aligned}\text{Emission Factor (lbs/ton dry coal)} &= 0.738 \text{ lbs CO}/\text{hr} \times 24 \text{ hours} / 192 \text{ tons dry coal} \\ &= 0.092 \text{ lbs}/\text{ton dry coal}\end{aligned}$$

Maximum charging rate = 232.6 tons/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.092 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 94.0 \text{ tons/yr}\end{aligned}$$

C) Particulate Matter (PM and PM₁₀)

Emissions from this process are calculated using an uncontrolled emission factor from AP-42 (Chapter 12.2) for charging. PM/PM₁₀ emissions from charging are controlled by a baghouse. Emissions after control will be calculated using a limited emission factor. Assume PM equals PM₁₀.

AP-42 Emission Factor = 0.48 lbs/ton coke produced
Maximum coke production = 167.5 tons coke/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum coking rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 167.5 \text{ tons/hr} \times 0.48 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 352.2 \text{ tons/yr}\end{aligned}$$

Limited Emission Factor = 0.0081 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.0081 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 8.25 \text{ tons/yr}\end{aligned}$$

D) Volatile Organic Compounds (VOC)

Emissions from this process are calculated based on an uncontrolled emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. VOC emissions from charging are not controlled.

Emission Factor = 0.000032 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.000032 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.033 \text{ tons/yr}\end{aligned}$$

E) Oxides of Nitrogen (NO_x)

Emissions from this process are calculated based on an uncontrolled emission factor for charging from AP-42 (Chapter 12.2)

and assuming that 85% of these emissions are captured due to the negative pressure associated with the oven.

Emission Factor = 0.03 lbs/ton coke produced
Maximum coke production = 167.5 tons coke/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum coking rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 167.5 \text{ tons/hr} \times 0.03 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 22.0 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{After Control Emissions (ton/yr)} &= \text{Potential Emissions (tons/yr)} \times (1 - \text{Control Efficiency}) \\ &= 22.0 \text{ tons/yr} \times (1 - 0.85) \\ &= 3.30 \text{ tons/yr}\end{aligned}$$

F) Lead (Pb)

Emissions from this process are calculated based on an emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. A portion of lead emissions from charging will be controlled by a baghouse. However, due to uncertainty of the control efficiency for lead, it is assumed potential emissions are equal to after control emissions.

Emission Factor = 0.0000012 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.0000012 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.001 \text{ tons/yr}\end{aligned}$$

G) Sulfuric Acid Mist (H₂SO₄)

Emissions from this process are based on emission factor data from AP-42 Chapter 1.1 (Coal Combustion) which states that SO₃ emissions from combustion are 0.7% of total sulfur content emissions (1.13% of SO₂ by weight). Assume 100% of SO₃ converts to H₂SO₄. A portion of the acid mist emissions from charging will be controlled by a baghouse. However, due to uncertainty of the control efficiency for acid mist, it is assumed potential emissions are equal to after control emissions.

Sulfur dioxide emissions from Charging = 6.88 tons/yr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{SO}_2 \text{ emissions} \times \% \text{H}_2\text{SO}_4 \text{ emissions/SO}_2 \text{ emissions (tons/ton)} \\ &= 6.88 \text{ tons/yr} \times 0.0113 \text{ tons/ton} \\ &= 0.077 \text{ tons/yr}\end{aligned}$$

II. EMISSIONS FROM MAIN STACK (Stack ID 201)

A) Sulfur Dioxide (SO₂)

Emissions from this process are calculated using an uncontrolled emission factor determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). SO₂ emissions from the main stack are controlled by a desulfurization unit.

Emission Factor = 23.74 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 23.74 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}\end{aligned}$$

$$= 24,186.0 \text{ tons/yr}$$

Desulfurization unit shall have a removal efficiency of 70%.

$$\begin{aligned} \text{After Control Emissions (ton/yr)} &= \text{Potential Emissions (tons/yr)} \times (1 - \text{Control Efficiency}) \\ &= 24,186.0 \text{ tons/yr} \times (1 - 0.70) \\ &= 7,255.8 \text{ tons/yr} \end{aligned}$$

B) Volatile Organic Compounds (VOC)

Emissions from this process are calculated based on an emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. VOC emissions from the main stack will be controlled by maintaining duct temperatures in a range which will destroy VOCs. However, due to uncertainty of the control efficiency for VOCs, it is assumed potential emissions are equal to after control emissions.

Emission Factor = 0.01747 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.01747 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 17.8 \text{ tons/yr} \end{aligned}$$

C) Carbon Monoxide (CO)

Emissions from this process are calculated using an emission factor determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). CO emissions from the main stack will not be controlled.

Emission Factor = 0.283 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.283 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 288.3 \text{ tons/yr} \end{aligned}$$

D) Oxides of Nitrogen (NO_x)

Emissions from this process are calculated using an emission factor determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). NO_x emissions from the main stack will be controlled by maintaining duct temperatures in a range which will minimize NO_x formation. However, due to uncertainty of the control efficiency for NO_x, it is assumed potential emissions are equal to after control emissions.

Emission Factor = 1.31 lbs/ton coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 1.31 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1,334.6 \text{ tons/yr} \end{aligned}$$

E) Lead (Pb)

Emissions from this process are calculated based on a controlled emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. Lead

emissions from the main stack will be controlled by a baghouse. However, due to uncertainty of the control efficiency for lead, it is assumed potential emissions are equal to after control emissions.

Emission Factor = 0.00082 lbs/ton

Maximum charging rate = 232.6 tons/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.00082 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.835 \text{ tons/yr}\end{aligned}$$

F) Sulfuric Acid Mist (H₂SO₄)

Emissions from this process are based on emission factor data from AP-42 Chapter 1.1 (Coal Combustion) which states that SO₃ emissions from combustion are 0.7% of total sulfur content emissions (1.13% of SO₂ by weight). Assume 100% of SO₃ converts to H₂SO₄. A portion of the acid mist emissions from charging will be controlled by a baghouse. However, due to uncertainty of the control efficiency for acid mist, it is assumed potential emissions are equal to after control emissions. Since net increases to determine major source review are only 7 tons/yr for sulfuric acid mist, Inland will have to show compliance with this emission factor. If Inland is able to show compliance with this limit, it will be assumed that emissions from other parts of the coke process will be emitted at a rate equal to or less than the emission factor.

Sulfur dioxide emissions from HRCC Main Stack = 7255.8 tons/yr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{SO}_2 \text{ emissions} \times \% \text{ H}_2\text{SO}_4 \text{ emissions/SO}_2 \text{ emissions (tons/ton)} \\ &= 7255.8 \text{ tons/yr} \times 0.0113 \text{ tons/ton} \\ &= 82.0 \text{ tons/yr}\end{aligned}$$

G) Particulate Matter (PM and PM₁₀)

Emissions from this process are calculated using modeled outlet grain loadings for PM and PM₁₀ from the facilities based on the maximum fan speed as supplied by Inland.

PM/PM10 modeled grain loading = 0.008 gr/dscf

Baghouse air flow rate = 605,090 scfm

$$\begin{aligned}\text{PM/PM10 Modeled Emissions(tons/yr)} &= 605,090 \text{ scfm} \times 0.008 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hr/yr} / \\ &2000 \text{ lbs/ton} \\ &= 181.7 \text{ tons/yr}\end{aligned}$$

III. EMISSIONS FROM PUSHING (Stack ID 204)

A) Sulfur Dioxide (SO₂)

Emissions from this process are calculated using an uncontrolled emission factor determined by stack test data from Jewell Coal and Coke Company (Vansant, VA - 1995). The stack test results state that emissions are less than 1 ppm. To obtain worst case emission rate, it will be assumed that SO₂ emissions are emitted at 1 ppm. SO₂ emissions from pushing are not controlled.

Converting ppm to mass emission rate:

$$\begin{aligned}\text{Emission Factor (lbs/hr)} &= 1 \text{ parts SO}_2/1,000,000 \times 17.56 \text{ lb mole air/min} \times 64 \text{ lb SO}_2/\text{lb mole} \times 60 \text{ min/hr} \\ &= 0.067 \text{ lbs SO}_2/\text{hr}\end{aligned}$$

Tons of coal charged during test: 192 tons dry coal/ 24 hours

$$\text{Emission Factor (lbs/ton dry coke)} = 0.067 \text{ lbs SO}_2/\text{hr} \times 24 \text{ hours} / 192 \text{ tons dry coke}$$

$$= 0.00843 \text{ lbs/ ton dry coal}$$

Maximum charging rate = 232.6 tons/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.00843 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 8.59 \text{ tons/yr} \end{aligned}$$

B) Carbon Monoxide (CO)

Emissions from this process are calculated based on an uncontrolled emission factor from AP-42 (Chapter 12.2). CO emissions from pushing are not controlled.

Emission Factor = 0.07 lbs/ton coke pushed
Maximum pushing rate = 167.5 tons coke/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum pushing rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 167.5 \text{ tons/hr} \times 0.07 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 51.4 \text{ tons/yr} \end{aligned}$$

C) Particulate Matter (PM and PM₁₀)

Emissions from this process are calculated based on allowable emission rate as stated in 326 IAC 6-1-10.2. PM/PM₁₀ emissions from pushing are controlled by a baghouse. Assume PM equals PM₁₀.

Allowable emission factor = 0.04 lbs/dry ton coke
Maximum pushing rate = 167.5 tons/hr

$$\begin{aligned} \text{Allowable Emissions (tons/yr)} &= \text{Maximum pushing rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 167.5 \text{ tons/hr} \times 0.04 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 29.3 \text{ tons/yr} \end{aligned}$$

D) Volatile Organic Compounds (VOC)

Emissions from this process are calculated based on an uncontrolled emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. VOC emissions from pushing are not controlled.

Emission Factor = 0.000076 lbs/ton
Maximum charging rate = 232.6 tons/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.000076 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.078 \text{ tons/yr} \end{aligned}$$

E) Oxides of Nitrogen (NO_x)

Emissions from this process are calculated based on an uncontrolled emission factor determined by Inland based on a proportion of the main stack emissions. NO_x emissions from pushing are not controlled.

Emission Factor = 0.0045 lbs/ton
Maximum charging rate = 232.6 tons/hr

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.0045 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \end{aligned}$$

= 4.60 tons/yr

F) Lead (Pb)

Emissions from this process are calculated based on an uncontrolled emission factor determined by Inland. This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. Lead emissions from pushing will be controlled by a baghouse. However, due to uncertainty of the control efficiency for lead, it is assumed potential emissions are equal to after control emissions.

Emission Factor = 0.00000285 lbs/ton
Maximum pushing rate = 232.6 tons/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.00000285 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.003 \text{ tons/yr}\end{aligned}$$

G) Sulfuric Acid Mist (H₂SO₄)

Emissions from this process are based on emission factor data from AP-42 Chapter 1.1 (Coal Combustion) which states that SO₃ emissions from combustion are 0.7% of total sulfur content emissions (1.13% of SO₂ by weight). Assume 100% of SO₃ converts to H₂SO₄. After control emissions will equal potential emissions for this pollutant. A portion of the acid mist emissions from charging will be controlled by a baghouse. However, due to uncertainty of the control efficiency for acid mist, it is assumed potential emissions are equal to after control emissions.

Sulfur dioxide emissions from Pushing = 6.18 tons/yr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{SO}_2 \text{ emissions} \times \% \text{H}_2\text{SO}_4 \text{ emissions/SO}_2 \text{ emissions (tons/ton)} \\ &= 6.18 \text{ tons/yr} \times 0.0113 \text{ tons/ton} \\ &= 0.07 \text{ tons/yr}\end{aligned}$$

IV. EMISSIONS FROM QUENCHING (Stack IDs 206 and 207)

A) Sulfur Dioxide (SO₂)

Emissions from this process are calculated based on an uncontrolled emission factor stated in Environmental Assessment of Coke Quench Towers, York Research Corporation, October 1979. SO₂ emissions from quenching are not controlled.

Emission Factor = 0.0053 lbs/ton dry coal charged
Maximum charging rate = 232.6 tons coal/hr

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 232.6 \text{ tons/hr} \times 0.0053 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 5.4 \text{ tons/yr}\end{aligned}$$

B) Particulate Matter (PM and PM₁₀)

Emissions from this process are calculated based on controlled emission factors from AP-42 for clean water and baffles in the quench tower. AP-42 assumes the baffles cover 95% of the cross-sectional area and clean water has a total dissolved solids (TDS) limit of 1500 mg/L. Inland will accept a TDS limit of 1100 mg/L, which will proportionately reduce the emission factors. PM₁₀ is 9.8% by mass of PM. A conversion will be made for coal's moisture content of 8 percent.

PM Emission Factor = 0.54 lbs/ton dry coke processed x 1100/1500 x 1/1-0.08 = 0.43 lbs/ton dry coke processed
Maximum pushing rate = 167.5 tons/hr

$$\text{PM Potential Emissions (tons/yr)} = \text{Maximum pushing rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000$$

$$= 167.5 \text{ tons/hr} \times 0.43 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}$$

$$= 315.8 \text{ tons/yr}$$

$$\text{PM}_{10} \text{ Emission Factor} = 0.43 \text{ lbs/ton dry coke processed} \times 0.098 = 0.042$$

$$\text{PM}_{10} \text{ Potential Emissions (tons/yr)} = \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000$$

$$= 167.5 \text{ tons/hr} \times 0.042 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}$$

$$= 30.9 \text{ tons/yr}$$

D) Volatile Organic Compounds (VOC)

Emissions from this process are calculated based on an uncontrolled emission factor determined by communication between Ron Myers (USEPA) and Stefan Shoup (Inland Steel Co.). This emission factor will allow Inland to avoid major new source review. Therefore, Inland will be limited to the emission factor submitted. VOC emissions from quenching are not controlled.

$$\text{Emission Factor} = 0.001 \text{ lbs/ton dry coke processed}$$

$$\text{Maximum charging rate} = 232.6 \text{ tons/hr}$$

$$\text{Potential Emissions (tons/yr)} = \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000$$

$$= 232.6 \text{ tons/hr} \times 0.001 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}$$

$$= 1.0 \text{ tons/yr}$$

E) Oxides of Nitrogen (NO_x)

Emissions from this process are calculated based on an uncontrolled emission factor determined by communication between Ron Myers (USEPA) and Stefan Shoup (Inland Steel Co.). After control emissions will equal potential emissions for this pollutant. This was verified by communication with Ron Myers on October 31, 1996. NO_x emissions from quenching are not controlled.

$$\text{Emission Factor} = 0.002 \text{ lbs/ton dry coke processed}$$

$$\text{Maximum charging rate} = 232.6 \text{ tons/hr}$$

$$\text{Potential Emissions (tons/yr)} = \text{Maximum charging rate (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000$$

$$= 232.6 \text{ tons/hr} \times 0.002 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}$$

$$= 2.0 \text{ tons/yr}$$

F) Sulfuric Acid Mist (H₂SO₄)

Emissions from this process are based on emission factor data from AP-42 Chapter 1.1 (Coal Combustion) which states that SO₃ emissions from combustion are 0.7% (1.13% of SO₂ emissions by weight) of total sulfur content emissions. Assume 100% of SO₃ converts to H₂SO₄. Acid mist emissions from quenching are not controlled.

$$\text{Sulfur dioxide emissions from Pushing} = 5.4 \text{ tons/yr}$$

$$\text{Potential Emissions (tons/yr)} = \text{SO}_2 \text{ emissions} \times \% \text{ H}_2\text{SO}_4 \text{ emissions/SO}_2 \text{ emissions (tons/ton)}$$

$$= 5.4 \text{ tons/yr} \times 0.0113 \text{ tons/ton}$$

$$= 0.06 \text{ tons/yr}$$

NATURAL GAS-FIRED TURBINES (Stack IDs 501 and 502)

$$\text{Heat input capacity} = 1,250 \text{ MMBtu/hr each}$$

$$\text{Maximum natural gas usage} = 2.45$$

Fuel Source: Natural Gas	PM ^{a,c}	PM ₁₀ ^{a,c}	SO ₂ ^{a,c}	NO _x ^{b,d}	VOC ^{b,d}	CO ^{b,d}
Emission Factor	3.0	3.0	0.6	0.1	0.0016	0.025
Potential Emissions (tons/yr)	32.2	32.2	6.4	1095.0	17.5	273.8

METHODOLOGY

^aEmission factors are given in lbs/MMCF

^bEmission factors are given in lbs/MMBtu

^cPotential Emissions (tons/yr) = Natural Gas Maximum Usage (MMCF/yr) x Emission Factor (lbs/MMCF) / 2000

^dPotential Emissions (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 / 2000

MISCELLANEOUS COMBUSTION SOURCES

Inland plans on installing combustion units to heat various buildings and processes. Since designs for the entire facility are yet to be completed, many of the specific combustion units have not been finalized. Therefore, Inland will be limited to a specific amount of fuel used at these combustion units, such that the significant de minimis level for VOC is not exceeded. Worst case emissions will be determined for all other regulated pollutants based on VOC emissions of 2.4 tons/yr from these combustion units combined.

Natural gas and distillate fuel oil with emissions of SO₂ less than 0.3 lbs/MMBtu are the only fuels allowed pursuant to 326 IAC 7-4. Distillate fuel oil combustion units are also limited to 20 MMBtu/hr. These fuel combinations for any type of combustion will be reviewed and the worst case emissions factors will be used.

I. Emissions from External Combustion Units

Limited Throughput = 1725 MMCF/yr

Fuel Source: Natural Gas	PM	PM ₁₀	SO ₂	NO _x	VOC	CO
Emission Factor in lbs/MMCF	14.0	14.0	0.6	550.0	2.8	61.0
Potential Emissions (tons/yr)	12.1	12.1	0.5	477.4	2.4	52.6

Limited Throughput = 14100 kgal/yr
 Sulfur Content of Fuel = < 0.3%

Fuel Source: Distillate Fuel Oil	PM	PM ₁₀	SO ₂	NO _x	VOC	CO
Emission Factor in lbs/kgal	2.0	2.0	41.9	20.0	0.34	5.0
Potential Emissions (tons/yr)	14.1	14.1	295.3	141.0	2.4	35.3

II. Emissions from Stationary Internal Combustion Units

Limited Throughput = 3640000 hp-hr/yr

Fuel Source: Natural Gas	PM	PM ₁₀	SO ₂	NO _x	VOC	CO
Emission Factor in lbs/hp-hr	0.00034	0.00034	0.00022	0.02	0.00132	0.0051

Potential Emissions (tons/yr)	0.6	0.6	0.4	36.4	2.4	9.2
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Limited Throughput = 1910000 hp-hr/yr
 Sulfur Content of Fuel = < 0.25%

Fuel Source: Distillate Fuel Oil	PM	PM ₁₀	SO ₂	NO _x	VOC	CO
Emission Factor in lbs/kgal	0.0022	0.0022	0.0021	0.031	0.0025	0.0067
Potential Emissions (tons/yr)	2.1	2.1	2.0	29.8	2.4	6.4

III. HAPs Associated with External Diesel Fuel Combustion

Pollutants	Emission Factor (lbs/hp-hr)	Emissions (tons/yr)
Arsenic Compounds	5.9e-04	0.003
Beryllium Compounds	3.5e-04	0.002
Cadmium Compounds	1.5e-03	0.007
Chromium Compounds	9.4e-03	0.042
Lead Compounds	1.2e-03	0.005
Manganese Compounds	2.0e-03	0.009
Mercury Compounds	4.2e-04	0.002
Nickel Compounds	2.4e-02	0.108
TOTALS		0.178

IV. HAPs Associated with Internal Diesel Fuel Combustion

Pollutants	Emission Factor (lbs/hp-hr)	Emissions (tons/yr)
Benzene	6.53e-06	0.008
Toluene	2.86e-06	0.004
Xylenes	2.00e-06	0.003
Propylene	1.81e-05	0.023
1,3-Butadiene	2.74e-07	0.000
Formaldehyde	8.26e-06	0.011
Acetaldehyde	5.37e-06	0.007
Acrolein	6.48e-07	0.001
Naphthalene	5.94e-07	0.001
TOTALS		0.057

APPENDIX B EMISSIONS CALCULATIONS

**Inland Steel Company
Indiana Harbor Coke Company
CokEnergy
3210 Watling Street
East Chicago, Indiana 46312**

CP-089-9033-00316

CP-089-9236-00316

CP-089-9237-00316

Most of the emission points and functionality of the coal and coke handling equipment proposed in the amendment request have changed since the original permit was issued. For the purposes of this review all Phase I and Phase II coke and coal handling equipment permitted in CP-089-6919 is assumed to be replaced with the following equipment. Since this equipment is new, a short description of the process will be added to the calculations. The following calculations will be the basis for the emissions from the proposed modification.

I. PARTICULATE MATTER EMISSIONS FROM COAL HANDLING SYSTEMS

A) Coal Thaw Shed/Rail Car Dump - Rail Car to Conveyor No. 1 (Stack ID 210)

Inland will receive coal for the HRCC at the rail car dump (Stack ID 210). The coal will be dropped out a gate at the bottom of the rail car and fall into an underground hopper where the coal will be reclaimed by Conveyor No. 1. This process is controlled by the enclosure of the thaw shed and wet suppression.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\begin{aligned} \text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}} \\ &= 0.0011 \text{ lbs/ton coke} \end{aligned}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.25 \text{ tons/yr} \end{aligned}$$

Enclosure and wet suppression control = 95% efficiency

$$\begin{aligned} \text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.25 \text{ tons/yr} \times (1 - 0.95) \\ &= 0.06 \text{ tons/yr} \end{aligned}$$

B) Coal Transfer Tower No. 1 - Conveyor No. 1 to Conveyor No. 2 (Stack ID 211)

Once the coal that has been reclaimed by Conveyor No.1 it will be transported to Tower No.1 where the coal will switch conveyors. Conveyor No.1 is covered on top and sides so that the coal dust generated during conveying will be directed to the transfer point. The emissions resulting from dropping the coal from Conveyor No. 1 to Conveyor No. 2 is controlled by the enclosure of the tower and wet suppression.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}} \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\begin{aligned} \text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}} \\ &= 0.0011 \text{ lbs/ton coke} \end{aligned}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.25 \text{ tons/yr} \end{aligned}$$

Enclosure and wet suppression control = 95% efficiency

$$\begin{aligned} \text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.25 \text{ tons/yr} \times (1 - 0.95) \\ &= 0.06 \text{ tons/yr} \end{aligned}$$

C) Coal Storage Pile Stacking Unit - Conveyor No. 2 to Storage Piles (Stack ID 212)

The coal will travel along Conveyor No.2 and be diverted to a coal stacking unit which will drop the coal onto one of six coal storage piles. The stacking unit will move on rails between piles such that at any time only one pile will be active. Emissions from this process will be controlled by a foam suppressant.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}} \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\begin{aligned} \text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}} \\ &= 0.0011 \text{ lbs/ton coke} \end{aligned}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \end{aligned}$$

$$= 1.25 \text{ tons/yr}$$

Foam suppression control = 50% efficiency

$$\text{After Control Emissions (tons/yr)} = \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency})$$

$$= 1.25 \text{ tons/yr} \times (1 - 0.5)$$

$$= 0.63 \text{ tons/yr}$$

D) Coal Storage Piles - (Unit IDs 240, 241, 242, 243, 244 and 245)

Long term storage of coal will be accomplished in one of six proposed storage piles, each having a diameter of 220 feet and a height of 50 feet. Emissions due to wind erosion will be controlled by using a foam suppressant.

Emissions from this process are calculated using an uncontrolled emission factor for storage piles in Supplement B to AP-42 (Chapter 11.2.3) dated September 1988. PM_{10} emissions are approximately 50% of PM emissions.

$$\text{Emission factor (lb/acre/day)} = 1.7 \times (s/1.5) \times (365 - p) / 235 \times (f / 15) ,$$

where

$$s = \% \text{ silt} = 5.0\%$$
$$p = \text{days of rain greater than 0.01 inches} = 125$$
$$f = \% \text{ of wind greater than or equal to 12 mph} = 15\%$$

$$\text{Emission factor (lb/acre/day)} = 1.7 \times (5.0/1.5) \times (365 - 125) / 235 \times (15/15)$$

$$= 5.79 \text{ lb/acre/day}$$

Surface area of one pile = approximately 0.96 acres

$$\text{Potential Emissions (tons/yr)} = \text{Emission factor (lb/acre/day)} \times \text{Pile Surface Area (acres)} \times 365 \text{ days/yr}$$

$$= 5.79 \text{ lb/acre/day} \times 0.96 \text{ acres} \times 365 \text{ day/yr} / 2000 \text{ lbs/ton}$$

$$= 1.01 \text{ tons/yr} \times 6 \text{ storage piles}$$

$$= 6.09 \text{ tons/yr}$$

Assume efficiency of foam dust suppressant to be 50%.

$$\text{After control emissions (tons/yr)} = \text{Potential Emissions (tons/yr)} \times (1 - \% \text{ Efficiency of Control})$$

$$= 6.09 \text{ tons/yr} \times (1 - 0.5)$$

$$= 3.04 \text{ tons/yr}$$

E) Coal Crushing and Screening Station - Conveyor No. 4 to Conveyor No. 5 (Stack ID 230)

After the coal is stored in one of the six storage piles it will drop through a gate at the bottom of the pile and fall into an underground hopper where it will be reclaimed by one of the six storage pile conveyors (Conveyor Nos. 3a through 3f). These conveyors will operate underground and transfer the coal to Conveyor No.4 which will run underground to the Coal Crushing and Screening Station. Because the coal is transferred underground, the handling emissions will be directed towards the Station. The coal will enter on Conveyor No. 4 and be screened to remove debris before being crushed. Once crushed the coal will be transferred out on Conveyor No. 5. All of this will be performed inside the building and will be controlled by a small baghouse.

Emissions from this process are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM_{10} .

Outlet grain loading = 0.003 gr/acf
Air flow rate = 14,000 acfm

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= 14,000 \text{ acfm} \times 0.003 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.58 \text{ tons/yr} \end{aligned}$$

F) Active Coal Storage Pile Stacking Unit - Conveyor No. 5 to Active Coal Storage Pile

The coal will travel along Conveyor No. 5 and will be transferred to the active coal storage pile by a dropping method. Conveyor No. 5 will be covered on top and sides so the emissions generated during handling will be direct to the drop point where they will be controlled by a foam suppressant.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM₁₀ emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\begin{aligned} \text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}} \\ &= 0.0011 \text{ lbs/ton coke} \end{aligned}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.25 \text{ tons/yr} \end{aligned}$$

Foam suppression control = 50% efficiency

$$\begin{aligned} \text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.25 \text{ tons/yr} \times (1 - 0.5) \\ &= 0.63 \text{ tons/yr} \end{aligned}$$

G) Active Coal Storage Pile (Unit ID 246)

Short term storage of coal will be accomplished in the active storage pile, having a diameter of 60 feet and a height of 15 feet. Emissions due to wind erosion will be controlled by using a foam suppressant.

Emissions from this process are calculated using an uncontrolled emission factor for storage piles in Supplement B to AP-42 (Chapter 11.2.3) dated September 1988. PM₁₀ emissions are approximately 50% of PM emissions.

$$\text{Emission factor (lb/acre/day)} = 1.7 \times (s/1.5) \times (365 - p) / 235 \times (f/15),$$

$$\text{where} \quad \begin{array}{l} s = \% \text{ silt} = 5.0\% \\ p = \text{days of rain greater than } 0.01 \text{ inches} = 125 \\ f = \% \text{ of wind greater than or equal to } 12 \text{ mph} = 15\% \end{array}$$

$$\begin{aligned} \text{Emission factor (lb/acre/day)} &= 1.7 \times (5.0/1.5) \times (365 - 125) / 235 \times (15/15) \\ &= 5.79 \text{ lb/acre/day} \end{aligned}$$

Surface area of one pile = approximately 0.21 acres

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= \text{Emission factor (lb/acre/day)} \times \text{Pile Surface Area (acres)} \times 365 \text{ days/yr} \\ &= 5.79 \text{ lb/acre/day} \times 0.21 \text{ acres} \times 365 \text{ day/yr} / 2000 \text{ lbs/ton} \\ &= 0.22 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{After control emissions (tons/yr)} &= \text{Potential Emissions (tons/yr)} \times (1 - \% \text{ Efficiency of Control}) \\ &= 0.22 \text{ tons/yr} \times (1 - 0.5) \\ &= 0.11 \text{ tons/yr}\end{aligned}$$

H) Coal Transfer Tower No. 2 - Conveyor No. 6 to Conveyor No. 7 (Stack ID 213)

After the coal is stored in the active coal storage pile it will drop through a gate at the bottom of the pile and fall into an underground hopper where it will be reclaimed by Conveyor No.6. The portion of Conveyor No. 6 running above ground will be covered on top and sides such that emissions generated during handling will be routed to Tower No. 2. The coal will enter Tower No. 2 where it will be dropped onto Conveyor No. 7. The emissions resulting from dropping the coal from this process will be controlled by the enclosure of the tower and wet suppression.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\begin{aligned}\text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}} \\ &= 0.0011 \text{ lbs/ton coke}\end{aligned}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned}\text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.25 \text{ tons/yr}\end{aligned}$$

Enclosure and wet suppression control = 95% efficiency

$$\begin{aligned}\text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.25 \text{ tons/yr} \times (1 - 0.95) \\ &= 0.06 \text{ tons/yr}\end{aligned}$$

I) Coal Transfer Tower No. 3 - Conveyor No. 7 to Conveyor No. 8a or 8b (Stack ID 214)

From Conveyor No. 7, the coal will be diverted to either Conveyor No. 8a or 8b in Tower No. 3. Conveyor No. 7 is covered on top and sides such that emissions generated during handling will be routed to Tower No. 3. The emissions resulting from dropping the coal from Conveyor No. 7 to Conveyor No. 8a or 8b is controlled by the enclosure of the tower and wet suppression.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 8\% \end{array}$$

$$\text{Emission Factor} = 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(8/2)^{1.4}}$$

$$= 0.0011 \text{ lbs/ton coke}$$

Maximum throughput = 252.8 tons of coal per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 252.8 \text{ tons/hr} \times 0.0011 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.25 \text{ tons/yr} \end{aligned}$$

Enclosure and wet suppression control = 95% efficiency

$$\begin{aligned} \text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.25 \text{ tons/yr} \times (1 - 0.95) \\ &= 0.06 \text{ tons/yr} \end{aligned}$$

J) East and West Coal Silos (Stack IDs 231 and 232)

The coal will move along Conveyor Nos. 8a or 8b and will be temporarily stored in the East or West Coal Silo before being transferred to the weight belt and diverter gates. Conveyors No. 8a and 8b are covered on top and sides such that emissions generated during handling will be routed to either the East or West Coal Silo, respectively. The emissions generated from dropping the coal off Conveyor No. 8a or 8b into the East or West Coal Silo will each be controlled by a small baghouse.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 1,750 acfm

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr} \times 2 \text{ baghouses} \\ &= 0.66 \text{ tons/yr} \end{aligned}$$

K) Coal Weigh Belts/Diverter Gates - East or West Silo to Batteries A&B or C&D (Stack IDs 233 and 234)

Coal being stored in the East or West Coal Silo will be dropped onto a weigh belt before being diverted to the charging unit for either Batteries A & B or C & D, respectively. Emissions generated from these processes will be captured by an enclosure and exhausted to a small baghouse for control.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 1,750 acfm

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr} \times 2 \text{ baghouses} \\ &= 0.66 \text{ tons/yr}\end{aligned}$$

II. PARTICULATE MATTER EMISSIONS FROM COKE HANDLING SYSTEMS

A) Coke Transfer Tower No. 1 - Conveyor Nos. 9a and 9b to Conveyor No. 10 (Stack IDs 260, 261 and 262)

After the coke has been quenched, it will be drained in the coke wharf for either Batteries A & B or C & D. From there, it will be reclaimed by either Conveyor 9a or 9b, respectively, and will travel to Tower No. 1 where it will be dropped onto Conveyor No. 10. Conveyors 9a and 9b will be covered on top and sides such that emissions generated during handling will be directed to the transfer point. These processes will be controlled by three separate baghouses.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 1,750 acfm

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr} \times 3 \text{ baghouses} \\ &= 0.99 \text{ tons/yr}\end{aligned}$$

B) Coke Transfer Tower No. 2 - Conveyor No. 10 to Conveyor No. 11a or Run of Oven Coke Pile (Stack IDs 263 and 264)

Coke traveling along Conveyor No. 10 will enter Coke Transfer Tower No. 2 and be dropped onto a diverter gate which will in turn drop the coke onto Conveyor No. 11a or divert the coke into a stacking tube which will form the Run of Oven Coke Pile. Conveyor No. 10 will be covered on top and sides such that emissions generated during handling will be directed to the transfer point. The first and second drop points will each be controlled by a separate baghouse.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 1,750 acfm

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr} \times 2 \text{ baghouses} \\ &= 0.66 \text{ tons/yr}\end{aligned}$$

C) Run of Oven Coke Pile (Unit ID 280)

Coke that is produced to quickly for the crushing unit will be temporarily diverted to the Run of Oven Coke Pile. Emissions due to wind erosion will be controlled by using a foam suppressant. After the coal is stored in the active coal storage pile it will drop through a gate at the bottom of the pile and fall into an underground hopper where it will be reclaimed by Conveyor No. 11b.

Emissions from this process are calculated using an uncontrolled emission factor for storage piles in Supplement B to AP-42 (Chapter 11.2.3) dated September 1988. PM_{10} emissions are approximately 50% of PM emissions.

$$\text{Emission factor (lb/acre/day)} = 1.7 \times (s/1.5) \times (365 - p) / 235 \times (f / 15) ,$$

where

$$\begin{aligned} s &= \% \text{ silt} = 5.0\% \\ p &= \text{days of rain greater than 0.01 inches} = 125 \\ f &= \% \text{ of wind greater than or equal to 12 mph} = 15\% \end{aligned}$$

$$\begin{aligned} \text{Emission factor (lb/acre/day)} &= 1.7 \times (5.0/1.5) \times (365 - 125) / 235 \times (15/15) \\ &= 5.79 \text{ lb/acre/day} \end{aligned}$$

Surface area of one pile = approximately 0.21 acres

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= \text{Emission factor (lb/acre/day)} \times \text{Pile Surface Area (acres)} \times 365 \text{ days/yr} \\ &= 5.79 \text{ lb/acre/day} \times 0.21 \text{ acres} \times 365 \text{ day/yr} / 2000 \text{ lbs/ton} \\ &= 0.22 \text{ tons/yr} \end{aligned}$$

$$\begin{aligned} \text{After control emissions (tons/yr)} &= \text{Potential Emissions (tons/yr)} \times (1 - \% \text{ Efficiency of Control}) \\ &= 0.22 \text{ tons/yr} \times (1 - 0.5) \\ &= 0.11 \text{ tons/yr} \end{aligned}$$

D) Coke Crushing and Screening Station (Stack ID 265)

Coke will be routed to the Coke Crushing and Screening Station either by Conveyor No. 11a or No. 11b. Conveyor No. 11a will be covered on top and sides and Conveyor No. 11b will be run underground such that any emissions generated during handling will be directed to the station. The coke will be screened and crushed and then will be transferred out on Conveyor No. 12a or 12b. Conveyor No. 12a will transport the coke fines to the Coke Fines Storage Pile while Conveyor No. 12b will transport the rest of the coke to Transfer Tower No. 3. All of this will be performed inside the building and will be controlled by a baghouse.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM_{10} .

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 31,250 acfm

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= 31,250 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 5.87 \text{ tons/yr} \end{aligned}$$

E) Coke Transfer Tower No. 3 - Conveyor No. 12b to Conveyor No. 13 (Stack IDs 266 and 267)

The coke will travel from the Coke Crushing and Screening Station along Conveyor 12b to Transfer Tower No. 3 where it will either be transferred to Conveyor No. 13 or diverted to the Rail Car Coke Loading operation. Conveyor No. 12b will be covered on top and sides such that any emissions generated during handling will be directed to the transfer tower. The transfer tower will have two drop points which will each be controlled by a baghouse.

Emissions from these processes are calculated using the baghouses outlet grain loadings and the maximum fan speed as supplied by Inland. Assume PM equals PM_{10} .

Outlet grain loading of each baghouse = 0.005 gr/acf

Air flow rate of each fan = 1,750 acfm

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr} \times 2 \text{ baghouses} \\ &= 0.66 \text{ tons/yr}\end{aligned}$$

F) Rail Car Coke Loading - (Stack ID 250)

Coke that is not diverted to Conveyor No.13 in Transfer Tower No. 3 will be dropped into rail cars for distribution. This operation will be controlled by a foam depressant.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 4.5\% \end{array}$$

$$\begin{aligned}\text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(4.5/2)^{1.4}} \\ &= 0.0025 \text{ lbs/ton coke}\end{aligned}$$

Maximum throughput = 167.5 tons of coke per hour

$$\begin{aligned}\text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 167.5 \text{ tons/hr} \times 0.0025 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 1.85 \text{ tons/yr}\end{aligned}$$

Enclosure and wet suppression control = 50% efficiency

$$\begin{aligned}\text{After Control Emissions (tons/yr)} &= \text{PM Potential Emissions (tons/yr)} \times (1 - \text{control efficiency}) \\ &= 1.85 \text{ tons/yr} \times (1 - 0.5) \\ &= 0.93 \text{ tons/yr}\end{aligned}$$

G) Coke Transfer Tower No. 4 - Conveyor No. 13 to Conveyor No. 14 (Stack ID 268)

The coal traveling along Conveyor No.13 will be transported to Coke Transfer Tower No.14 where the coal will switch conveyors. Conveyor No.13 will be covered on top and sides so that the emissions generated during conveying will be directed to the transfer point. The emissions resulting from dropping the coal from Conveyor No. 13 to Conveyor No. 14 are controlled by a baghouse.

Emissions from this process are calculated using the baghouse outlet grain loading and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 1,750 acfm

$$\begin{aligned}\text{Potential Emissions (tons/yr)} &= 1,750 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.33 \text{ tons/yr}\end{aligned}$$

H) Existing Coke Crushing and Screening Transfer Point - Conveyor No. 14 to Existing Conveyor System (Stack ID 269)

The coal traveling along Conveyor No.14 will be transported to Existing Coke Handling equipment at the Existing Coke Crushing and Screening Transfer Point. Conveyor No.14 will be covered on top and sides so that the emissions generated during conveying will be directed to the transfer point. The emissions resulting from dropping the coal from Conveyor No. 14 to the existing conveyor are controlled by a baghouse.

Emissions from this process are calculated using the baghouse outlet grain loading and the maximum fan speed as supplied by Inland. Assume PM equals PM₁₀.

Outlet grain loading of each baghouse = 0.005 gr/acf
Air flow rate of each fan = 2,150 acfm

$$\begin{aligned} \text{Potential Emissions (tons/yr)} &= 2,150 \text{ acfm} \times 0.005 \text{ gr/dscf} / 7000 \text{ gr/lb} \times 60 \text{ min/hr} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.40 \text{ tons/yr} \end{aligned}$$

III. PARTICULATE MATTER EMISSIONS FROM LIME AND FGD PRODUCT HANDLING

A) Lime Storage Silos Loading (Stack ID 220)

Lime which will be used in the flue gas desulfurization unit will be stored in one of two storage silos. Emissions will only be generated during loading of the silo because unloading will be accomplished pneumatically. The silos will be controlled by dry filters.

Emissions from this process are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 7.8\% \end{array}$$

$$\begin{aligned} \text{Emission Factor} &= 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(7.8/2)^{1.4}} \\ &= 0.0012 \text{ lbs/ton coke} \end{aligned}$$

Maximum throughput = 9.13 tons of lime per hour

$$\begin{aligned} \text{PM Potential Emissions (tons/yr)} &= \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000 \\ &= 9.13 \text{ tons/hr} \times 0.0012 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton} \\ &= 0.05 \text{ tons/yr} \end{aligned}$$

B) FGD Product Storage Silos Loading and Unloading (Stack IDs 221 and 222)

Lime and particulate matter which is captured by the main stack baghouse will be stored in the FGD Product Storage Silos until it can be properly disposed. Both loading and unloading operations will generate emissions. The silos will be controlled by dry filters.

Emissions from these processes are calculated using an uncontrolled emission factor for transfer drop points in AP-42 (Chapter 13.2.4). PM10 emissions are approximately 35% of PM emissions.

$$\text{Emission Factor (lbs/ton)} = k \times (0.0032) \times \frac{(U/5)^{1.3}}{(M/2)^{1.4}}, \quad \text{where} \quad \begin{array}{l} k = \text{particle size multiplier} = 1.0 \\ U = \text{mean wind speed} = 10 \text{ mph} \\ M = \text{material moisture content} = 7.8\% \end{array}$$

$$\text{Emission Factor} = 1.0 \times 0.0032 \times \frac{(10/5)^{1.3}}{(7.8/2)^{1.4}}$$

$$= 0.0012 \text{ lbs/ton coke}$$

Combined maximum throughput of loading and unloading operations = 21.6 tons of lime per hour

$$\text{PM Potential Emissions (tons/yr)} = \text{Maximum Throughput (tons/hr)} \times \text{Emission Factor (lbs/ton)} \times 8760 / 2000$$

$$= 21.6 \text{ tons/hr} \times 0.0012 \text{ lbs/ton} \times 8760 \text{ hrs/yr} / 2000 \text{ lbs/ton}$$

$$= 0.11 \text{ tons/yr}$$

IV. EMISSIONS FROM COAL THAW SHED BURNERS

The new thaw shed being installed will be equipped with natural gas-fired burners to prevent the rail car gates from freezing shut. The emissions from the burners are given in the table below.

Heat input capacity = 25.2 MMBtu/hr
 Maximum natural gas usage = 216 MMCF/yr

Fuel Source: Natural Gas	PM	PM ₁₀	SO ₂	NO _x	VOC	CO
Emission Factor (lbs/MMCF)	12.0	12.0	0.6	550	7.3	40
Potential Emissions (tons/yr)	1.30	1.30	0.06	59.40	0.79	4.32

METHODOLOGY

Maximum Natural Gas Usage (MMCF/yr) = Heat Input Capacity (MMBtu/hr) / 1020 MMBtu/MMCF x 8760 hrs/yr
 Potential Emissions (tons/yr) = Natural Gas Maximum Usage (MMCF/yr) x Emission Factor (lbs/MMCF) / 2000

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for a Permit Amendment

Source Name: Inland Steel Company, CokEnergy, & Indiana Harbor Coke Company
 Source Location: 3210 Watling Street, East Chicago, Indiana 46312
 County: Lake
 Construction Permit No.: CP-089-9033-00316, CP-089-9237-00316, & CP-089-9236-00316
 SIC Code: 3312
 Permit Reviewer: Bryan Sheets

On January 24, 1998, the Office of Air Management (OAM) had a notice published in the Hammond Times, Hammond, Indiana and the Gary Post Tribune, Gary, Indiana, stating that Inland Steel Company, CokEnergy, & Indiana Harbor Coke Company had applied for an amendment to construction permit CP-089-6919-00316 which was for construction and operation a new nonrecover coke oven battery and gas turbines. 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 changes to all three permits:

1. The quarterly reports that are required in all the permits should be sent to the Compliance Data Section as well as the Northwest Regional Office. The additional address will be added to those conditions.
2. All record keeping conditions in the permits require that the records be kept for a minimum of 36 months. Since Inland Steel Company is a major source for purposes of Title V, the record keeping requirements should be consistent with the Title V rules. Therefore, records shall be kept for a minimum period of 5 years. The conditions in the permits will be changed to reflect this.

Upon further review, OAM has made the following changes to the Inland Steel Company permit CP-089-9033 (new language is bolded for emphasis):

1. Operation Conditon No. 17 (NSPS Limitations) has been changed for the purpose of clarity from:

NSPS Limitations

That pursuant to 326 IAC 12-1 and 40 CFR 60.330, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine the following:

- (a) any gases which contain nitrogen oxides in excess of:

$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour)

or, actual measured heat rate based on lower heating value of fuel as measured at actual peck load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (b) any gases which contain sulfur dioxide in excess of 0.015 percent by volume at 15 percent oxygen on a dry basis. The natural gas fuel shall not contain sulfur in excess of 0.8 percent by weight.

Monitoring, record keeping, and reporting shall be performed as required in 40 CFR 60.334. A copy of this rule is enclosed.

to be as follows on page 7 of 14 of the final permit:

NSPS Limitations

That pursuant to 326 IAC 12-1 and **40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:**

- (a) **limit nitrogen oxides emissions, as required by 40 CFR 60.332, to:**

$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peck load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (b) **limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight;**
- (c) **install a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine, as required by 40 CFR 60.334(a);**
- (d) **monitor the sulfur content and nitrogen content of the fuel being fired in the turbine, as required by 40 CFR 60.334(b); and**
- (e) **report periods of excess emissions, as required by 40 CFR 60.334(c).**

2. Operation Condition No. 20 (Performance Testing) has been changed for the purpose of clarity from:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for VOC, NO_x and PM/PM₁₀ emissions from the natural gas-fired turbines (Stack ID 501 or 502) within 60 days after the natural gas-fired turbines achieve maximum production rate, but no later than 180 days after initial

start-up. 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.
- (f) After the OAM's evaluation and approval of stack test results, stack tests which demonstrate compliance with VOC emission limitations may be used to request an amendment to revise established VOC emission limitations on the tested HRCC unit operations. Existing VOC emission limitations shall be enforced until an amendment is issued. The Permittee shall specify in the amendment request how the VOC limitations be restructured, but in no case shall the total restructured VOC limitation for the HRCC and gas turbine facilities exceed 39.6 tons per year.

to be as follows on page 8 of 14 of the final permit:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for VOC, NO_x and **PM** emissions from the natural gas-fired turbines (Stack ID 501 or 502) within 60 days after the natural gas-fired turbines achieve maximum production rate, but no later than 180 days after initial start-up.

- (a) 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. **PM limits include both filterable and condensable particulate matter. Therefore, PM testing should be performed according to 40 CFR 60, Appendix A, Method 5 and 40 CFR 51, Appendix M, Method 202.**
- (b) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.

- (c) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
 - (d) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
 - (e) 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.
 - (f) 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.
 - (g) After the OAM's evaluation and approval of stack test results, stack tests which demonstrate compliance with VOC emission limitations may be used to request an amendment to revise established VOC emission limitations on the tested HRCC unit operations. Existing VOC emission limitations shall be enforced until an amendment is issued. The Permittee shall specify in the amendment request how the VOC limitations be restructured, but in no case shall the total restructured VOC limitation for the HRCC and gas turbine facilities exceed 39.6 tons per year.
3. Operation Condition No. 21 (Record Keeping Requirements) has been changed to include the NSPS record keeping and the longer period for maintaining records from:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition Nos. 18 and 19 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:

- (a) No. 18 - Records that the baghouses have been inspected on a quarterly basis and the number of bags replaced. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented.
- (b) No. 19 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented.

to be as follows on page 9 of 14 of the final permit:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition Nos. 17, 18 and 19 shall be maintained. These records shall be kept for at least the past 60 month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:

- (a) **No. 17 - Records that the fuel consumption, water to fuel ratio, sulfur content of the fuel, and nitrogen content of the fuel have been monitored;**
 - (b) No. 18 - Records that the baghouses have been inspected on a quarterly basis and the number of bags replaced. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented; and
 - (c) No. 19 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented.
4. Operation Condition No. 24 (Reporting Requirements) has been changed to include the NSPS reporting and the new address from:

Reporting Requirements

A quarterly summary of the information necessary to document compliance with Operation Condition No. 22(b) shall be submitted to:

IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms.

to be as follows on page 11 of 14 of the final permit:

Reporting Requirements

Reports required by 40 CFR 60.334 and a quarterly summary of the information necessary to document compliance with Operation Condition No. 22(b) shall be submitted to:

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

and

IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms.

Upon further review, OAM has made the following changes to the Coke Energy permit CP-089-9237 (new language is bolded for emphasis):

1. Operation Condition No. 18 (Performance Testing) has been changed for the purpose of clarity from:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for PM/PM₁₀ emissions from the HRCC waste gas stack (Stack ID 201). The tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after complete facility start-up, or January 1, 1999 whichever comes first. Complete facility start-up is defined as the date at which all batteries have started. 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. The test protocol for compliance stack tests of VOC and NO_x emissions from the HRCC waste gas stack (201) shall be submitted as a 24 hour period 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.

to be as follows on page 7 of 10 of the final permit:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for **PM** emissions from the HRCC waste gas stack (Stack ID 201). The tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after complete facility start-up, or January 1, 1999 whichever comes first. Complete facility start-up is defined as the date at which all batteries have started.

- (a) 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. **PM limits include both filterable and condensable particulate matter. Therefore, PM testing should be performed according to 40 CFR 60, Appendix A, Method 5 and 40 CFR 51, Appendix M, Method 202.**
 - (b) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
 - (c) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
 - (d) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
 - (e) 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.
 - (f) 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.
2. Operation Condition No. 19 (Record Keeping Requirements) has been changed to include the longer period for maintaining records from:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition No. 17 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and shall include information to ensure that the baghouse pressure drops have been monitored daily during HRCC operation. When the pressure drop falls out of the acceptable range, the duration of the exceedance and corrective action taken shall be documented.

to be as follows on page 8 of 10 of the final permit:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition No. 17 shall be maintained. These records shall be kept for at least the past **60** month period and made available upon request to the Office of Air Management (OAM) and shall include information to ensure that the baghouse pressure drops have been monitored daily during HRCC operation. When the pressure drop falls out of the acceptable range, the duration of the exceedance and corrective action taken shall be documented.

Upon further review, OAM has made the following changes to the Indiana Harbor Coke Company permit CP-089-9236(new language is bolded for emphasis):

1. Operation Condition No. 10 (Opacity Limitations) has been changed for the purpose of clarity from:

That pursuant to 326 IAC 2-1-3(i)(8), visible emissions from the coal and coke handling system controlled by baghouses (Stack IDs 230 through 234 and 260 through 267) shall not exceed an opacity of five percent (5%) six minute average. Compliance with this opacity limit will satisfy the requirement of 40 CFR 60.250.

to be as follows on page 8 of 19 of the final permit:

That pursuant to 326 IAC 2-1-3(i)(8), visible emissions from the coal and coke handling system controlled by baghouses (Stack IDs 230 through 234 and 260 through 267) shall not exceed an opacity of five percent (5%) six minute average. Compliance with this opacity limit will satisfy the requirement of 40 CFR 60, **Subpart Y (Coal Preparation Plants)**.

2. Operation Condition No. 21 (Particulate Matter and Visible Emissions Limitations) has been changed for the purpose of clarity from:

Each coke battery shall comply with the applicable requirements contained in 326 IAC 6-1-10.2, including, but not limited to the following:

- (a) The particulate emissions from the pushing shed stack (Stack ID 204) shall not exceed 0.04 lbs/ton of coke pushed. Compliance with this emission limit shall be determined by 40 CFR 60, Appendix A, Method 5.
- (b) That charging emissions which escape the oven door shall be minimized by collecting in a mobile hood, which is connected to the charging/pushing unit, and exhausted through the charging stacks (Stack IDs 202 and 203).

The Permittee shall have an individual certified to read opacity, and said individual shall observe the opacity of charging emissions escaping the hood during daylight hours each day for the first year of operation of the coke batteries. Opacity readings shall be recorded and submitted to the Office of Air Management with the Permittee's Quarterly Report for each period in which observed visible emissions bypassing the capture hood exceed an average of twenty percent (20%) over a three (3) minute period. The report shall describe conditions during the three minute period that may have contributed to the opacity reading (e.g. high winds, moisture content of the coal, etc.).

All visible emission observations shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9. The charging operation shall be considered to begin when the charging conveyor enters the coke oven and to end when the push side oven door is closed.

Upon review of the opacity data from the first year of operation, the Office of Air Management may request that the Permittee continue opacity readings at the capture hood as necessary to further document causes of opacity readings greater than twenty percent (20%) over a three (3) minute period. The Office of Air Management shall provide documentation on the basis of such a request and shall make this request no later than 120 days after receipt of the final quarterly report containing opacity readings from the first year.

- (c) The charging unit baghouses (Stack IDs 202 and 203) shall be operated within the pressure drop ranges as determined by Operation Condition No. 30. The fans associated with these baghouses shall be operated at a minimum fan amperage determined by the Permittee within the first 60 days of operation. In addition, oven damper adjustments shall be made to maximize oven draft during charging operations. Monitoring of these parameters shall be performed during charging to assure that the systems are working correctly and at design capacity. These procedures shall be documented in the Permittee's Work Practice Plan as required by 40 CFR 63.306. These procedures along with the requirements established in subset (b) of this condition shall satisfy the requirements of 326 IAC 6-1-10.2(c)(2).

to be as follows on page 10 of 19 of the final permit:

Each coke battery shall comply with the following applicable requirements contained in 326 IAC 6-1-10.2:

- (a) **That pursuant to 326 IAC 6-1-10.2(c)(3)(C)**, the particulate emissions from the pushing shed stack (Stack ID 204) shall not exceed 0.04 lbs/ton of coke pushed. Compliance with this emission limit shall be determined by 40 CFR 60, Appendix A, Method 5.
- (b) **That pursuant to 326 IAC 6-1-10.2(c)(2) and 326 IAC 2-1-3(i)(8)**, charging emissions which escape the oven door shall be minimized by collecting in a mobile hood, which is connected to the charging/pushing unit, and exhausted through the charging stacks (Stack IDs 202 and 203).

The Permittee shall have an individual certified to read opacity, and said individual shall observe the opacity of charging emissions escaping the hood during daylight hours each day for the first year of operation of the coke batteries. Opacity readings shall be recorded and submitted to the Office of Air Management with the Permittee's Quarterly Report for each period in which observed visible emissions bypassing the capture hood exceed an average of twenty percent (20%) over a three (3) minute period. The report shall describe conditions during the three minute period that may have contributed to the opacity reading (e.g. high winds, moisture content of the coal, etc.).

All visible emission observations shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9. The charging operation shall be considered to begin when the charging conveyor enters the coke oven and to end when the push side oven door is closed.

Upon review of the opacity data from the first year of operation, the Office of Air Management may request that the Permittee continue opacity readings at the

capture hood as necessary to further document causes of opacity readings greater than twenty percent (20%) over a three (3) minute period. The Office of Air Management shall provide documentation on the basis of such a request and shall make this request no later than 120 days after receipt of the final quarterly report containing opacity readings from the first year.

- (c) The charging unit baghouses (Stack IDs 202 and 203) shall be operated within the pressure drop ranges as determined by Operation Condition No. 30. The fans associated with these baghouses shall be operated at a minimum fan amperage determined by the Permittee within the first 60 days of operation. In addition, oven damper adjustments shall be made to maximize oven draft during charging operations. Monitoring of these parameters shall be performed during charging to assure that the systems are working correctly and at design capacity. These procedures shall be documented in the Permittee's Work Practice Plan as required by 40 CFR 63.306. These procedures along with the requirements established in subset (b) of this condition shall satisfy the requirements of 326 IAC 6-1-10.2(c)(2).

- (d) That pursuant to 326 IAC 6-1-10.2(c)(6), no visible emissions shall be permitted from the waste gas common duct or its associated piping.**

3. Subsection (a) of Operation Condition No. 22 (Particulate Matter and Visible Emissions Limitations) has been changed for the purpose of clarity from:

- (a) Visible emissions escaping the shed shall not exceed an average of twenty percent (20%) over a three (3) minute time period.

to be as follows on page 11 of 19 of the final permit:

- (a) Visible emissions escaping the shed shall not exceed an average of twenty percent (20%) over a three (3) minute time period. **Compliance with this limit shall satisfy the requirement of 326 IAC 6-1-10.2(c)(3)(B).**

4. The first paragraph of Operation Condition No. 25 (Particulate Matter and Visible Emissions Limitations) has been changed for the purpose of clarity from:

That pursuant to 326 IAC 20-1-1 and 40 CFR 63.300, the nonrecovery coke oven facility shall comply with requirements of this rule including, but not limited to, the following:

to be as follows on page 12 of 19 of the final permit:

That pursuant to 326 IAC 20-1-1 and 40 CFR 63, **Subpart L (Coke Oven Batteries)**, the nonrecovery coke oven facility shall comply with requirements of this rule including, but not limited to, the following:

5. Operation Condition No. 30 (Performance Testing) has been changed for the purpose of clarity from:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for lead, VOC and NO_x emissions from the HRCC waste gas stack (Stack ID 201) and PM/PM₁₀ emissions from the charging stack

(Stack ID 202 or 203), pushing stack (Stack ID 204), coal crusher and screening station (Stack ID 230), and coke crusher and screening station (Stack ID 265). The tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after complete facility start-up, or January 1, 1999 whichever comes first. Complete facility start-up is defined as the date at which all batteries have started. 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. The test protocol for compliance stack tests of VOC and NO_x emissions from the HRCC waste gas stack (Stack ID 201) shall be submitted as a 24 hour period 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.
- (f) After the OAM's evaluation and approval of stack test results, stack tests which demonstrate compliance with VOC emission limitations may be used to request an amendment to revise established VOC emission limitations on the tested operations. Existing VOC emission limitations shall be enforced until an amendment is issued. Inland Steel Company shall specify in the amendment request how the VOC limitations be restructured, but in no case shall the total restructured VOC limitation for the HRCC and gas turbine facilities exceed 39.6 tons per year.

to be as follows on page 13 of 19 of the final permit:

Performance Testing

That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for lead, VOC and NO_x emissions from the HRCC waste gas stack (Stack ID 201) and **PM** emissions from the charging stack (Stack ID 202 or 203), pushing stack (Stack ID 204), coal crusher and screening station (Stack ID 230), and coke crusher and screening station (Stack ID 265). The tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after complete facility start-up, or January 1, 1999 whichever comes first. Complete facility start-up is defined as the date at which all batteries have started.

- (a) 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. **PM limits include both filterable and condensable particulate matter. Therefore, PM testing should be performed according to 40 CFR 60, Appendix A, Method 5 and 40 CFR 51, Appendix M, Method 202.**
- (b) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test. The test protocol for compliance stack tests of VOC and NO_x emissions from the HRCC waste gas stack (Stack ID 201) shall be submitted as a 24 hour period test.
- (c) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
- (d) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
- (e) 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.
- (f) 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.
- (g) After the OAM's evaluation and approval of stack test results, stack tests which demonstrate compliance with VOC emission limitations may be used to request an amendment to revise established VOC emission limitations on the tested operations. Existing VOC emission limitations shall be enforced until an amendment is issued. Inland Steel Company shall specify in the amendment request how the VOC limitations be restructured, but in no case shall the total restructured VOC limitation for the HRCC and gas turbine facilities exceed 39.6 tons per year.

6. Operation Condition No. 32 (Record Keeping Requirements) has been changed to include the charging opacity record keeping and the longer period for maintaining records from:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition Nos. 15, 21(c), 22(b), 23, 28, 29 and 31 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:

- (a) No. 15 - Records of tons of coal charged per month.

- (b) No. 21(c) - Records that the baghouse pressure drops, fan amps, and oven damper adjustments have been monitored during charging operations. When pressure drops and fan amps fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented.
- (c) No. 22(b) - Records that the baghouse pressure drops, fan amps, and oven damper adjustments have been monitored during pushing operations. When pressure drops and fan amps fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented. In addition, records that the shed has been visually inspected on a weekly basis.
- (d) No. 23 - Records of the total dissolved solids in the quench water as determined by the test protocol required in operation condition no. 23. These tests shall be performed weekly.
- (e) No. 28 - Records that the baghouse pressure drops have been monitored on a daily basis and that baghouses have been inspected on a quarterly basis. When pressure drops fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented.
- (f) No. 29 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented.
- (g) No. 31 - Records that the temperature of the common tunnel ducts have been monitored once per work shift. When duct temperatures fall out of the range determined by Operation Condition Nos. 30 and 31, the time and duration of the exceedance, the magnitude of the exceedance, and the corrective action taken shall be documented.

to be as follows on page 14 of 19 of the final permit:

Record Keeping Requirements

That a log of information necessary to document compliance with Operation Condition Nos. 15, **21(b)**, 21(c), 22(b), 23, 28, 29 and 31 shall be maintained. These records shall be kept for at least the past **60** month period and made available upon request to the Office of Air Management (OAM) and shall include the following information for operation conditions:

- (a) No. 15 - Records of tons of coal charged per month.
- (b) No. 21(b) - Records of charging opacities.**
- (c) No. 21(c) - Records that the baghouse pressure drops, fan amps, and oven damper adjustments have been monitored during charging operations. When pressure drops and fan amps fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented.

- (d) No. 22(b) - Records that the baghouse pressure drops, fan amps, and oven damper adjustments have been monitored during pushing operations. When pressure drops and fan amps fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented. In addition, records that the shed has been visually inspected on a weekly basis.
- (e) No. 23 - Records of the total dissolved solids in the quench water as determined by the test protocol required in operation condition no. 23. These tests shall be performed weekly.
- (f) No. 28 - Records that the baghouse pressure drops have been monitored on a daily basis and that baghouses have been inspected on a quarterly basis. When pressure drops fall out of acceptable limits, the duration of the exceedance and corrective action taken shall be documented. When a problem has been discovered during an inspection, records of the problem and corrective action taken shall be documented.
- (g) No. 29 - Records that visible emission notations have been performed on a daily basis. When visible emissions are abnormal, the duration of the occurrence and corrective action taken shall be documented.
- (h) No. 31 - Records that the temperature of the common tunnel ducts have been monitored once per work shift. When duct temperatures fall out of the range determined by Operation Condition Nos. 30 and 31, the time and duration of the exceedance, the magnitude of the exceedance, and the corrective action taken shall be documented.

7. Operation Condition No. 33 (Reporting Requirements) has been changed to include the the new address from:

Reporting Requirements

A quarterly summary of the information necessary to document compliance with Operation Condition No. 15 shall be submitted to:

IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms.

to be as follows on page 15 of 19 of the final permit:

Reporting Requirements

A quarterly summary of the information necessary to document compliance with Operation Condition No. 15 shall be submitted to:

**Compliance Data Section
Office of Air Management**

**100 North Senate Avenue
P. O. Box 6015
Indianapolis, IN 46206-6015**

and

IDEM/Northwest Regional Office
Gainer Bank Building
504 North Broadway, Suite 418
Gary, Indiana 46402-1962

within 30 days after the end of the quarter being reported in the format attached. The report shall include the information as stated on the forms.