CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

American Iron Oxide Company
2001 East County Road 700 North
Grandview, Indiana 47615

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.

Construction Permit No.: CP-147-9798-00050	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3, D.1, and D.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information

The Permittee owns an iron oxide and hydrochloric acid (HCl) regeneration and recovery plant.

Responsible Official:	Satish C. Wadhawan
Source Address:	2001 East County Road 700 North, Grandview, Indiana 47615
Mailing Address:	Foster Plaza No. 7, 661 Andersen Drive Pittsburgh, Pennsylvania 15220
SIC Code:	2819
County Location:	Spencer
County Status:	Attainment for all criteria pollutants

A.2 Emission Units and Pollution Control Equipment Summary

This permit is to construct and operate an iron oxide and hydrochloric acid (HCl) regeneration and recovery plant consisting of the following facilities:

(a) Process line no. 1:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-1, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour; one (1) venturi separator; and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and a mist eliminator. This system exhausts through a stack, identified as R-1; and

(2) two (2) iron oxide storage bins, identified as O-1 and O-2, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

(b) Process line no. 2:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-2, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour, one (1) venturi separator, and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and mist eliminator. This system exhausts through a stack, identified as R-2; and

(2) two (2) iron oxide storage bins, identified as O-3 and O-4, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

(c) a chlorination system with a maximum chlorine usage of 900 pounds per hour. This system consists of one (1) chlorinator, identified as C-1, attached to a chlorination scrubber for HCl and chlorine emissions control, and exhausting through a stack, identified as C-1;

(d) a solvent extraction system, identified as TV-1, exhausting through a stack identified as TV-1;

(e) one (1) natural gas-fired boiler, identified as B-1, utilizing a normal firing method and ultra low-NO_x burners, with a maximum heat input rate of 8 million British Thermal Units per hour, and exhausting through a stack, identified as B-1; and

(f) a tank farm, identified as TS-1, consisting of two (2) 50,000 gallon storage tanks for regenerated hydrochloric acid identified as T-1 and T-2, seven (7) 50,000 gallon storage tanks for spent pickle liquor identified as T-3 through T-9, one (1) 35,000 gallon storage tank for fresh acid identified as T-10, two (2) 50,000 gallon storage tanks for raffinate identified as T-11 and T-12, one (1) 6,000 gallon inhibitor tank identified as T-17, and four (4) 50,000 gallon storage tanks for purified iron liquor identified as T-13 through T-16. Each of these tanks are attached to a common fume scrubber to control vapor loss and exhaust to a common stack, identified as TS-1.

SECTION B GENERAL CONSTRUCTION AND OPERATION CONDITIONS

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

Construction Conditions [326 IAC 2-1-3.4]

B.1 General Construction Conditions

(a) The data and information supplied with the application shall be the basis for this permit. Prior to any proposed change in construction which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2 or otherwise triggers applicability of 326 IAC 2, the change must be approved by the Office of Air Management (OAM).

(b) 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.

B.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1-9(b)]

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.

B.4 Permit Review Rules [326 IAC 2]

Notwithstanding Operation Condition No. B.5, 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).

B.5 First Time Operation Permit [326 IAC 2-1-4]

(a) 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:

(1) 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, OAM,.

(2) 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.

(3) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

(b) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1 (Fees).

(c) Pursuant to 326 IAC 2-1-4, the Permittee shall apply for an operating permit renewal at least ninety (90) days prior to the expiration date established in the validation letter. The operating permit issued shall contain as a minimum the conditions in the Operating Conditions section of this permit.

Operation Conditions

B.6 General Operation Conditions

(a) The data and information supplied in the application shall be the basis 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 or otherwise triggers applicability of 326 IAC 2, the change must be approved by the Office of Air Management (OAM).

(b) 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 (IC13-17) and the rules promulgated thereunder.

B.7. Preventive Maintenance Plan [326 IAC 1-6-3]

(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this permit, including the following information on each facility:

(1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If due to circumstances beyond its control, the PMP cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

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

(b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that failure to implement the plan does not cause or contribute to a violation of any limitation on emissions or potential to emit.

(c) PMP's shall be submitted to IDEM, OAM, upon request and shall be subject to review and approval by IDEM, OAM.

B.8 Transfer of Permit [326 IAC 2-1-6]

Pursuant to 326 IAC 2-1-6 (Transfer of Permits):

(a) In the event that ownership of this iron oxide and hydrochloric acid (HCl) regeneration and recovery plant is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) The OAM shall reserve the right to issue a new permit.

B.9 Permit Revocation [326 IAC 2-1-9]

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, OAM,, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

B.10 Availability of Permit [326 IAC 2-1-3(l)]

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

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitation and Standards

C.1 Opacity Limitations [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Visible Emissions Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

(a) Visible emissions shall not exceed an average of twenty percent (40%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.

(b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

C.2 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.3 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter from unpaved roadways shall be controlled according to the attached Fugitive Dust Control Plan (Attachment A) such that the visible emissions shall not exceed an average instantaneous opacity of five percent (5%). Average instantaneous opacity shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass. The three (3) opacity readings for each vehicle pass shall be taken as follows:

(a) The first reading shall be taken at the time of emission generation.

(b) The second reading shall be taken five (5) seconds after the first.

(c) The third reading shall be taken five (5) seconds after the second reading, or ten (10) seconds after the first reading.

The three (3) readings shall be taken approximately four (4) feet from the surface at the point of maximum opacity. The observer shall stand at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

C.4 Operation of Equipment

Except as provided otherwise, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units venting to the control equipment are in operation.

C.5 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

Testing Requirements

C.6 Performance Testing [326 IAC 3-6] [326 IAC 2-1-4(f)]

(a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures) and 326 IAC 2-1-4(f), except as provided elsewhere in this permit, utilizing methods approved by the IDEM, OAM.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

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

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

(b) All test reports must be received by IDEM, OAM, within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Monitoring Requirements

C.7 Compliance Monitoring

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment upon start-up. If due to circumstances beyond its control, this schedule cannot be met, the Permittee shall notify:

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

in writing, no more than ninety (90) days after receipt of this permit, with full justification of the reasons for the inability to meet this date and a schedule which it expects to meet. If a denial of the request is not received before the monitoring is fully implemented, the schedule shall be deemed approved.

C.8 Maintenance of Monitoring Equipment [326 IAC 2-1-3(i)(8)]

(a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.

(b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.9 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

C.10 Operational Parameter Gauge Specifications

Whenever a condition in this permit requires the measurement of a operational parameter across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent (±2%) of full scale reading.

Corrective Actions and Response Steps

C.11 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-1-3(i)(8)]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee also shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM, shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM, within thirty (30) days of receipt of the notice of deficiency.

(b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAM, that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM, may extend the retesting deadline.

(c) IDEM, OAM, reserves the authority to take any actions allowed under the law to resolve noncompliant stack tests.

Record Keeping and Reporting Requirements

C.12 Monitoring Data Availability [326 IAC 2-1-3(i)(8)]

(a) With the exception of performance tests conducted in accordance with Section C-Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the air pollution emitting equipment listed in section D of this permit is operating.

(b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the air pollution emitting equipment is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.

(c) If the air pollution emitting equipment is operating but the associated air pollution control equipment monitoring parameter is outside the required range specified in the approved site-specific Preventive Maintenance Plan or visible emissions limitations are exceeded as determined via 40 CFR Part 60, Appendix A, Method 9, and if these conditions are not caused by a malfunction as defined in 326 IAC 1-2-39, additional observations and sampling should be taken with a record made of the nature of the condition. An excursion from a monitoring parameter does not constitute a violation of this permit, but failure to take corrective actions is considered a violation.

(d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded. Failure to make the required observations, sampling, maintenance procedures, or record keeping is a violation of this permit.

C.13 Records and Notice of Malfunction [326 IAC 1-6-2]

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 IDEM, 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 IDEM, OAM, using the Malfunction Report Form (2 pages) or its substantial equivalent. 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]

C.14 General Record Keeping Requirements [326 IAC 2-1-3(i)(8)]

(a) Records of all required monitoring data and support information shall be retained for a period of two (2) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location. If an IDEM, OAM, representative makes a request for records to the Permittee, the Permittee shall furnish the records to IDEM, OAM, within a reasonable time.

(b) Records of required monitoring information shall include, where specified in this permit:

(1) The date, place, and time of sampling or measurements;

(2) The dates analyses were performed;

(3) The company or entity performing the analyses;

(4) The analytic techniques or methods used;

(5) The results of such analyses; and

(6) The operating conditions existing at the time of sampling or measurement.

(c) Support information shall include, where specified in this permit:

(1) Copies of all reports required by this permit;

(2) All original strip chart recordings for continuous monitoring instrumentation;

(3) All calibration and maintenance records;

(4) Records of preventive maintenance shall be sufficient to demonstrate that improper maintenance did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures.

(d) All record keeping requirements not already legally required shall be implemented upon start-up.

C.15 General Reporting Requirements

(a) Reports required by conditions in Section D of this permit shall be submitted to:

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

(b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.

(c) Unless otherwise specified in this permit, any report shall be submitted within thirty (30) days of the end of the reporting period.

(d) The first report shall cover the period commencing on the date of operation of the source following the issuance of this permit and ending on the last day of the reporting period.

SECTION D.1 FACILITY CONDITIONS

(a) Process line no. 1:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-1, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour, one (1) venturi separator, and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and a mist eliminator. This system exhausts through a stack, identified as R-1; and

(2) two (2) iron oxide storage bins, identified as O-1 and O-2, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

(b) Process line no. 2:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-2, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour, one (1) venturi separator, and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and mist eliminator. This system exhausts through a stack, identified as R-2; and

(2) two (2) iron oxide storage bins, identified as O-3 and O-4, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

Emissions Limitation and Standards

D.1.1 Waste Pickle Liquor Processing Capacity Limitation [326 IAC 2-1]

The waste pickle liquor processing capacity shall be limited to less than 38,400,000 gallons per 12-consecutive month period rolled on a monthly basis. During the first twelve (12) months of operation, the amount of waste pickle liquor processed shall be limited to 3,200,000 gallons per month. This limit is equivalent to the following emission limits:

Operation	PM and PM-10 limit (lb/hr)	HCl limit (lb/hr)	Cl_2 limit (lb/hr)
each hydrochloric acid recovery system	1.59	0.68	0.31
each iron oxide storage bin	0.09	--	--

Compliance with the above particulate limits shall satisfy the requirements of 326 IAC 6-3 (Particulate Limitations for Process Operations). Compliance with above HCl and Cl_2 limits shall render 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.1.2 Hydrochloric Acid (HCl) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), HCl emissions from the each of the two (2) hydrochloric acid recovery systems shall be controlled by two (2) wet scrubbers in series. The outlet HCl concentration of the exhaust from each of the two (2) hydrochloric acid recovery systems shall not exceed 3 parts per million by volume dry (ppmvd) and the HCl emissions from each system shall not exceed 0.68 pound per hour.

Compliance with the above limit shall render the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.1.3 Chlorine (Cl_2) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), chlorine (Cl_2) concentration of the exhaust from each of the two (2) hydrochloric acid recovery systems shall not exceed 4 parts per million by volume dry (ppmvd) and the Cl_2 emissions from each system shall not exceed 0.31 pound per hour.

Compliance with the above limit shall render the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.1.4 Particulate Matter less than 10 microns (PM-10) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), PM-10 emissions from each of the two (2) hydrochloric acid recovery systems shall be controlled by two (2) wet scrubbers in series and a mist eliminator. Total PM-10 (filterable and condensible portions) emissions from each system shall be limited to 0.031 grains per dry standard cubic feet and 1.59 pounds per hour

D.1.5 Particulate Matter (PM) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), PM emissions from each of the two (2) hydrochloric acid recovery systems shall be controlled by two (2) wet scrubbers in series and a mist eliminator. Filterable PM emissions from each system shall be limited to 0.031 grains per dry standard cubic feet and 1.59 pounds per hour

Compliance with the above limit shall satisfy the requirements of 326 IAC 6-3 (Particulate Limitations for Process Operations).

D.1.6 Particulate Matter (PM/PM-10) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), each of the four (4) iron oxide storage bins shall be operated one at a time and PM/PM-10 emissions from each storage bin shall be controlled by a separate baghouse. Filterable PM/PM-10 emissions from each storage bin shall be limited to 0.014 grains per dry standard cubic feet and 0.09 pound per hour.

D.1.7 Nitrogen Oxides (NO_x) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), the two (2) roasters (ID#s R-1 and R-2) shall burn natural gas only and shall use low-NO_x burners only. NO_x emissions shall be limited to 0.08 pound per million British Thermal Units (lb/MMBtu).

D.1.8 Opacity Limitation [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), visible emissions from any stack shall not exceed an average of five percent (5%) opacity in 24 consecutive readings taken in accordance with 40 CFR Part 60, Appendix A (U.S. EPA Method 9).

Compliance with this opacity limitation shall also satisfy the requirements of 326 IAC 5-1-2 (Visible Emissions Limitations).

D.1.9 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the two (2) process lines and associated control devices.

Compliance Determination Requirements

D.1.10 Testing Requirements [326 IAC 2-1-4(f)]

(a) The Permittee shall perform HCl testing on the two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) to measure the outlet HCl mass flow rate and concentration, utilizing methods as approved by the Commissioner. These tests shall be performed to determine compliance with condition D.1.2 and to establish the following operating parameter ranges for each scrubber that will achieve a minimum control efficiency to comply with condition D.1.2:

(1) acidity (pH) of scrubber effluent;

(2) pressure drop in inches of water; and

(3) discharge pressure of the centrifugal pump used for recirculating the scrubbing liquid.

These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(b) The Permittee shall perform Cl_2 testing on the two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) to measure the outlet Cl_2 mass flow rate and concentration, utilizing methods as approved by the Commissioner. These tests shall be performed to determine compliance with condition D.1.3 and to establish the following operating parameter ranges for each scrubber that will achieve a minimum control efficiency to comply with condition D.1.3:

(1) process offgas temperature; and

(2) maximum proportion of excess air fed to the process.

These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(c) The Permittee shall perform PM-10 testing on the two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) within 60 days after achieving maximum capacity, but no later than 180 days after initial start up, utilizing 40 CFR Part 60, Appendix A, Method 201 or 201A and 202, or other methods as approved by the Commissioner. This test shall be performed to determine compliance with condition D.1.4 and shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM-10 shall include both filterable and condensible portions.

(d) The Permittee shall perform filterable PM testing on the two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) within 60 days after achieving maximum capacity, but no later than 180 days after initial start up, utilizing 40 CFR Part 60, Appendix A, Method 5 or 17 or other methods as approved by the Commissioner. This test shall be performed to determine compliance with condition D.1.5 and shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(e) The Permittee shall perform NO_x testing on the two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) within 60 days after achieving maximum capacity, but no later than 180 days after initial start up, utilizing 40 CFR Part 60, Appendix A, Method 7E or other methods as approved by the Commissioner. This test shall be performed to determine compliance with condition D.1.7 and shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(f) Testing of the four (4) iron oxide storage bins for PM is not required by this permit. However, if testing is required, compliance with the filterable PM/PM-10 limits specified in operation condition D.1.6 shall be determined by a performance test conducted in accordance with condition C.7 - Performance Testing. This does not preclude testing requirements on these facilities under 326 IAC 2-1-4(f).

D.1.11 Visible Emission Observations [40 CFR Part 60, Appendix A, Method 9]

The Permittee shall have a certified visible emissions reader conduct and record observations of the four (4) iron oxide storage bin stacks and the two (2) hydrochloric acid recovery system stacks once per day, determined by a six (6) minute average in accordance with 40 CFR 60, Appendix A, Method 9.

Compliance with this condition shall determine continuous compliance with the opacity limit under operation condition D.1.8.

Compliance Monitoring Requirements

D.1.12 Scrubber and Mist Eliminator Operating Condition

The scrubbers and mist eliminators shall be operated at all times when the respective process line is in operation.

(a) The Permittee shall record the following operating parameters at least once every 8-hour period when the respective process line is in operation:

(1) acidity (pH) of scrubber effluent for each scrubber;

(2) flow rate of scrubbing liquid in gallons per minute; and

(3) proportion of excess air fed to the process.

(b) The Permittee shall record the pressure drop for each scrubber at least once per day when the respective process line is in operation.

(c) The Permittee shall record the process offgas temperature continuously when the respective process line is in operation.

(d) Unless operated under conditions for which the Preventive Maintenance specifies otherwise, the acidity of the scrubber effluent, pressure drop, flow rate of the scrubbing liquid, process offgas temperature and proportion of excess air fed to the process shall be maintained within the ranges established during the latest stack test.

(e) The Preventive Maintenance Plan for the scrubbers and mist eliminators shall contain troubleshooting contingency and response steps for when any of the operation parameters in (a) and (b) is outside of the above mentioned range for any one reading.

(f) The instruments used for determining the pressure drop, flow rate, acidity, and temperature shall comply with Section C - Operation Parameter Gauge Specifications of this permit, shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(g) An inspection shall be performed each calender quarter on the scrubbers and mist eliminators. Defective scrubber and mist eliminator components shall be replaced. A record shall be kept of the results of the inspection and the number of each scrubber and mist eliminator component replaced.

(h) In the event that failure of a scrubber or mist eliminator has been observed:

(1) The process line associated with the affected scrubber or mist eliminator shall be shut down immediately until the failed units have been repaired or replaced.

(2) Within eight (8) hours of the determination of failure, response steps according to the timetable described in the Preventive Maintenance Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Preventive Maintenance Plan, response steps shall be devised within eight (8) hours of discovery of the failure and shall include a timetable for completion.

D.1.13 Baghouse Operating Condition

The baghouses shall be operated at all times when the respective iron oxide storage bins are in operation.

(a) The pressure drop across each baghouse shall be measured by a Pressure Differential Switch/Pressure Gauge that gives the Permittee the capability to indicate both low-end and high-end set-points and connects to a Programmable Logic Controller and an alarm system.

(b) The Permittee shall record the time and pressure drop across each baghouse for every instance that the alarm in item (a) sounds.

(c) Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across each baghouse shall be maintained within the range established during the latest stack test to demonstrate continuous compliance with the particulate emission limit in operation condition D.1.6.

(d) The Preventive Maintenance Plan for the baghouse shall contain troubleshooting contingency and response steps for when the pressure drop reading is outside of the above mentioned range for any one reading.

(e) The instruments used for determining the pressure shall comply with C.10 - Operational Parameter Gauge Specifications of this permit, shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(f) An inspection shall be performed each calender quarter of all bags controlling the four (4) iron oxide storage bins. All defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(g) In the event that bag failure has been observed:

(1) The affected compartments shall be shut down immediately until the failed units have been repaired or replaced. For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced.

(2) Within eight (8) hours of the determination of failure, response steps according to the timetable described in the Preventive Maintenance Plan shall be initiated, For any failure with corresponding response steps and timetable not described in the Preventive Maintenance Plan, response steps shall be devised within eight (8) hours of discovery of the failure and shall include a timetable for completion.

Record Keeping and Reporting Requirements

D.1.14 Record Keeping Requirements

(a) To document compliance with condition D.1.1, the Permittee shall maintain records of the amount of waste pickle liquor processed for each month and for the previous eleven (11) month period.

(b) To document compliance with condition D.1.11, the Permittee shall maintain records of visible emission readings at the source and made available upon request to IDEM, OAM.

(c) To document compliance with condition D.1.12, the Permittee shall maintain the following:

(1) 8-hour records of the following scrubber operational parameters during normal operation:

(A) acidity (pH) of scrubber effluent for each scrubber;

(B) discharge pressure of the centrifugal pump used for recirculating the scrubbing liquid; and

(C) proportion of excess air fed to the process.

(2) Daily records of pressure drop for each scrubber during normal operation:

(3) Continuous records of process offgas temperature during normal operation.

(4) Documentation of all response steps implemented, per operation parameter reading that is outside of the range.

(5) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.

(6) Standard operating procedures for the equipment, manufacturers's specifications or their equivalent, and quality assurance/quality control (QA/QC) procedures which may be included in the preventive maintenance plans, shall also be maintained.

(d) To document compliance with condition D.1.13, the Permittee shall maintain the following:

(1) Daily records of the following baghouse operational parameters during normal operation:

(A) Differential pressure during activation of the alarm mentioned in condition D.1.13(a); and

(B) Cleaning cycle: frequency and differential pressure.

(2) Documentation of all response steps implemented, per pressure drop reading that is outside of the range.

(3) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.

(4) Standard operating procedures for the equipment, manufacturers's specifications or their equivalent, and quality assurance/quality control (QA/QC) procedures which may be included in the preventive maintenance plans, shall also be maintained.

(e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

D.1.15 Reporting Requirements

The Permittee shall submit quarterly reports within thirty (30) days after the end of the quarter being reported using the attached quarterly report form or its substantial equivalent. This report shall include the amount of waste pickle liquor processed for each month and for the previous 12-month period.

SECTION D.2 FACILITY CONDITIONS

a chlorination system with a maximum chlorine usage of 900 pounds per hour. This system consists of one (1) chlorinator, identified as C-1, attached to a chlorination scrubber for HCl and chlorine emissions control, and exhausting through a stack, identified as C-1.

Emissions Limitation and Standards

D.2.1 Hydrochloric Acid (HCl) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), HCl emissions from the chlorination system shall be controlled by a scrubber. The outlet HCl emissions from the system shall not exceed 0.09 pound per hour.

Compliance with the above limit shall also make the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.2.2 Chlorine (Cl_2) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), Cl_2 emissions from the chlorination system shall be controlled by scrubber. The outlet Cl_2 emissions from the system shall not exceed 0.07 pound per hour.

Compliance with the above limit shall also make the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.2.3 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the chlorination system and associated control device.

Compliance Determination Requirements

D.2.4 Testing Requirements [326 IAC 2-1-4(f)]

(a) The Permittee shall perform HCl testing on the chlorination system stack (ID# C-1) to measure the outlet HCl mass flow rate, utilizing methods as approved by the Commissioner. This test shall be performed to determine compliance with condition D.2.1 and to establish the following operating parameter ranges for each scrubber that will achieve a minimum control efficiency to comply with condition D.2.1:

(1) acidity (pH) of scrubber effluent;

(2) pressure drop in inches of water; and

(3) flow rate of scrubbing liquid in gallons per minute.

These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(b) The Permittee shall perform Cl_2 testing on the chlorination system stack (ID# C-1) to measure the outlet Cl_2 mass flow rate, utilizing methods as approved by the Commissioner. These tests shall be performed to determine compliance with condition D.2.2 and to establish the following operating parameter ranges for each scrubber that will achieve a minimum control efficiency to comply with condition D.2.2:

(1) process offgas temperature; and

(2) maximum proportion of excess air fed to the process.

These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

Compliance Monitoring Requirements

D.2.5 Scrubber Operating Condition

The scrubber shall be operated at all times when the chlorination system is in operation.

(a) The Permittee shall record the acidity (pH) of the scrubbing liquid and the acidity (pH) of the scrubber effluent at least once every 8-hour period when the chlorination system is in operation.

(b) The Permittee shall record the pressure drop and flow rate of the scrubbing liquid at least once per day when the respective process line is in operation.

(c) Unless operated under conditions for which the Preventive Maintenance specifies otherwise, the acidity of the scrubbing liquid, pressure drop, flow rate of the scrubbing liquid, and the acidity of the scrubber effluent shall be maintained within the ranges established during the latest stack test.

(d) The Preventive Maintenance Plan for the scrubber systems shall contain troubleshooting contingency and response steps for when any of the operation parameters in (a) and (b) is outside of the above mentioned ranges for any one reading.

(e) The instruments used for determining the pressure drop, flow rate, and acidity shall comply with C.10 - Operational Parameter Gauge Specifications of this permit, shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(f) An inspection shall be performed each calender quarter on the scrubber. Defective scrubber components shall be replaced. A record shall be kept of the results of the inspection and the number of each scrubber component replaced.

(g) In the event that failure of the scrubber has been observed:

(1) The chlorination system shall be shut down immediately until the failed units have been repaired or replaced.

(2) Within eight (8) hours of the determination of failure, response steps according to the timetable described in the Preventive Maintenance Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Preventive Maintenance Plan, response steps shall be devised within eight (8) hours of discovery of the failure and shall include a timetable for completion.

Record Keeping Requirements

D.2.6 Record Keeping Requirements

(a) To document compliance with condition D.2.5, the Permittee shall maintain the following:

(1) 8-hour records of the acidity of scrubber effluent during normal operation:

(2) Daily records of the following scrubber operational parameters during normal operation:

(A) Differential pressure; and

(B) Discharge pressure of the centrifugal pump used for recirculating the scrubbing liquid.

(3) Documentation of all response steps implemented, per operation parameter reading that is outside of the range.

(4) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.

(5) Standard operating procedures for the equipment, manufacturers's specifications or their equivalent, and quality assurance/quality control (QA/QC) procedures which may be included in the preventive maintenance plans, shall also be maintained.

(b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

SECTION D.3 FACILITY CONDITIONS

a solvent extraction system, identified as TV-1, exhausting through a stack identified as TV-1.

Emissions Limitation and Standards

There are no emission limitations or standards applicable to the solvent extraction system.

SECTION D.4 FACILITY CONDITIONS

one (1) natural gas-fired boiler, identified as B-1, utilizing a normal firing method and ultra low-NO_x burners, with a maximum heat input rate of 8 million British Thermal Units per hour, and exhausting through a stack, identified as B-1.

Emissions Limitation and Standards

D.4.1 Nitrogen Oxides (NO_x) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), shall burn natural gas only and shall use ultra low-NO_x burners only. NO_x emissions shall be limited to 0.02 pound per million British Thermal Units (lb/MMBtu).

Compliance Determination Requirements

D.4.2 Testing Requirements [326 IAC 2-1-4(f)]

Testing of the boiler is not required by this permit. However, if testing is required, compliance with the NO_x limit specified in operation conditions D.4.1 shall be determined by a performance test conducted in accordance with condition C.6 - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-1-4(f).

SECTION D.5 FACILITY CONDITIONS

a tank farm, identified as TS-1, consisting of two (2) 50,000 gallon storage tanks for regenerated hydrochloric acid identified as T-1 and T-2, seven (7) 50,000 gallon storage tanks for spent pickle liquor identified as T-3 through T-9, one (1) 35,000 gallon storage tank for fresh acid identified as T-10, two (2) 50,000 gallon storage tanks for raffinate identified as T-11 and T-12, one (1) 6,000 gallon inhibitor tank identified as T-17, and four (4) 50,000 gallon storage tanks for purified iron liquor identified as T-13 through T-16. Each of these tanks are attached to a common fume scrubber to control vapor loss and exhaust to a common stack, identified as TS-1.

Emissions Limitation and Standards

D.5.1 Hydrochloric Acid (HCl) [326 IAC 2-1]

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements), HCl emissions generated from the tank farm storage tanks shall be controlled by a common scrubber unit. The outlet HCl emissions from the tank farm shall not exceed 0.27 pound per hour.

Compliance with the above limit shall also make the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

D.5.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the tank farm and associated control device.

Compliance Determination Requirements

D.5.3 Testing Requirements [326 IAC 2-1-4(f)]

The Permittee shall perform HCl testing on the tank farm stack (ID# TS-1) to measure the outlet HCl mass flow rate, utilizing methods as approved by the Commissioner. This test shall be performed to determine compliance with condition D.5.1 and to establish the following scrubber operating parameter ranges that will achieve a minimum control efficiency to comply with condition D.5.1:

(a) acidity (pH) of scrubber effluent;

(b) pressure drop in inches of water; and

(c) discharge pressure of the centrifugal pump used for recirculating the scrubbing liquid.

This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

Compliance Monitoring Requirements

D.5.4 Scrubber Operating Condition

The scrubber shall be operated at all times when the tank farm is in operation.

(a) The Permittee shall record the acidity (pH) of the scrubber effluent at least once every 8-hour period when the tank farm is in operation.

(b) The Permittee shall record the pressure drop and flow rate of the scrubbing liquid at least once per day when the tank farm is in operation.

(c) Unless operated under conditions for which the Preventive Maintenance specifies otherwise, the acidity of the scrubber effluent, pressure drop, and flow rate of the scrubbing liquid shall be maintained within the ranges established during the latest stack test.

(d) The Preventive Maintenance Plan for the scrubber shall contain troubleshooting contingency and response steps for when any of the operation parameters in (a) and (b) is outside of the above mentioned range for any one reading.

(e) The instruments used for determining the pressure drop, flow rate, and acidity shall comply with C.10 - Operational Parameter Gauge Specifications of this permit, shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(f) An inspection shall be performed each calender quarter on the scrubbers. Defective scrubber components shall be replaced. A record shall be kept of the results of the inspection and the number of each scrubber component replaced.

(g) In the event that failure of the scrubber has been observed:

(1) The tank farm shall be shut down immediately until the failed units have been repaired or replaced.

(2) Within eight (8) hours of the determination of failure, response steps according to the timetable described in the Preventive Maintenance Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Preventive Maintenance Plan, response steps shall be devised within eight (8) hours of discovery of the failure and shall include a timetable for completion.

Record Keeping Requirements

D.5.5 Record Keeping Requirements

To document compliance with condition D.5.4, the Permittee shall maintain the following:

(a) 8-hour records of the acidity of scrubber effluent during normal operation:

(b) Daily records of the following scrubber operational parameters during normal operation:

(1) Differential pressure; and

(2) Discharge pressure of the centrifugal pump used for recirculating the scrubbing liquid.

(c) Documentation of all response steps implemented, per operation parameter reading that is outside of the range.

(d) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.

(e) Standard operating procedures for the equipment, manufacturers's specifications or their equivalent, and quality assurance/quality control (QA/QC) procedures which may be included in the preventive maintenance plans, shall also be maintained.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
COMPLIANCE DATA SECTION

Quarterly Report

Source Name: American iron Oxide Company
Source Address: 2001 East County Road 700 North, Grandview, Indiana 47615
Mailing Address: Foster Plaza No. 7, 661 Andersen Drive, Pittsburgh, Pennsylvania 15220
Construction Permit No.: CP 147-9798-00050
Facility: two (2) hydrochloric acid recovery systems
Parameter: waste pickle liquor (WPL) processing capacity
Limits: 3,200,000 gallons per month for first twelve (12) months of operation; 38,400,000 gallons per 12-consecutive month period rolled on a monthly basis

YEAR: _____

Month	WPL Processed This Month (A)	WPL Processed Previous 11-Month Period (B)	WPL Processed 12- Month Period (A + B)
Month 1			
Month 2			
Month 3			

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

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: American Iron Oxide Company PHONE NO._____

LOCATION: (CITY AND COUNTY) Grandview/Spencer
PERMIT NO. 147-9798 AFS PLANT ID: 147-00050 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:_____

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

326 IAC 1-6-1 Applicability of rule

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

326 IAC 1-2-39 "Malfunction" definition

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

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

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

_____

_____

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	American Iron Oxide Company
Source Location:	Intersection of County Road 700 East and County Road 700 North, Rockport, Indiana 47635
County:	Spencer
Construction Permit No.:	CP-147-9798
Plant Identification No.:	147-00050
SIC Code:	2819
Permit Reviewer:	Marco A. Salenda

The Office of Air Management (OAM) has reviewed an application from American Iron Oxide Company ("AMROX") relating to the construction and operation of an iron oxide and hydrochloric acid regeneration and recovery plant, consisting of the following facilities:

(a) Process line no. 1:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-1, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour; one (1) venturi separator; and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and a mist eliminator. This system exhausts through a stack, identified as R-1; and

(2) two (2) iron oxide storage bins, identified as O-1 and O-2, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

(b) Process line no. 2:

(1) a hydrochloric acid recovery system with a maximum processing rate of 15 tons per hour of waste pickle liquor. This system consists of one (1) natural gas-fired spray roaster, identified as R-2, utilizing a tangential firing method and low-NO_x burners, with a maximum heat input rate of 26.8 million British Thermal Units per hour, one (1) venturi separator, and one (1) absorber. HCl and particulate emissions are controlled by two (2) scrubbers in series and mist eliminator. This system exhausts through a stack, identified as R-2; and

(2) two (2) iron oxide storage bins, identified as O-3 and O-4, each with a storage capacity of 100 tons, each attached to an individual baghouse for particulate control, and each exhausting through an individual stack.

(c) a chlorination system with a maximum chlorine usage of 900 pounds per hour. This system consists of one (1) chlorinator, identified as C-1, attached to a chlorination scrubber for HCl and chlorine emissions control, and exhausting through a stack, identified as C-1;

(d) a solvent extraction system, identified as TV-1, exhausting through a stack identified as TV-1. This system includes one (1) 40,000 gallon octanol storage tank, identified as T-17;

(e) one (1) natural gas-fired boiler, identified as B-1, utilizing a normal firing method and ultra low-NO_x burners, with a maximum heat input rate of 8 million British Thermal Units per hour, and exhausting through a stack, identified as B-1; and

(f) a tank farm, identified as TS-1, consisting of two (2) 50,000 gallon storage tanks for regenerated hydrochloric acid identified as T-1 and T-2, seven (7) 50,000 gallon storage tanks for spent pickle liquor identified as T-3 through T-9, one (1) 35,000 gallon storage tank for fresh acid identified as T-10, two (2) 50,000 gallon storage tanks for raffinate identified as T-11 and T-12, and four (4) 50,000 gallon storage tanks for purified iron liquor identified as T-13 through T-16. Each of these tanks are attached to a common fume scrubber to control vapor loss and exhaust to a common stack, identified as TS-1.

Source Definition

This iron oxide and hydrochloric acid regeneration and recovery plant is located contiguous to AK Steel - Rockport Works, Rockport, Indiana. However, the issue on whether the proposed plant is considered part of AK Steel, defining them as “one source”, is still unresolved.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
R-1	hydrochloric acid recovery system	140	3.0	16,450	200
R-2	hydrochloric acid recovery system	140	3.0	16,450	200
O-1	iron oxide storage bin no. 1	110	1.0	2,400	150
O-2	iron oxide storage bin no. 2	110	1.0	2,400	150
O-3	iron oxide storage bin no. 3	110	1.0	2,400	150
O-4	iron oxide storage bin no. 4	110	1.0	2,400	150
C-1	chlorination system	69	0.33	less than 1	100
TV-1	solvent extraction system	69	0.5	5,000	60
B-1	boiler	69	0.5	2,800	500
TS-1	tank farm	67	0.33	1,000	6

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 May 18, 1998, with additional information received on June 5, 1998, August 17, 1998, August 20, 1998, August 21, 1998, August 24, 1998, August 31, 1998, September 3, 1998, October 6, 1998, October 7, 1998, and October 8, 1998.

As mentioned under **Source Definition**, the issue on whether the proposed plant is considered part of AK Steel, defining them as "one source", is still unresolved. However, since AMROX understands the length of time it would take to resolve this issue and would like to commence construction as early as possible, it has agreed to limit its potential to emit (PTE) to below the PSD significant levels. AMROX will limit the amount of waste pickle liquor that it can process and will operate emission control technologies that would otherwise be considered the best available. Notwithstanding the eventual decision on the source issue, by limiting the PTE, the applicability of the PSD requirements under 326 IAC 2-2 is considered moot.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (five (5) pages).

Total Potential and Allowable Emissions

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

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	281	1330
Particulate Matter (PM-10)	1320	1320
Sulfur Dioxide (SO_2)	0.16	0.16
Volatile Organic Compounds (VOC)	1.45	1.45
Carbon Monoxide (CO)	8.41	8.41
Nitrogen Oxides (NO_x)	20.3	20.3
Single Hazardous Air Pollutant (HAP)	330	330
Combination of HAPs	604	604

(a) Allowable PM emissions are determined from the applicability of rule 326 IAC 6-2 and 326 IAC 6-3-2. See attached spreadsheets for detailed calculations.

(b) The allowable PM emissions before control are less than the potential PM emissions before controls, therefore, the allowable PM emissions before control are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of PM are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

(d) Allowable emissions (as defined in the Indiana Rule) of a single hazardous air pollutant (HAP) are greater than 10 tons per year. Therefore, pursuant to 326 IAC 2-1, a construction permit is required.

County Attainment Status

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

(b) Spencer County has also been classified as attainment or unclassifiable for the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

The source has agreed to limit the amount of waste pickle liquor that it can process to 38,400,000 gallons per 12-consecutive month period rolled on a monthly basis and operate control technologies that would otherwise be considered the best available. These results to the following emissions:

(a) Criteria Pollutants

Pollutant	PM (tons/yr)	PM-10 (tons/yr)	SO_2 (tons/yr)	VOC (tons/yr)	CO (tons/yr)	NO_x (tons/yr)
Proposed AMROX plant	15.5	less than 15.0	0.16	1.45	8.41	20.3
PSD Thresholds	100	100	100	100	100	100
PSD Significant Levels	25	15	40	40	100	40

By taking the above limits, the applicability of the PSD requirements under 326 IAC 2-2 is considered moot under any scenario.

(b) Hazardous Air Pollutants

Single HAP	Combination of HAPs
7.6	9.0

Federal Rule Applicability

There are no 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 the subject facilities.

State Rule Applicability

(a) 326 IAC 1-6 (Malfunctions)
The above facilities are subject to the requirements of 326 IAC 1-6 (Malfunctions) because they are required to obtain an operating permit under 326 IAC 2-1-4

(b) 326 IAC 1-7 (Stack Height Provisions)

The two (2) hydrochloric acid recovery system stacks (ID#s R-1 and R-2) and four (4) iron oxide storage bin stacks (ID#s O-1 through O-4) are subject to the requirements of 326 IAC 1-7 (Stack Height Provisions) because potential emissions of PM greater than 25 tons per year is exhausted through each of these stacks. This rule requires that the stack be constructed using Good Engineering Practice (GEP), unless field studies or other methods of modeling show to the satisfaction of IDEM that no excessive ground level concentrations, due to less than adequate stack height, will result.

Based on air quality modeling performed by IDEM, there will be no excessive ground level concentrations due to the proposed plant. Therefore, the subject stacks do not need to meet GEP height requirements.

(c) 326 IAC 2-1 (Construction and Operating Permit Requirements)

Pursuant to 326 IAC 2-1 (Construction and Operating Permit Requirements),

(1) The waste pickle liquor processing capacity shall be limited to less than 38,400,000 gallons per 12-consecutive month period rolled on a monthly basis. During the first twelve (12) months of operation, the amount of waste pickle liquor processed shall be limited to 3,200,000 gallons per month. This limit is equivalent to the following emission limits:

Operation	PM and PM-10 limit (lb/hr)	HCl limit (lb/hr)	Cl_2 limit (lb/hr)
each hydrochloric acid recovery system	1.59	0.68	0.13
each iron oxide storage bin	0.09	--	--
chlorination system	--	0.09	0.07
tank farm	--	0.27	--

Compliance with the above particulate limits shall render 326 IAC 2-2 (Prevention of Significant Deterioration Rules) not applicable and shall also satisfy the requirements of 326 IAC 6-3 (Particulate Limitations for Process Operations). Compliance with above HCl and Cl_2 limits shall render 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

(2) PM and PM-10 emissions from each of the two (2) hydrochloric acid recovery systems shall be controlled by two (2) wet scrubbers in series and a mist eliminator. PM and PM-10 emissions from each system shall be limited to 0.031 grains per dry standard cubic feet and 1.59 pounds per hour.

Compliance with the above limit shall satisfy the requirements of 326 IAC 6-3 (Particulate Limitations for Process Operations).

(3) The two (2) roasters (ID#s R-1 and R-2) shall burn natural gas only and shall use low-NO_x burners only. NO_x emissions shall be limited to 0.083 pound per million British Thermal Units (lb/MMBtu).

(4) PM/PM-10 emissions from each of the four (4) iron oxide storage bins shall be controlled by separate baghouses. PM/PM-10 emissions from each storage bin shall be limited to 0.014 grains per dry standard cubic feet and 0.09 pound per hour.

(5) Visible emissions from any stack shall not exceed an average of five percent (5%) opacity in 24 consecutive readings taken in accordance with 40 CFR Part 60, Appendix A (U.S. EPA Method 9).

Compliance with this opacity limitation shall also satisfy the requirements of 326 IAC 5-1-2 (Visible Emissions Limitations).

(6) The boiler (ID# B-1) shall burn natural gas only and shall use ultra low-NO_x burners only. NO_x emissions shall be limited to 0.02 pound per million British Thermal Units (lb/MMBtu).

(7) Fugitive emissions from unpaved roadways shall be controlled according to the attached Fugitive Dust Control Plan (Attachment A) such that the visible emissions shall not exceed an average instantaneous opacity of ten percent (10 %). Average instantaneous opacity shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass. The three (3) opacity readings for each vehicle pass shall be taken as follows:

(A) The first reading shall be taken at the time of emission generation.

(B) The second reading shall be taken five (5) seconds after the first.

(C) The third reading shall be taken five (5) seconds after the second reading, or ten (10) seconds after the first reading.

The three (3) readings shall be taken approximately four (4) feet from the surface at the point of maximum opacity. The observer shall stand at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

Compliance with the above control requirements shall satisfy the requirements of 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations).

(8) HCl emissions from the each of the two (2) hydrochloric acid recovery systems shall be controlled by two (2) wet scrubbers in series. The outlet HCl and chlorine (Cl_2) concentration from each process line shall not exceed 3 and 1.4 parts per million by volume dry (ppmvd), respectively; and the HCl and Cl_2 emissions from each process line shall not exceed 0.68 and 0.13 pound per hour, respectively.

Compliance with the above limitation shall render 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

(9) The HCl and Cl_2 emissions from the chlorination system shall be controlled by a scrubber. The outlet HCl and Cl_2 emissions shall not exceed 0.09 and 0.07 pound per hour, respectively.

Compliance with the above limitation shall render 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

(10) The tank farm storage tanks shall be enclosed and maintained under negative pressure. The HCl generated from these tanks shall be controlled by a common scrubber unit. The outlet HCl emissions from the tank farm shall not exceed 0.27 pound per hour.

Compliance with the above limitation shall render 326 IAC 2-1-3.4 (New Source Toxics Control) not applicable.

(d) 326 IAC 6-2 (Particulate Emissions Limitations for Sources of Indirect Heating)
The 8 million British Thermal Units per hour natural gas-fired boiler (ID# B-1) is subject 326 IAC 6-2 (Particulate Emissions Limitations for Sources of Indirect Heating). Pursuant to 326 IAC 6-2-4, the particulate matter (PM) emissions shall be limited to 0.23 pounds per million BTU heat input.

Allowable PM emissions = (0.23 lb/MMBtu)*(8 MMBtu/hr)*(8760 hr/yr)*(1 ton/2000 lbs)
= 8.11 tons/year

Based on this calculations, the potential emissions are less than the allowable emissions, therefore, this boiler complies with the rule.

(e) 326 IAC 6-4 (Fugitive Dust Emissions)
The source is subject to the requirements of 326 IAC 6-4 (Fugitive Dust Emissions). This rule requires the Permittee to not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.

Air Toxic Emissions

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

(a) This iron oxide and hydrochloric acid regeneration and recovery plant will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.

(b) See attached spreadsheets for detailed air toxic calculations.

Conclusion

The construction of this iron oxide and hydrochloric acid regeneration and recovery plant will be subject to the conditions of the attached proposed **Construction Permit No. CP-147-9798, Plant Identification No. 147-00050**.

ATTACHMENT A

FUGITIVE DUST CONTROL PLAN

Source Background and Description

Source Name:	American Iron Oxide Company
Source Location:	2001 East County Road 700 North, Grandview, Indiana 47615
County:	Spencer
Construction Permit No.:	CP-147-9798
Plant Identification No.:	147-00050
SIC Code:	2819

Section 1 - Introduction

The following control plan, when implemented, is designed to reduce uncontrolled fugitive dust, based on a PM-10 mass emission basis, from unpaved roadways by 90 percent, such that the visible emissions limitations specified in the permit are met.

The plan shall be implemented on a year-round basis until such time as another plan is approved or ordered by the Indiana Department of Environmental Management.

The name, title, and telephone number of the person who is responsible for implementing the plan will be supplied to the OAM Compliance Section.

Section 2 - Vehicle Speed Control

Speed limit shall be posted to be 10 miles per hour. Compliance with this speed limit shall be monitored by plant guards and safety department. Upon violation, employees shall receive written warning, followed by a one-day suspension if continued violations occur. Visitors to the plant shall be denied access if repeated violations occur

Section 3 - Unpaved Roadways

Fugitive dust emissions shall be controlled to at least 90 percent instantaneous control based on a PM-10 mass emission basis. All unpaved roadways shall be treated with a commercially produced chemical dust suppressant specifically manufactured for that purpose, and shall be approved, in writing , by the Indiana Department of Environmental Management for use in the State of Indiana as a chemical dust suppressant. The program shall be implemented at the following rate by plant personnel:

Material	Rate	Frequency
Asphalt emulsion	0.14 gal/yd^2	once/week

An asphalt emulsion product shall be applied on a frequency of once per week, April through October, unless conditions require frequency to increase, or as required by IDEM or U.S. EPA, to insure fugitive dust control. Snow cover, inclement weather and freezing/thawing shall preclude application November through March.

Asphalt emulsion products (Petrotac or equivalent - equivalence shall require written approval

from IDEM) shall be applied at a rate of 0.14 gallons per square yard per treatment. Petroleum resin products (Coherex or equivalent - equivalence shall require written approval from IDEM) shall be applied at a rate of 0.14 gallons per square yard for the initial treatment and 0.12 gallons per square yard for all subsequent treatments, with the second treatment immediately following the first. Application rates and frequencies shall be sufficient to provide at least 90 percent instantaneous control efficiency.

The above dosage may be too high to be absorbed by the road in one step. In this case each application may be done in two or more stages using lower concentrations but with a corresponding increase in treatment frequency.

Treating of unpaved road segments may be delayed by one day when:

(a) 0.1 or more inches of rain has accumulated during the 24-hour period prior to the scheduled treatment.

(b) Road segments are saturated with water such that chemical dust suppressants cannot be accepted by the surface.

(c) Road segments are frozen or covered by ice, snow, or standing water.

(d) The road segment or area is closed or abandoned. Abandoned roads will be barricaded

(e) It is raining at the time of the scheduled treatment.

As an alternative, AMROX may pave previously unpaved roadways and apply paved road cleaning measures as follows:

Paved roadways shall be controlled by the use of a vehicular vacuum sweeper and shall be performed every 14 days.

Since an Industrial Augmentation factor of I=1 was used for the emissions inventory, vehicles shall be limited to traveling on paved surfaces only and not allowed to enter any paved surface except from public paved roads and tarred and chipped roads. Vehicles shall also not be allowed to travel on the shoulder of paved road ways.

Upon request of the Assistant Commissioner, AMROX shall sample and provide to IDEM surface material silt content and surface dust loadings in accordance1 with C. Cowherd, Jr., et al., Iron and Steel Plant Open Dust Source Fugitive Emission Evaluation, EPA-600/2-79-103, U.S. Environmental Protection Agency, Cincinnati, OH, May 1979. IDEM will have the right to specify road segments to be sampled. AMROX shall provide supplemental cleaning of paved road sections found to exceed the controlled silt surface loading of 16.8 pounds of silt per mile.

Cleaning of paved road segments may be delayed by one day when:

(a) 0.1 or more inches of rain has accumulated during the 24-hour period prior to the scheduled cleaning.

(b) The road segment is closed or abandoned. Abandoned roads will be barricaded to prevent vehicle access.

(c) It is raining at the time of the scheduled cleaning.

Section 4 - Monitoring and Recording Keeping

Records shall be kept within a journal which will be updated on a daily basis by the engineering department. The journals shall include dust suppressant application frequency and amount or vacuum sweeping. The journals shall be kept at the designated plant location for a minimum of three years and shall be available for inspection or copying upon reasonable prior notice.

Section 5 - Compliance Schedule

This plan shall be fully implemented when construction is completed. Until that time, the plan shall be implemented within portions of the site where construction is considered complete. Where construction is incomplete, appropriate control measures shall be implemented, but cannot be comprehensively addressed. These activities shall be included with the engineering journal.

APPENDIX B

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION

Source Background and Description

Source Name:	American Iron Oxide Company
Source Location:	Intersection of County Road 700 East and County Road 700 North, Rockport, Indiana 47635
County:	Spencer
Construction Permit No.:	CP-147-9798
Plant Identification No.:	147-00050
SIC Code:	2819
Permit Reviewer:	Marco A. Salenda

BACT Analysis

326 IAC 2-2-3 BACT analyses for PM, PM-10, SO_2, VOC, CO, and NO_x have been conducted in accordance with U. S. EPA "Top Down BACT Guidance". The RACT/BACT/LAER Clearinghouse and related state and federal construction permits were reviewed for control technology information.

(a) Two (2) hydrochloric acid recovery systems (ID#s R-1 and R-2)

Iron enriched hydrochloric acid (waste pickle liquor (WPL)) received by AMROX from AK Steel and other steel mills is sprayed into the top of each of the two (2) roasters and descends as droplets into an ascending current of hot combustion gases introduced tangentially into the base of the roaster by a natural gas-fired burner with a maximum heat input rate of 26.8 million British Thermal Units per hour (MMBtu/hr). The liquor droplets are evaporated to dryness in excess oxygen to produce HCl gas and ferric oxide.

(1) BACT for PM/PM-10

How PM/PM-10 will be generated:

Ferric oxides formed from the roasters will fall to the bottom of the roasters while relatively light particles will be exhausted from the top of the roaster. HCl gas (in conjunction with water vapor, combustion gases, and some ferric oxide) will pass through a venturi separator and an absorbtion tower to rinse off excess water and ferric oxide. The regenerated HCl is then recycled back to AK Steel. Exhaust gas from the absorption tower will contain small amounts of HCl (in gaseous and aerosol form) and trace amounts of ferric oxides (in particulate form).

Control Technology Technical Feasibility Study:

Three (3) alternatives available to control particulate emissions from the acid recovery systems:

(A) Electrostatic precipitators (ESPs);
(B) Fabric filtration - baghouse; and
(C) Scrubber followed by mist eliminator.

Electrostatic precipitators (ESPs) use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge. While ESPs have a very high removal efficiency for many sources of particulate matter, they are limited in their particle charging and collection capabilities for high resistivity gas streams with low particulate loading rates. A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed no applications of ESPs to control particulate matter emissions from acid recovery systems. The primary reason could be attributed to the high corrosivity of the exhaust gas coupled with relatively low particulate loading rates due to the ferric oxide recovery. These reasons make ESPs technically and economically infeasible.

Fabric filters (i.e., baghouses) will collect particle sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 percent. The dust cake collected on the fabric is primarily responsible for such high efficiency. Gas temperatures up to 500 ^{o}F, with surges to about 550 ^{o}F, can be accommodated routinely with many bag types. A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed no applications of fabri filters to control particulate matter emissions from acid recovery systems. Particulate collection limitations are imposed by gas characteristics such as temperature, moisture content, and corrosivity as well as particle characteristics such as stickiness. Due to the high corrosivity and moisture of the exhaust gas coupled with relatively low particulate loading rates, the application of fabric filters to control particulate emissions from an acid recovery system is technically infeasible.

Wet scrubbers remove particles from exhaust gas streams by stripping them with fine liquid droplets and separating them from the gas stream. Wet scrubber applications are the prevalent control technology when the following conditions are present:

* Contaminants cannot be removed easily in a dry form;
* Soluble gases are present;
* Soluble or wetable particulates are present;
* The contaminant will undergo a subsequent wet process;
* The pollution control system must be compact; and
* The contaminants are most safely handed in a wet form rather than dry form.

Thus, wet scrubbers are typically used to control exhaust gas streams that would otherwise plug fabric filters. Wet scrubbers are also used extensively to control emissions of acid gases, particularly gases such as HCl , which are soluble in water.

A critical component of effective wet scrubbing is the efficient removal of the residual droplets or mists (aerosols) that can be created in the scrubber. Such droplet removal can be accomplished by incorporating a mist eliminator (e.g., cyclonic separator, chevrons, and mesh pads).

A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed widespread application of scrubber technology in conjunction with downstream mist eliminator to control particulate emissions from acid recovery systems; and therefore are considered technically feasible.

BACT Determination:

The use of a wet scrubber with a mist eliminator is considered BACT for controlling particulate emissions from the acid recovery systems. AMROX will use two (2) scrubbers in series and a mist eliminator for each acid recovery system. The outlet particulate grain loading will be 0.031 grains per dry standard cubic feet and maximum volumetric gas flow rate of 16,450 actual cubic feet per minute.

(2) BACT for NO_x

How NO_x will be generated:

Most of the NO_x from the roaster will be generated as thermal NO_x, due to the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air at very high temperature. Fuel NO_x will be a very minor contributor.

Control Technology Technical Feasibility Study:

Four (4) available control alternatives were evaluated to control NO_x from the roasters:

(A) Combustion Controls - low-NO_x burners, ultra low-NO_x burners
(B) Selective Catalytic Reduction (SCR),
(C) Non-Selective Catalytic Reduction (NSCR), and
(D) Selective Non-Catalytic Reduction (SNCR) options - Exxon's Thermal DeNO$_x$ ® and Nalco Fuel Tech's NoxOUT®.

The roasters will be using **low-NO_x burners**. AMROX explored the possibility of using **ultra low-NO_x burners** but found them to be incompatible with the operation of the roaster burners. The AMROX process requires heat and oxidizing conditions to achieve the basic roasting of spent pickle liquor and regenration of acid with separation of iron in the form of iron oxide, according the the equation:

$$2\ FeCl_2 + 2\ H_2O + ½\ O_2 \div 4\ HCl + Fe_2O_3$$

The production of Fe_2O_3 (hematite) is a carefully controlled process to meet the specifications of particle size, surface area, density, etc. Insufficient oxidation will result in discoloration and formation of Fe_3O_4 (magnetite), a lower form of iron oxide and not suitable for the AMROX market in the ferrite industry.

To control the process based on the variables of spent liquor chemistries and the desired product specifications, the roaster process will be using a wide range of air/fuel gas ratios. AMROX learned from the manufacturers that these operating ranges cannot be met with the "ultra low-NO_x" labeled products and no guarantees were available. Therefore, this type of combustion control technology is technically infeasible.

Selective catalytic reduction (SCR) is technically infeasible due to the variability in the off-gas temperature depending on the quality of iron oxide produced and the concentration of chlorides in the waste pickle liquor, the variability of the air/gas ration in the burner, the variability in the off-gas flow rates, and the presence of HCl and iron oxide in the exhaust gas which can cause catalyst poisoning. A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed no applications of SCR to control NO_x emissions from acid recovery systems.

Non-selective catalytic reduction (NSCR) is technically infeasible due to reasons mentioned for SCR and the requirement of this technology that the burners have to run stoichiometric. This condition can not be met by the process. A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed no applications of SCR to control NO_x emissions from acid recovery systems.

For **selective non-catalytic reduction (SNCR)**, there are two (2) mechanisms to consider: Thermal $DeNO_x$ and NoxOUT. Thermal $DeNO_x$ requires operation at high temeprature (1,600 ^oF - 2,200 ^oF). The acid recovery systems will operate in the range of 650 ^oF - 700 ^oF. This technology also requires a minimum residence time of 1.0 seconds which cannot be met due to physical constraints of the systems. Therefore, Thermal $DeNO_x$ is technically infeasible.

Nalco Fuel's NO_xOUT technology has the same limitations as the Thermal $DeNO_x$ technology. Therefore, this is considered technically infeasible.

A review of the RBLC and discussions with various individuals knowledgeable about acid recovery systems have revealed no applications of SNCR to control NO_x emissions from acid recovery systems.

BACT Determination:

The use of low-NO_x burners and natural gas is considered BACT.

(3) BACT for SO_2

How SO_2 will be generated:

Due to the small presence of sulfur in natural gas, SO_2 will be generated during the combustion of natural gas.

Control Technology Technical Feasibility Study:

Due to the small amount of SO_2 that will be emitted, any add-on controls is considered impractical.

BACT Determination:

Therefore, the use of natural gas is considered BACT.

(4) BACT for VOC and CO

How CO and VOC will be generated:

CO and VOC will be generated as by-products of incomplete combustion of natural gas.

Control Technology Technical Feasibility Study:

Due to the small amount of VOC and CO that will be emitted, any add-on controls is considered impractical.

BACT Determination:

Therefore, the use of natural gas is considered BACT.

(b) Four (4) iron oxide storage bins (ID#s O-1 through O-4)

BACT for PM/PM-10

How PM/PM-10 will be generated:

Particulate emissions will be generated during loading of the storage silos. As ferric oxide is pneumatically loaded, air will be displaced and exhausted through an opening on top of the silo.

Control Technology Technical Feasibility Study:

IDEM, OAM, is not aware of cases where other types of technologies, other than fabric filters (i.e., baghouses), were implemented to control particulate emissions from storage bins. The use of a baghouse will constitute an emission reduction of 99.9 percent.

BACT Determination:

Individual baghouses will control the PM/PM-10 emissions from the four (4) iron storage bins. Each baghouse will have an outlet grain loading of 0.014 grains per dry standard cubic feet and a maximum volumetric gas flow rate of 1,000 cubic feet per minute.

(c) One (1) boiler (ID# B-1)

BACT for PM/PM-10, SO_2, NO_x, VOC and CO

How emissions will be generated:

All emissions will be products of combustion.

Control Technology Technical Feasibility Study:

Due to the small amount of PM/PM-10, SO_2, NO_x, VOC and CO that will be emitted, any add-on controls is considered impractical.

BACT Determination:

The use of ultra low-NO_x burners and natural gas is considered BACT.

APPENDIX C

AIR QUALITY ANALYSIS

Source Background and Description

Source Name:	American Iron Oxide Company
Source Location:	Intersection of County Road 700 East and County Road 700 North, Rockport, Indiana 47635
County:	Spencer
Construction Permit No.:	CP-147-9798
Plant Identification No.:	147-00050
SIC Code:	2819
Modeler:	Michael Mosier
Permit Reviewer:	Marco A. Salenda

Introduction

American Iron Oxide Company (AMROX) has applied for a Permit to construct a iron oxide and hydrochloric acid regeneration and recovery plant in Spencer County, Indiana. The proposed site will be located approximately five miles north/northeast of Rockport next to the new AK Steel plant on the northeast side. The proposed plant will accept waste pickle liquor from AK Steel and others. The iron dissolved in the pickle liquor will be removed and sold as a high grade iron oxide. The remaining liquid will be regenerated into hydrochloric acid and sent back to the steel companies to be reused to clean steel. Spencer County is designated attainment for all criteria pollutants.

Krikau, Pyles, Rysiewicz, and Associates, Inc. prepared the permit application for AMROX. The permit application was received by the Office of Air Management (OAM) on May 18, 1998. This document provides the Air Quality Modeling Section's air quality analysis and results.

Executive Summary

The air quality impact analysis examined two items to determine if more refined modeling would be needed. Additional AK Steel refined modeling was performed and a significant impact analysis was conducted for AMROX. Based on the modeling results, AMROX will have no significant impact to air quality.

Meteorological Data

The meteorological data used in the ISCST3 models consisted of surface data from the Evansville National Weather Service station merged with the mixing height from greater Peoria Airport in Peoria, Illinois for 1990. The meteorological data was obtained from the EPA Support Center for Regulatory Air Models' Electronic Bulletin Board and processed using EPA procedures. The 1990 meteorological year was chosen since this was the worst case year for PM_{10} for AK Steel.

Receptor Grid

For the modeling analysis, OAM utilized AK Steel's polar grid network taken from their NAAQS and Increment analysis. The network was centered on the Boiler House number 2 with radials spaced

every 10 degrees. The receptor ring distances were placed every 100 meters out to 1000 meters, 200 meters out to 2000 meters, 500 meters out to 4000 meters, 1000 meters out to 6000 meters. The polar grid was supplemented with 105 receptors placed along the property fence line for aerodynamic building downwash.

Downwash

OAM used BEE-LINE's GEP-BPIP Version 5.1 for their building height and width calculations for input to the ISCST3 model. These calculations take into account the influence of building wake effects for the spent acid regeneration and recycling facility.

Modeling Analysis

For AK Steel, the PM_{10} NAAQS was a concern, so OAM reran the worst case year, 1990, for the PM_{10} high 2nd high 24 hour time averaging period and divided the sources into groups. This was done to determine who exactly was contributing to the concentration value of 83.21 ug/m^3 (plus background 63 ug/m^3 equals 146.21 ug/m^3) stated in OAM's modeling technical support document. See Table below.

AK Steel's NAAQS Analysis for PM_{10}

POLLUTANT	YEAR	TIME-AVERAGING PERIOD	MAXIMUM CONCENTRATION	BACKGROUND CONCENTRATION	TOTAL	NAAQS LIMIT
			(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
PM_{10}	1990	2nd high 24 hour	83.21	63	146.21	150
PM_{10}	1990	Annual	4.91	26	30.91	50
NO_2	1990	Annual	15.64	16.9	32.54	100

Based on the modeling results, the background inventory area sources contributed 82.42 ug/m^3 at that South East receptor location. This leaves a contribution of .79 ug/m^3 from AK Steel and various other inventory sources. This exercise was done prior to performing a significant impact analysis because it would only take 3.79 ug/m^3 to go over the NAAQS and the significant impact level for the 24 hour time averaging period is 5 ug/m^3. The high concentrations for AMROX are located on the north and northeast side of the property.

A significant impact analysis was performed by OAM for AMROX to determine if the source would exceed significant impact levels. The significant impact levels determine whether the applicant can forgo a full modeling impact analysis. The analysis for AMROX provided the following concentrations just north and northeast of AK Steel's property line. One full year of meteorological data was used. Again, 1990 was used because it was the worst case year for the PM_{10} NAAQS modeling done for AK Steel.

Significant Impact Analysis

POLLUTANT	TIME AVERAGING PERIOD	MET YEAR	MAXIMUM MODELED IMPACTS (ug/m^3)	SIGNIFICANT IMPACT LEVEL (ug/m^3)	REFINED AQ ANALYSIS REQUIRED
PM_{10}	24 Hour	1990	2.03	5	No
PM_{10}	Annual	1990	.270	1	No
NO_2	Annual	1990	.31	1	No
CO	1 Hour	1990	4.99	2000	No
CO	8 Hour	1990	1.98	500	No

Hazardous Air Toxics Analysis and Results

The OAM presently requests data concerning the emission of 189 Hazardous Air Pollutants (HAPs) listed in the 1990 Clean Air Act Amendments (CAAA) which are either carcinogenic or otherwise considered toxic and may be used by industries in the State of Indiana. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Management's construction permit application Form Y.

Also, a toxic analysis was performed. The results this analysis showed off-property concentrations are below the 0.5% of the Occupational Safety and Health Administration (OSHA) 8 hour Permissible Exposure Limits (PEL).

Air Toxic Analysis

POLLUTANT	Time Averaging Period	Maximum Model Impacts (ug/m^3)	0.5% of PEL (ug/m^3)
Hydrochloric Acid (HCl)	8 Hour	3.31	35
Chlorine (Cl)	8 Hour	0.38	15

Summary of Air Quality Analysis

AMROX has applied for a construction permit to construct a spent acid regeneration and recycling facility next to AK Steel. The application was prepared by Krikau, Pyles, Rysiewicz, and Associates, Inc. Spencer County is designated as attainment for all criteria pollutants. PM_{10}, NO_2, and CO concentrations associated with the proposed facility was below the significant impact levels. Refined modeling was not required. An air toxic analysis was performed but no concentrations exceeded .5% of the PEL. Based on the impact analysis, the operation of AMROX will have no significant impact to air quality.

Company Name: **American Iron Oxide Company**
Address City IN Zip: **Intersection of CR 700 East and CR 700 North, Rockport, Indiana 47635**
CP: **147-9798**
Plt ID: **147-00050**
Reviewer: **Marco A. Salenda**
Date: **July 23, 1998**

I. Potential Emissions of Hazardous Air Pollutatants

Nonfugitve Emission Points	Pollutant	Ebc (lb/hr)	Ebc (ton/yr)	Eac (lb/hr)	Eac (ton/yr)	Type of control	Control eff (%)
Roaster 1 (ID# R-1)	HCl	15.00	65.70	0.75	3.29	wet scrubber	95.0%
	Cl2	0.14	0.61	0.14	0.61	none	0.0%
Roaster 2 (ID# R-2)	HCl	15.00	65.70	0.75	3.29	wet scrubber	95.0%
	Cl2	0.14	0.61	0.14	0.61	none	0.0%
Chlorinator (ID# C-1)	HCl	30.00	131.40	0.10	0.44	wet scrubber	99.7%
	Cl2	75.00	328.50	0.08	0.35	wet scrubber	99.9%
Solvent Extraction System (ID# TV-1)	HCl	0.00	0.00	0.00	0.00	none	
	Cl2	0.00	0.00	0.00	0.00	none	
Tank Farm/Truck Load and Unload (ID# TS-1)	HCl	2.60	11.39	0.30	1.31	wet scrubber	99.0%
	Cl2	0.00	0.00	0.00	0.00	none	
TOTAL	HCl	62.60	274.19	1.90	8.32		
	Cl2	75.28	329.73	0.36	1.58		
Potential emissions of worst case single HAP (tons/yr) =			**329.73**		**8.32**		
Potential emissions of combination of HAPs (tons/yr) =			**603.91**		**9.90**		

II. Potential Emissions of Criteria Pollutants

Nonfugitve Emission Points	Rate (MMcf/yr)	Pollutant	Ef (lb/MMcf)	Ebc (ton/yr)	Eac (ton/yr)	Type of control	Control eff (%)
Natural gas combustion - tangential firing, low NOx burners	460.3	PM *	--	1275.85	15.31	wet scrubber/mist elim	98.8%
Roaster 1 (ID# R1) = 26.8 MMBtu/hr		PM-10 *	--	1275.85	15.31	wet scrubber/mist elim	98.8%
Roaster 2 (ID# R2) = 26.8 MMBtu/hr		SO2	0.60	0.14	0.14	none	
Total = 53.6 MMBtu/hr		NOx	85.00	19.56	19.56	none	
		VOC	5.50	1.27	1.27	none	
* PM and PM-10 emissions are based on wet scrubber grain loading		CO	24.00	5.52	5.52	none	

Nonfugitve Emission Points	Rate (MMcf/yr)	Pollutant	Ef (lb/MMcf)	Ebc (ton/yr)	Eac (ton/yr)	Type of control	Control eff (%)
Natural gas combustion - normal firing, ultra low-NOx burners	68.7	PM	7.60	0.26	0.26	none	
Boiler (ID# B1) = 8.0 MMBtu/hr		PM-10	7.60	0.26	0.26	none	
		SO2	0.60	0.02	0.02	none	
		NOx	20.40	0.70	0.70	none	
		VOC	5.50	0.19	0.19	none	
		CO	84.00	2.89	2.89	none	

Nonfugitve Emission Points	Rate	Pollutant	Ef	Ebc (ton/yr)	Eac (ton/yr)	Type of control	Control eff (%)
Four (4) iron oxide storage bins	n/a	PM	n/a	43.66	0.44	baghouse	99.0%
(ID#s O1 through O4)		PM-10	n/a	43.66	0.44	baghouse	99.0%

Fugitive Emission Points	Rate (VMT/yr)	Pollutant	Ef (lb/VMT)	Ebc (ton/yr)	Eac (ton/yr)	Type of control	Control eff (%)
Transporting on unpaved roadways	3504.00	PM	5.24	9.18	0.92	wet supression	90.0%
		PM-10	2.36	4.13	0.41	wet supression	90.0%

	Pollutant	Ebc (ton/yr)	Eac (ton/yr)
TOTAL	**PM**	**1328.95**	**16.93**
	PM-10	**1323.90**	**16.42**
	SO2	**0.16**	**0.16**
	NOx	**20.26**	**20.26**
	VOC	**1.45**	**1.45**
	CO	**8.41**	**8.41**

Methodology:

A. Natural gas combustion

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: Low NOx (normal firing) = 50, Low NOx Burner (tangential) = 85

Emission Factors for CO: uncontrolled (normal firing) = 84, uncontrolled (tangential) = 24

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

B. Two (2) roasters

The following calculations determine the potential PM/PM-10 emissions after controls from the two (2) roasters:

1. Determination of stack gas flowrate (V_std) during standard conditions

Given:	V_act =	actual stack gas flowrate (ft^3/min) =	16450
	T_act =	actual stack gas temperature (deg F) =	200
	T_std =	standard temperature (deg F) =	68
Equation: Idea Gas Law			
	V_std,wet =	V_act x (T_std + 459) / (T_act +459) =	13155
	Volume % moisture =	50.0%	
	V_std,dry =	V_std,wet x volume % moisture =	6578

2. Conversion of 0.031 gr/dscf to lb/hr and tons/yr to determine potential emissions after controls

Emissions PM/PM-10 (lbs/hr) = 0.031 gr/ft^3 x 1 lb/7000 gr x V_std,dry (ft^3/min) x 60 min/hr = 1.75
Emissions PM/PM-10 (tons/yr) = 7.66 x 2 roasters = 15.31

C. Four (4) iron oxide storage bins

The following calculations determine the potential PM/PM-10 emissions after controls from the four (4) storage bins: storage bins can only be filled one at a time

1. Determination of stack gas flowrate (V_std) during standard conditions

Given:	V_act =	actual stack gas flowrate (ft^3/min) =	2400
	T_act =	actual stack gas temperature (deg F) =	150
	T_std =	standard temperature (deg F) =	68
Equation: Idea Gas Law			
	V_std =	V_act x (T_std + 459) / (T_act +459) =	2077
	Volume % moisture =	40.0%	
	V_std,dry =	V_std,wet x volume % moisture =	831

2. Conversion of 0.014 gr/dscf to lb/hr and tons/yr to determine potential emissions after controls

Emissions PM/PM-10 (lbs/hr) = 0.014 gr/ft^3 x 1 lb/7000 gr x V_std,dry (ft^3/min) x 60 min/hr = 0.10
Emissions PM/PM-10 (tons/yr) = 0.44

C. Transporting on unpaved roadways

The following calculations determine the amount of PM and PM-10 emissions created by production-related vehicles travelling on unpaved roads, based on 8760 hours of use and AP-42, Ch 13.2.2.

2.0 trip/hr x 0.1 mile/trip x 2 (round trip) x 8760 hr/yr = 3504 miles per year

Ef = k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)
= 5.24 lb PM/mile
= 2.36 lb PM-10/mile
where k = 0.8 (particle size multiplier for PM)
where k = 0.36 (particle size multiplier for PM-10)
s = 6 % silt content of unpaved roads
p = 125 days of rain greater than or equal to 0.01 inches
S = 10 miles/hr vehicle speed
W = 28 tons average vehicle weight
w = 18 wheels

$$\frac{5.24 \text{ lb/mi} \times 3504 \text{ mi/yr}}{2000 \text{ lb/ton}} = 9.18 \text{ tons PM/yr}$$

$$\frac{2.36 \text{ lb/mi} \times 3504 \text{ mi/yr}}{2000 \text{ lb/ton}} = 4.13 \text{ tons PM-10/yr}$$

III. Limited Potential Emissions (Potential to Emit)

A. AMROX has agreed to limit its potential PM-10 emissions after controls to less than 15 tons per year by limiting its annual processing capacity to 38,400,000 gallons based on a 12-month rolling total, as determined as follows:

Maximum plant processing capacity = 80 gallons/minute
4800 gallons/hour
115200 gallons/day
42048000 gallons/year

PM-10 Potential to Emit = **15.0 tons/year**
PM-10 Potential Emissions after controls 16.4 tons/year
Limited plant processing capacity = PM-10 Potential to Emit / PM-10 Potential Emissions x Max. plant capacity 38409299
(38,400,000 gallons/year)

B. The 9% reduction in capacity will also limit the HAP emissions as follows:

Worst case single HAP Potential to Emit	0.91	x	8.3	=	**7.6 tons/year**
Combination of HAPs Potential to Emit =	0.91	x	9.9	=	**9.0 tons/year**

III. Allowable Emissions

A. The following calculations determine PM compliance with 326 IAC 6-3-2 for process weight rates less than or equal to 30 tons per hour:

P= 15.0 tons/hr each process line

limit = 4.1 x (15.0 ^0.67) = 25.2 lb/hr for each process line

110.21 tons/yr for each process line

Potential PM emissions for each line = *1.75* lb/hr x 2 = 3.50 lb/hr (will comply)

B. The following calculations determine the allowable particulate emissions per 326 IAC 6-2-4 for boiler B1:

limit = $\frac{1.09}{Q^{0.26}}$ lb PM/MMBtu where Q = 388 MMBtu/hr (total Q for all boilers in the source: AMROX boiler B1 and AK Steel boilers (5 @76MMBtu/hr each)

= 0.23 lb PM/MMBtu

= 1.85 lb PM/hr

= 8.11 tons PM/yr

Potential PM emissions = *0.3* tons/yr x 2000 lb/ton / 8760 hrs/yr / *8* MMBtu/hr = 0.01 lb PM/MMBtu (will comply)

IV. Summary of Emissions

Pollutant	Potential Emissions (tons/yr)		Allowable (tons/yr)	Potential to Em (tons/yr)
	Before Controls	After Controls		
PM	1328.95	16.93	281.38	15.46
PM-10	1323.90	16.42	1323.90	15.00
SO2	0.16	0.16	0.16	0.16
NOx	20.26	20.26	20.26	20.26
VOC	1.45	1.45	1.45	1.45
CO	8.41	8.41	8.41	8.41
single HAP	329.73	8.32	329.73	7.60
total HAPs	603.91	9.90	603.91	9.04