Air Quality
TIER II OPERATING PERMIT

State of Idaho
Department of Environmental Quality

PERMIT No.: T2-2009.0109
FACILITY ID No.: 029-00001
AQCR: 61 **CLASS:** A **ZONE:** 12
SIC: 2819 **NAICS:** 325188
UTM COORDINATE (km): 452.0, 4726.0

1. **PERMITTEE**
P4 Production, L.L.C.

2. **PROJECT**
DEQ-initiated BART Tier II operating permit

3. **MAILING ADDRESS**	**CITY**	**STATE**	**ZIP**
P. O. Box 816	Soda Springs	ID	83276
4. **FACILITY CONTACT** Carol Adams	**TITLE** Senior Environmental Engineer	**TELEPHONE** (208) 547-1224	
5. **RESPONSIBLE OFFICIAL** Sheldon D. Alver	**TITLE** Plant Manager	**TELEPHONE** (208) 547-1318	
6. **EXACT PLANT LOCATION** Two miles north of Soda Springs, Idaho, on Highway 34		**COUNTY** Caribou	

7. **GENERAL NATURE OF BUSINESS & KINDS OF PRODUCTS**
Elemental phosphorus production

8. **PERMIT AUTHORITY**

This permit is issued according to the Rules for the Control of Air Pollution in Idaho, IDAPA 58.01.01.400 through 410, and pertains only to emissions of air contaminants regulated by the state of Idaho and to the sources specifically allowed to be operated by this permit.

This permit has been granted on the basis of design information presented with its application. Changes in design, equipment or operations may be considered a modification. Modifications are subject to DEQ review in accordance with IDAPA 58.01.01.200 through 228 of the Rules for the Control of Air Pollution in Idaho.

Carole Zundel

CAROLE ZUNDEL, PERMIT WRITER
DEPARTMENT OF ENVIRONMENTAL QUALITY

MIKE SIMON, STATIONARY SOURCE PROGRAM MANAGER
DEPARTMENT OF ENVIRONMENTAL QUALITY

Date Issued:	November 17, 2009
Date Modified/Revised:	
Date Expires:	November 17, 2014

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~~Acronyms, Units, and Chemical Nomenclature~~

~~AQCR~~	~~Air Quality Control Region~~
~~BART~~	~~Best available retrofit technology~~
~~CFR~~	~~Code of Federal Regulations~~
~~DEQ~~	~~Department of Environmental Quality~~
~~EPA~~	~~U.S. Environmental Protection Agency~~
~~IDAPA~~	~~a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act~~
~~km~~	~~kilometers~~
~~lb/hr~~	~~pounds per hour~~
~~LCDA~~	~~lime concentrated dual alkali~~
~~NAICS~~	~~North American Industry Classification System~~
~~O&M~~	~~operations and maintenance~~
~~PM~~	~~particulate matter~~
~~PM_{10}~~	~~particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers~~
~~SIC~~	~~Standard Industrial Classification~~
~~SO_2~~	~~sulfur dioxide~~
~~T/yr~~	~~tons per year~~
~~UTM~~	~~Universal Transverse Mercator~~

1. TIER II OPERATING PERMIT SCOPE

~~Purpose~~

~~1.1~~ ~~The purpose of this permit is to establish permit requirements as required in 40 CFR 51.308(e) and IDAPA 58.01.01.668 for Best Available Retrofit Technology (BART).~~

Regulated Sources

1.2 Table 1.1 lists all sources of regulated emissions in this permit.

Table 1.1 REGULATED SOURCES

Permit Section	Source Description	Emissions Control
2.0	Kiln	Four parallel Hydro-Sonic scrubbers SO_2 scrubbing system (LCDA)

2. PHOSPHATE ORE NODULIZING KILN

~~2.1~~ ~~Process Description~~

~~Phosphate ore must be nodulized in a rotary kiln in preparation for use in the furnace feedstock. Blended ore is added to the kiln where it is heated to the point of incipient fusion. The tumbling action of the kiln causes the ore to agglomerate into balls referred to as raw nodules. These raw nodules pass through a cooling and crushing process. A portion of the resulting raw nodules is routed directly into the nodule crushing and screening process while the remainder of the raw nodules is stockpiled for future use. The kiln's exhaust gas is routed through an emission control system that includes a dust knockout chamber for large particulate removal, a spray tower used to capture soluble gases and fine particulate matter, and four parallel hydrosonic scrubbing systems that remove submicron dust particles and entrained particulate-laden water. The nodule cooling process generates both point and fugitive particulate matter that is controlled by a wet scrubbing system.~~

~~2.2~~ ~~Emission Control Description~~

~~P4 Production's phosphate ore nodulizing kiln has particulate emissions, including polonium-210, and SO_2 emissions. The particulate emissions are controlled by a dust knockout chamber, North spray tower, eight parallel cyclonic separators, four parallel Hydro-Sonic scrubbers and demisters, and SO_2 scrubbing system. A spray tower controls emissions from the nodule cooler. The kiln SO_2 emissions are controlled by a lime concentrated dual alkali (LCDA) SO_2 scrubbing system. This system consists of Hydro-Sonic scrubbers that absorb SO_2 with a solution of sodium salts. Some sodium sulfate is produced. The spent solution of sodium sulfite/bisulfite/sulfate is continuously withdrawn to a dual-reactor system, where it is reacted with hydrated lime. The lime regenerates the scrubbing solution and precipitates calcium sulfite/sulfate solids. The solids are removed from the system through thickening and filtration, and the regenerated solution is returned to the scrubber as feed material. The LCDA installation includes raw material storage tanks, two reactor tanks, thickener/clarifier, filtration (feed tank with vacuum filtering process), and a double lined landfill with leachate collection.~~

~~Table 2.1 KILN DESCRIPTION~~

~~Emissions Unit(s) / Process(es)~~	~~SO_2 Emissions Control Device~~
~~Kiln~~	~~Four parallel Hydro-Sonic scrubbers LCDA SO_2 scrubbing system~~

Emissions Limits

2.3 BART 40 CFR 51.308(e) Emission Limits

Emissions from the kiln shall not exceed 143 lb/hr, on a three-hour average, of SO_2 in accordance with 40 CFR 51.308(e).

Operating Requirements

2.4 BART 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 pH Limit

The one-hour average pH of the scrubbing solution measured in the recirculation tank shall not be less than 6.1 in accordance with 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05.

Monitoring and Recordkeeping Requirements

2.5 BART 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 Hydrosonic and LCDA Scrubbing System Operation

The hydrosonic and LCDA scrubbing system shall be operated any time the kiln is in operation in accordance with 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 .

2.6 BART 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 pH Monitoring Requirement

The permittee shall monitor and record the pH of the scrubbing solution measured in the recirculation tank at least once per hour when the system is operating in accordance with 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05. The record shall be kept at the facility for the most recent five-year period and shall be made available to Department representatives upon request.

2.7 BART 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 Operations and Maintenance Manual

Within 60 days after startup, the permittee shall have developed an O&M manual for the hydrosonic scrubber system and the LCDA system which describes the procedures that will be followed to comply with General Provision 2 for these systems in accordance with 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05. The manual shall be updated as needed to reflect any change in operating parameters, including scrubber solution flow rate and pressure drop across the scrubber, from the most recent performance test that demonstrated compliance. This manual shall remain onsite at all times and shall be made available to Department representatives upon request.

2.8 BART 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05 SO_2 Performance Tests for Kiln Hydro Sonics

The permittee shall conduct performance tests to measure SO_2 emissions from the kiln Hydro Sonics scrubber stacks according to the schedule in this permit condition. The performance testing will be conducted to demonstrate compliance with the emission rate limits listed in Permit Condition 2.3 in accordance with 40 CFR 51.308(e)(1)(v) and IDAPA 58.01.01.668.05.

Each performance test shall be performed in accordance with IDAPA 58.01.01.157 and General Provision 6 of this permit. The following information shall be recorded during each performance test:

- Amount of kiln feed processed in the kiln, in tons per hour
- Pressure drop across the scrubber
- Scrubber solution flow rate
- pH in the recirculation tank

After the initial performance test, future testing shall be performed according to the following schedule. If the SO_2 emission rate measured in the most recent test is less than or equal to 75% of the applicable emission standard in Permit Condition 2.3, the next test shall be conducted within five years of the test date. If the SO_2 emission rate measured during the most recent performance test is greater than 75%, but less than or equal to 90%, of the emission standard in Permit Condition 2.3, the next test shall be conducted within two years of the test date. If the SO_2 emission rate measured during the most recent performance test is greater than 90% of the emission standard in Permit Condition 2.3, the next test shall be conducted within one year of the test date.

3. TIER II PERMIT TO OPERATE GENERAL PROVISIONS

General Compliance

1. The permittee has a continuing duty to comply with all terms and conditions of this permit. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the Rules for the Control of Air Pollution in Idaho. The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit and the Rules for the Control of Air Pollution in Idaho, and the Environmental Protection and Health Act, Idaho Code §39-101, et seq.

[Idaho Code §39-101, et seq.]

2. The permittee shall at all times (except as provided in the Rules for the Control of Air Pollution in Idaho) maintain in good working order and operate as efficiently as practicable, all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.

[IDAPA 58.01.01.405, 5/1/94]

3. Nothing in this permit is intended to relieve or exempt the permittee from the responsibility to comply with all applicable local, state, or federal statutes, rules and regulations.

[IDAPA 58.01.01.406, 5/1/94]

Inspection and Entry

4. Upon presentation of credentials, the permittee shall allow DEQ or an authorized representative of DEQ to do the following:

   a. Enter upon the permittee's premises where an emissions source is located or emissions related activity is conducted, or where records are kept under conditions of this permit;

   b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

   c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

   d. As authorized by the Idaho Environmental Protection and Health Act, sample or monitor, at reasonable times, substances or parameters for the purpose of determining or ensuring compliance with this permit or applicable requirements.

[Idaho Code §39-108]

Construction and Operation Notification

5. The permittee shall furnish DEQ written notifications as follows:

   a. A notification of the date of initiation of construction, within five working days after occurrence;

   b. A notification of the date of any suspension of construction, if such suspension lasts for one year or more;

   c. A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date;

   d. A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date; and

   e. A notification of the initial date of achieving the maximum production rate, within five working days after occurrence - production rate and date.

[IDAPA 58.01.01.405, 5/1/94]

Performance Testing

6. If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.

   All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.

   Within 30 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The written report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.

   [IDAPA 58.01.01.157, 4/5/00]

Monitoring and Recordkeeping

7. The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Records of monitoring information shall include, but not be limited to the following: (a) the date, place, and times of sampling or measurements; (b) the date analyses were performed; (c) the company or entity that performed the analyses; (d) the analytical techniques or methods used; (e) the results of such analyses; and (f) the operating conditions existing at the time of sampling or measurement. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes, but is not limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit. All records required to be maintained by this permit shall be made available in either hard copy or electronic format to DEQ representatives upon request.

   [IDAPA 58.01.01.405, 5/1/94]

Excess Emissions

8. The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130-136 for excess emissions due to startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.

   [IDAPA 58.01.01.130-136, 4/5/00]

Certification

9. All documents submitted to DEQ, including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certification shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

   [IDAPA 58.01.01.123, 5/1/94]

False Statements

10. No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under this permit, or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.125, 3/23/98]

Tampering

11. No person shall knowingly render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.126, 3/23/98]

Expiration and Renewal

12. This permit shall be renewable on the expiration date, provided the permittee submits an application for renewal to the Department and continues to meet all terms and conditions contained in the permit. The expiration of this permit will not affect the operation of the stationary source of facility during the administrative procedure period associated with the permit renewal process.

[IDAPA 58.01.01.404.04, 7/1/02]

Transferability

13. This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.404.05.

[IDAPA 58.01.01.404.05, 4/11/06]