AIR QUALITY

TIER II OPERATING PERMIT

Permittee	P4 Production LLC
Permit Number	T2-2012.0016
Project ID	61025
Facility ID	029-00001
Facility Location	2 Miles N. Soda Springs, Highway 34 Soda Springs, ID 83230

Permit Authority

This permit (a) is issued according to the "Rules for the Control of Air Pollution in Idaho" (Rules) (IDAPA 58.01.01.400–410); (b) pertains only to emissions of air contaminants regulated by the State of Idaho and to the sources specifically allowed to be constructed or modified by this permit; (c) has been granted on the basis of design information presented with the application; (d) does not affect the title of the premises upon which the equipment is to be located; (e) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (f) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; and (g) in no manner implies or suggests that the Idaho Department of Environmental Quality (DEQ) or its officers, agents, or employees assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment. Changes in design, equipment, or operations may be considered a modification subject to DEQ review in accordance with IDAPA 58.01.01.200–228.

Date Issued DRAFT

Date Expires

Dan Pitman, P.E., Permit Writer

Mike Simon, Stationary Source Manager

Table of Contents

Acronyms, Units, and Chemical Nomenclature

DEQ	Department of Environmental Quality
Hg	mercury
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
LCDA	lime concentrated dual alkali
MBACT	Mercury best available control technology
SO_2	sulfur dioxide

1. TIER II OPERATING PERMIT SCOPE

Purpose

1.1 The purpose of this permit is to establish a Mercury Best Available Control Technology (MBACT) emission standard in accordance with IDAPA 58.01.01.401.02.a.ii.

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	Dust knockout chamber, North spray tower (nodulizing kiln spray tower)[a], Eight parallel cyclonic separators (four pairs), Four parallel Hydro-Sonic scrubbers, Demisters, LCDA SO_2 scrubbing system

a) The north spray tower is upstream of the hydrosonic scrubbers and is different than the "cooler spray tower and demisters" listed in P4's Permit No. T1-2009.0121 as controls for the "Cooler" source in Table 1.1 of that permit.

2. PHOSPHATE ORE NODULIZING KILN

2.1 Process Description

Phosphate ore is 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 Control Equipment Description

P4 Production's phosphate ore nodulizing kiln has particulate emissions, including polonium-210, SO_2 emissions, and mercury emissions. The emissions are controlled by a dust knockout chamber, North spray tower, four 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, particulate matter, and mercury (particulate matter mercury and Hg^{+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

Process	Emissions Control Devices
Kiln	Dust knockout chamber, North spray tower (nodulizing kiln spray tower)[a], Eight parallel cyclonic separators (four pairs), Four parallel Hydro-Sonic scrubbers, Demisters, LCDA SO_2 scrubbing system

a) The north spray tower is upstream of the hydrosonic scrubbers and is different than the "cooler spray tower and demisters" listed in P4's Permit No. T1-2009.0121 as controls for the "Nodule cooler" source in Table 3.1 of that permit.

Emissions Limits

2.3 MBACT Emission Standard

Total mercury emissions from the kiln stacks shall not exceed 746.4 pounds per any consecutive 12 calendar month period. In absence of any other credible evidence, compliance with the emission limit is assured by complying with this permit's operating, monitoring and record keeping requirements.

Operating Requirements

2.4 Hydro-Sonic Scrubbing System Operation

- When the kiln is in use, the Hydro-Sonic scrubbing systems shall be operated continuously to scrub mercury emissions.
- The rolling three-hour average pressure drop across the venturi section of the scrubbing system shall be maintained at or above the pressure drop, in inches of water, established by the most recent mercury emission test. The permittee shall not violate any other permit requirements on pressure drop even if they are different than those established by this permit.
- The rolling three-hour average scrubbing media flow rate shall be maintained at or above the scrubbing media flow rate, in gallons per minute, established by the most recent mercury emission test. The permittee shall not violate any other permit requirements on scrubbing media flow rate even if they are different than those established by this permit.

2.5 North Spray Tower (Nodulizing Kiln Spray Tower)

When the kiln is in use the water spray flow rate to the spray tower shall be equal to or greater than the flow rate monitored during the most recent mercury emission test.

2.6 Kiln Throughput

The total tons of kiln input each consecutive 12 calendar month period shall not exceed the total allowable throughput calculated by using the mercury emission factor that is calculated as required by Permit Condition 2.7 or 2,188,856 tons per year, whichever is most stringent.

Monitoring and Recordkeeping Requirements

2.7 Mercury Source Tests

Within 180 days of permit issuance and during third and fifth calendar year of the 5 year permit term the permittee shall conduct mercury emission tests on the kiln stacks. The permittee may in its discretion conduct mercury emission tests on the kiln stacks more frequently than as required by the preceding schedule, provided the results of such tests will be treated as the most recent emission test for all purposes under this Permit Condition 2.7. The initial source tests shall be conducted on each of the four kiln stacks; subsequent source testing shall be on each of the four kilns stacks unless approved otherwise in writing by DEQ. Each emission test shall be conducted in accordance with a written and DEQ approved source testing protocol, and in accordance with IDAPA 58.01.01.157. For each test the permittee shall:

- Measure total mercury emissions in pounds per hour and determine particulate bound mercury, oxidized mercury, and elemental mercury emissions rates;
- Monitor and record the total input of the kiln during the test;
- Monitor and record the pressure drop, in inches of water, across each scrubber once each 15 minutes during the test;
- Monitor and record the scrubbing media flow rate, in gallons per minute, to each scrubber once each 15 minutes during the test.
- Calculate the average pressure drop and scrubbing media flow rate to each scrubber during the test, these values will become the minimum 3 hour rolling average operating limits;
- Monitor and record the water flow rate to the North Spray tower (Nodulizing Kiln Spray Tower) in gallons per minute;
- Provide a naming convention for each scrubber so that each scrubber can be identified (e.g. from west to east - scrubber #1, scrubber #2, scrubber #3, and scrubber #4);

- Develop a mercury emission factor in units of pounds of total mercury emitted per ton of kiln input; and
- Calculate the allowable kiln throughput per each consecutive 12 calendar month period that will not exceed 746.4 pounds of mercury emitted per any consecutive 12 calendar month period. The kiln throughput limit shall be calculated using the mercury emission factor in pounds of total mercury per ton of kiln input developed by the most recent emission test unless approved otherwise in writing by DEQ. The permittee shall maintain a copy of the source test reports and calculations on-site and make them available to DEQ representatives upon request.

2.8 Hydro-Sonic Scrubbers Monitoring

- The permittee shall monitor and record the pressure drop across the venturi section of the scrubbing system for each of the Hydro-Sonic scrubbers at least once per hour and determine the 3 hour rolling average pressure drop. If more than one reading is taken each hour, the readings for that hour shall be averaged to show compliance with the pressure drop limit established by Permit Condition 2.4. The readings shall be taken in evenly-spaced time increments.
- The permittee shall monitor and record the total scrubbing media flow rate, in gallons per minute, across each of the Hydro-Sonic scrubbers at least once per hour and determine the 3 hour rolling average scrubbing media flow rate. If more than one reading is taken each hour, the readings for that hour shall be averaged to show compliance with the flow rate limit established by Permit Condition 2.4. The readings shall be taken in evenly-spaced time increments.

2.9 North Spray Tower (Nodulizing Kiln Spray Tower)

Once each 8 hours the permittee shall monitor and record the water flow rate to the north spray tower in gallons per minute.

2.10 Kiln Throughput Monitoring

Each month the permittee shall monitor and record the total input to the kiln in tons per calendar month and the input to the kiln during the most recent 12 consecutive calendar months.

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. Only those permit conditions regulated in accordance of IDAPA 58.01.01.400-410 are subject to expiration. The permittee shall submit an application to DEQ for renewal of this permit at least six months before, but no earlier than 18 months before the expiration of this permit. To ensure that the term of the permit does not expire before the permit is renewed the permittee is encouraged to submit a renewal application nine months prior to the date of the expiration. The expiration of a permit will not affect the operation of a stationary source or facility during the administrative procedure period associated with the permit renewal.

[IDAPA 58.01.01.405.03, 5/1/94]

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]

Severability

14. The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[IDAPA 58.01.01.405, 5/1/94]