

OM&M Plan for the Port Inland Plant

This Operations, Maintenance and Monitoring Plan (OM&M) was developed for purposes of the Air Quality permit for this facility and the Lime MACT (40 CFR 63, subpart AAAAA). The facility is currently a major source of hazardous air pollutants (HAPs) and subject to the Lime MACT. Therefore, the requirements of the Lime MACT are included in this Plan. It covers actions to be taken for the lime kilns, coolers and processed stone handling system as defined below for each kiln. Significant revisions to this Plan will be submitted to Michigan Department of Environment, Great Lakes & Energy for review and approval. Pending approval by the applicable permitting authority of an initial or amended plan, Graymont Western Lime will comply with its interpretation of the provisions of the submitted Plan or amended Plan.

Kiln 1 Port Inland	
<p>Port Inland Kiln 1: Processed stone handling subject to MACT starts at the top of the stone bin (N-119) where the stone drops from the conveyor (C-118) through the stone distributor and into the stone bin (N-119). From the bottom of the bin, the stone drops into the kiln’s preheater (PH-121). The system is designed with minimal drop distances to reduce fugitive dust. The kiln and cooler are also subject to MACT - both are dust collected by the kiln baghouse. The MACT requirements do not apply to any point after the lime leaves the cooler.</p>	
Information	Graymont Western Lime Plan
<p>Lime MACT § 63.7100 (d)(1) (OM&M Elements) – “Process and control device parameters to be monitored to determine compliance, along with established operating limits or ranges, as applicable, for each emission unit.”</p>	<p>Kiln Stack Opacity: Kiln opacity will be monitored. Opacity will be maintained at or below 10% opacity averaged over a 6-minute period consistent with air permit.</p> <p>Kiln Baghouse Differential Pressure: Kiln baghouse differential pressure will be maintained between 1-10 inches H₂O averaged over one hour based on the manufacturer’s recommendations and operating experience to maximize bag life.</p> <p>Kiln Baghouse Inlet Gas Temperature: The inlet temperature to the baghouse will be maintained below 525°F averaged over one hour to prevent damage to the PTFE membrane filter bags.</p> <p>Kiln Baghouse Air Flow: The air flow through the baghouse will be maintained below 112,000 acfm averaged over one hour based on engineering evaluation to maximize bag life. The air flow is monitored at the kiln stack.</p> <p>Kiln Limestone Feed: The limestone feed to the kiln shall not exceed 584,000 tons per year based upon a 12-month rolling period as determined within 10 business days after the end of each calendar month.</p>

	<p>Processed Stone Handling Equipment: Fugitive emissions will be monitored using opacity readings (Method 9). The emission limit for this source is 10% opacity.</p>
<p>Lime MACT § 63.7100 (d)(2) (OM&M Elements) - “A monitoring schedule for each emission unit.” Monitoring will not be performed during periods of startup, shutdown, and malfunction. See, 40 CFR 63.7100(a).</p>	<p>Kiln Stack Opacity: Continuous opacity reading recorded as 6-minute averages will be used to monitor Kiln #1 consistent with air permit.</p> <p>Kiln Baghouse Differential Pressure: Kiln baghouse differential pressure will be continuously (i.e., every minute) monitored while the kiln is in operation.</p> <p>Kiln Baghouse Inlet Gas Temperature: The inlet temperature to the baghouse will be continuously (i.e., every minute) monitored while the kiln is in operation.</p> <p>Kiln Baghouse Air Flow: The air flow through the baghouse will be continuously (i.e., every minute) monitored while the kiln is in operation.</p> <p>Kiln Limestone Feed: The limestone feed shall be continuously (i.e., every minute) monitored and the daily feed rate recorded consistent with air permit.</p> <p>Processed Stone Handling Opacity: Monthly 1-minute visible emissions (VE) check for each emission unit will be performed. If visible emissions are observed during the 1-minute check, a full 6-minute Method 9 test will be performed. The frequency of the VE checks may be reduced in accordance with Item 1 of Table 6 to Subpart AAAAA of Part 63.</p>
<p>Lime MACT § 63.7100 (d)(3) (OM&M Elements) – “Procedures for the proper operation and maintenance of each emission unit and each air pollution control device to meet the applicable emission limitations and operating limits in Tables 1, 2 and 3 to this subpart, respectively. On and after the relevant compliance date for your source as specified in § 63.7083(e), your OM&M plan must address periods of startup and shutdown.”</p>	<p>Kiln Operation and Maintenance: The baghouse for the kiln is used to remove particulate from the exhaust gases before they are released to the atmosphere. Differential pressure across the baghouse is used to confirm normal operation of the baghouse. The inlet gas temperature to the baghouse is maintained below 525°F averaged over one hour to prevent damage to the PTFE membrane filter bags. The exhaust from the baghouse is continuously (i.e., every minute) monitored with the opacity monitor and flow monitor. The differential pressure, opacity, inlet temperature, and air flow are used as indicators as well as diagnostic tools for normal operation and maintenance of the baghouse. In the event of a potential issue, the diagnostic activities listed in this Plan are used to gauge the return to normal baghouse performance. Excursions from these parametric monitoring ranges are not necessarily considered violations.</p>

Processed Stone Handling Operation and Maintenance: The processed stone handling system is designed to minimize fugitive dust emissions. Portions of the system are fully enclosed, and minimal drop distances are integral to the design. Dust from the stone chute into the kiln preheater is minimized using negative draft from the kiln's induced draft fan.

Startup Procedure: Ensure that the fabric filter dust collector and COMS are operating properly. Operate the kiln to safely and steadily increase the temperature and pressure inside the kiln. The kiln is started up with exhaust exiting through one module of the baghouse. Once the kiln's exhaust gas temperature and the differential pressure has been maintained at appropriate levels another baghouse module is opened, continuing until all baghouse modules are open and the exhaust gas is passing through the entire dust collector. Bypass capability has been removed.

Shutdown Procedure: Before taking the fabric filter dust collector and COMS out of operation, ensure that the kiln is shut down.

Startup Record Keeping: Each kiln startup is recorded. Lime product is tested each hour of kiln startup once lime is discharged to determine when quality specifications are met to determine the end of a startup event. These quality specifications for each lime product are recorded. In accordance with 40 CFR 63.7132(a)(2)(i), the following is recorded during startup:

- Date and time startup began
- Date and time production of on-specification lime product began
- Date and time discharge from kiln began

Malfunctions: Malfunctions are documented using Kiln Environmental Logs and a DAHS system. Under 40 CFR 63.7132(a)(2)(ii) the date, time cause and duration of each malfunction must be recorded.

Startup Definition: Startup is defined as the beginning of kiln operation. Startup begins when a shutdown kiln begins firing in the main burner. Startup ends when the lime kiln first generates on-specification lime product of 12 hours following the first discharge from the kiln, whichever is earlier.

	<p>Shutdown Definition: Shutdown mean the cessation of kiln operation. Shutdown begins when feed to the kiln is reduced to below planned production and ends when stone feed is halted and fuel combustion from the main burner ceases.</p> <p>Discharge Definition: Discharge is defined as lime product exiting the lime cooler which has been heated from its natural state using a permit compliant fuel source following a shutdown event and re-firing of the kiln burner.</p> <p>The Port Inland Plant Kiln logs and/or DAHS system will be used to document all required information.</p>
<p>Lime MACT § 63.7100 (d)(4) (OM&M Elements) – “Procedures for the proper installation, operation, and maintenance of monitoring devices or systems used to determine compliance, including:</p> <p>(i) Calibration and certification of accuracy of each monitoring device; (ii) Performance and equipment specifications for the sample interface, parametric signal analyzer, and the data collection and reduction systems; (iii) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (3) and (4)(ii); (iv) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d).”</p>	<p>Kiln Opacity Monitor (COMS) and Air Flow: The COMS and stack air flow monitor are installed, calibrated, maintained and operated according to the facility’s Quality Assurance / Quality Control Plan (attached).</p> <p>Kiln Baghouse Differential Pressure: Kiln baghouse differential pressure gauges are calibrated annually.</p> <p>Kiln Baghouse Inlet Gas Temperature: The inlet temperature gauge is tested annually.</p> <p>Kiln Limestone Feed: The limestone feed belt is calibrated annually.</p> <p>Processed Stone Handling Monitors: There are no monitoring devices or systems for this fugitive emissions source.</p>
<p>Lime MACT § 63.7100 (d)(5) (OM&M Elements) – “Procedures for monitoring process and control device parameters.”</p>	<p>Kiln Opacity and Air Flow: The opacity monitor is installed on the exhaust stack for this process and collects opacity data at least once every 15 seconds. Air flow is averaged every minute. These readings are displayed by the kiln's operating computer in the control room and are recorded in the data acquisition and handling system. This process is detailed in the facility’s Quality Assurance / Quality Control Plan. The kiln's operating computer program alerts the kiln operator when the opacity reaches a specified level.</p> <p>Kiln Baghouse Differential Pressure: Kiln baghouse differential pressure is continuously (i.e., every minute) monitored and readings are displayed by the</p>

	<p>kiln's operating computer in the control room. The kiln's operating computer program alerts the kiln operator when the differential pressure measures outside a range of 2.5-7 inches H2O.</p> <p>Kiln Baghouse Inlet Gas Temperature: The inlet temperature to the baghouse is continuously (i.e., every minute) monitored and readings are displayed by the kiln's operating computer in the control room. The kiln's operating computer program alerts the kiln operator when the inlet temperature exceeds 485°F averaged over one minute.</p> <p>Kiln Limestone Feed: The limestone feed is continuously (i.e., every minute) monitored and the feed rate recorded at least daily consistent with the air permit. Consistency with the limit is validated monthly.</p> <p>Processed Stone Handling Monitors: There are no monitoring devices or systems for this fugitive emissions source.</p>
<p>Lime MACT § 63.7100 (d)(6) (OM&M Elements) – “Corrective actions to be taken when process or operating parameters or add-on control device parameters deviate from the operating limits specified in Table 2 to this subpart, including: (i) Procedures to determine and record the cause of a deviation or excursion, and the time the deviation or excursion began and ended; and (ii) Procedures for recording the corrective action taken, the time corrective action was initiated, and the time and date the corrective action was completed.”</p>	<p>When Kiln Opacity Exceeds 10% (6 Minute Average) or Baghouse Differential Pressure Deviates Outside 1-10 inches H2O Averaged Over One Hour: In the event of a malfunction or failure that results in an excursion, appropriate actions will be taken to address the issue. These actions may include, individually or collectively:</p> <ol style="list-style-type: none"> a. Ensure that the opacity monitor is working properly. If not, contact qualified personnel to troubleshoot the issue. b. Inspect the magnahelics and/or photohelics and the pressure lines and maintain/repair as needed. c. Ensure the dampers are working and in the correct position d. Ensure that the dust removal system is working properly. e. Isolating baghouse modules to inspect and/or replace the bags and cage assembly. f. Verify that the bag cleaning system is working properly. g. Shutting down the kiln for system inspection. <p>Kiln Baghouse Inlet Gas Temperature Exceeds 500F Averaged Over One Hour: In the event of a malfunction or failure that results in an excursion, appropriate actions will be taken to address the issue. These actions may include individually or collectively:</p>

	<ul style="list-style-type: none"> a. Ensure that the temperature gauge is working properly. If not, contact qualified personnel to troubleshoot the issue. b. Ensure the air tempering damper is working and in the correct position c. Kiln will automatically shut down if temperature exceeds 525°F averaged over one hour. <p>If repairing a malfunction will jeopardize the safety of an individual or equipment, seek advice from your supervisor before proceeding.</p> <p>When Processed Stone Handling Fugitive Emissions Exceed 10% (Six Minute Average): In the event of a malfunction or failure that results in the excursion, appropriate actions will be taken to address the issue. The induced draft fan for the kiln creates negative draft for the stone feed into the kiln preheater. The kiln cannot operate properly without the required negative draft, therefore, when the kiln is operating properly, the negative draft will be in place.</p> <p>The Port Inland Plant kiln log sheets and/or the Data Acquisition Housing System will be used to document all the required information.</p>
<p>Lime MACT § 63.7100 (d)(7) (OM&M Elements) – “A maintenance schedule for each emission unit and control device that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance.”</p>	<p>Kiln Baghouse Inspection and Preventative Maintenance Schedule</p> <ul style="list-style-type: none"> a) An internal inspection of the baghouse and ductwork leading to the baghouse is performed at least once every calendar year of operation or on an as needed basis. The inspection may include such items as: <ul style="list-style-type: none"> i. the condition of the bags ii. the internal baghouse structure iii. the bag cleaning system iv. the discharge equipment v. the condition of the ductwork leading to the baghouse vi. the photohelic/magnahelic gauges. b) Preventative maintenance will be performed as needed based upon the inspection results. c) Functionality tests of the baghouse double dump valve alarms and hopper high level indicators will be performed semiannually. d) Per manufacturer recommendations, the following preventive maintenance is performed: <ul style="list-style-type: none"> i. inspect air compressor filter monthly and replace, if necessary ii. lubricate bearings every three months

	<p>iii. check screw conveyor gearbox lubrication every three months</p> <p>Processed Stone Handling System Inspection and Preventative Maintenance Schedule</p> <p>a) An inspection of the processed stone handling system will be performed at least once every calendar year or on an as needed basis. The inspection may include such items as the condition of stone handling equipment covers and/or enclosures. Preventative maintenance will be performed as needed based upon the inspection results.</p>
<p>Lime MACT § 63.6(e)(3) (OM&M Elements) – “The owner or operator of an affected source must develop a written startup, shutdown and malfunction plan that describes in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control and monitoring equipment used to comply with the relevant standard.”</p>	<p>Startup: Ensure that the fabric filter baghouse and COMS are operating properly. Operate the kiln to safely and steadily increase the temperature and pressure inside the kiln. The kiln is started up with exhaust exiting through one module of the baghouse. Once the kiln's exhaust gas temperature and the differential pressure has been maintained at appropriate levels another baghouse module is opened, continuing until all baghouse modules are open and the exhaust gas is passing through the entire baghouse. Bypass capability has been removed.</p> <p>Shutdown: Before taking the fabric filter baghouse and COMS out of operation, ensure that the kiln is shut down.</p> <p>Kiln Malfunction: In the event of a malfunction of the kiln process, which causes a deviation, the process control parameters will be inspected to determine the source of the issue. If the problem can be resolved in a timely fashion, the kiln will remain in operation while the malfunction is being corrected. If an extended amount of time is needed to correct the malfunction, the kiln will be temporarily shutdown.</p> <p>Baghouse Malfunction: In the event of a malfunction that results in the deviation, appropriate actions will be taken to address the issue. These actions may include individually or collectively:</p> <ol style="list-style-type: none"> a. Inspect the magnahelics and/or photohelics and the pressure lines and maintain/repair as needed. b. Inspect and/or replace bags and cage assembly. c. Ensure the dampers are working and in the correct position d. Isolating baghouse modules to inspect and/or replace the bags and cage assembly.

- e. Verify that the bag cleaning system is working properly.
- f. Shutting down the kiln for system inspection.

If repairing a malfunction will jeopardize the safety of an individual or equipment, seek advice from your supervisor before proceeding.

Opacity Monitor Malfunction: If the opacity monitor is malfunctioning the system will be analyzed to determine the source of the issue. If the malfunction can be quickly addressed the work will be performed with the monitor in place on the stack.

Processed Stone Handling System Malfunction: This is a fugitive emissions source. The only dust control for this process is the negative draft in the kiln preheater, supplied by the kiln's induced draft fan. A malfunction that would affect the negative draft would be addressed as a malfunction of the kiln, which is addressed elsewhere.

The Port Inland Plant kiln log sheets and/or the Environmental database will be used to document the required information.