



United States Environmental Protection Agency
Region 7
Enforcement and Compliance Assurance Division

Air Branch

**Air Branch Inspection Report
Unannounced Partial Compliance Evaluation
Holcim (US) Inc. (Lee Island Plant)**

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Inspection Date(s):

March 7, 2024

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and provides a clear indication of the end of this report.**

INSPECTION OVERVIEW

INSPECTION OBJECTIVE

The objective of the partial compliance evaluation (PCE) inspection was to determine compliance of the facility with the Clean Air Act (CAA), specifically those requirements located in the Code of Federal Regulations at 40 CFR Part 63 Subpart LLL - National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry.

This inspection was conducted by Luke Rodriguez with EPA Region 7, Enforcement and Compliance Assurance Division, Air Branch.

FACILITY CONTACT INFORMATION

Table 1 lists the primary facility contact.

Table 1. FACILITY CONTACT INFORMATION		
Name, Title	Phone No.	Email Address
Andrew Horrell, Area Environmental & Public Affairs Manager	636-524-8425	Andrew.horrell@holcim.com

FACILITY OVERVIEW

Holcim (US) Inc. (Holcim) owns and operates a Portland cement manufacturing installation in Bloomsdale, Missouri. The facility employs roughly 250 people and operates 24 hours a day, 7 days a week. There is an annual shutdown which typically lasts about a month during the winter months to complete maintenance and repairs on the equipment.

Holcim has applied for a Prevention of Significant Deterioration (PSD) permit requesting to add a 5th finish mill with an associated production increase and other equipment changes to it's existing process. The facility contends that the 5th finish mill is required for making changes to the product which will result in lower greenhouse gas emissions. The new product will include higher limestone content, and this will, in turn, require more extensive milling.

The facility has not reported any 40 CFR Part 63 Subpart LLL violations in the past two years.

According to Holcim's Title V operating permit, issued by MoDNR on December 12, 2018, the facility is subject to the following regulations and standards subject to review during this inspection (**Table 2**):

Table 2. APPLICABLE PERMIT CONDITIONS, REGULATIONS AND STANDARDS	
Code of Federal Regulation	Standard Name
40 CFR Part 63	Subpart A, General Provisions Subpart LLL - National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry

FACILITY OPERATIONS SUMMARY

Raw material such as calcium, silica, alumina, and iron are sized, ground, and blended before being processed in the kiln system where they are physically and chemically transformed into cement clinker. The permitted capacity of the plant is 4,828,074 tons of clinker per year. Operational units include an on-site quarry, raw material storage, crushing and milling, solid fuel (coal and petroleum coke) storage and milling, liquid fuel storage, one preheater/precalciner cement kiln system, product milling, product storage, and loading and unloading systems. The installation consists of one kiln, two raw mills, four vertical rotary finish mills, eight cement silos, and two domes for coal and limestone, respectively. Fuels utilized for the process include low sulfur diesel, coal, petroleum coke, and other non-hazardous materials. The liquid diesel and other non-hazardous materials are used as secondary fuels in critical situations such as start-up and back-up. The coal and petroleum coke are used as the primary fuels for the manufacturing process. All emission units are classified as existing according to the 40 CFR Part 63 Subpart LLL definition.

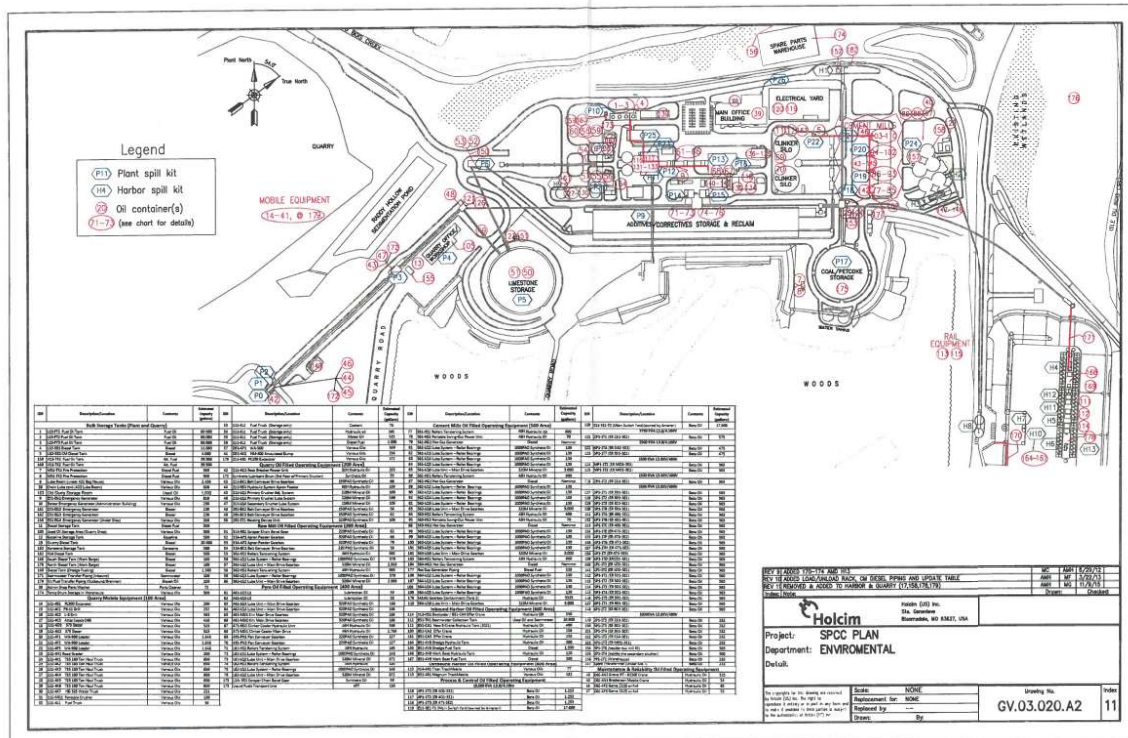


Figure 1. Site Diagram.

FIELD ACTIVITIES SUMMARY

I arrived at the facility on March 7, 2024, at 8:00 a.m. and completed a drive by surveillance inspection. I did not observe visible emissions. I made entry at the front gate at 8:15 a.m. and introduced myself, presented my credentials, and provided my business card to Mr. Andrew Horrell. I was given a facility safety briefing by Mr. Horrell. I conducted an opening conference during which I explained that the purpose of the visit was to conduct an inspection to determine compliance with the CAA, specifically, to determine compliance with the regulations and standards listed in Table 2. I explained that after asking for some general business information, I would observe work practices, process units, emission units, and control equipment, as well as review associated records demonstrating compliance with the regulation. I explained to Mr. Horrell that the facility would have an opportunity to make a claim of business confidentiality at the end of the inspection and provided him with a Confidential Business Information form.

I was given a facility tour by Mr. Horrell. I wore steel toed boots, safety glasses, and a hard hat as required by facility requirements for visitors.

I reviewed the condition of all emission units regulated by 40 CFR Part 63 Subpart LLL, the operating status of the equipment, and any required recordkeeping for the equipment for compliance with the regulations and permit conditions noted in Table 2 only. Mr. Horrell and I discussed the records that I was requesting as part of the inspection and provided him a list via an email. Mr. Horrell signed the Receipt for Documents form which indicated that the records specified in that email would be submitted electronically by the end of business on March 15, 2024. **Appendix A** contains both the signed receipt for documents form and the email which identified the specific records. The records were uploaded by the date as agreed.

We broke for lunch at 12:50 p.m. and returned to the inspection at 1:30 p.m. I conducted a closing conference with Mr. Horrell. He deferred the decision of whether to make a claim of confidentiality until he had discussed the records request with his plant manager. He indicated that he would make the claim when uploading the records, but he did not make a claim of confidentiality when uploading the documents. I departed the facility at 3:00 p.m.

Observations and potential findings from the facility tour, and records review, and sampling/measurement activities are noted in the **Investigation Observation and Potential Findings** section below.

INVESTIGATION OBSERVATIONS AND POTENTIAL FINDINGS

Ambient weather, site conditions and activities were documented in field records. All photographs are attached as **Appendix B**. I made the following observations during the inspection. I discussed all observations with facility representatives during the closeout meeting unless otherwise noted in the observation description.

These observations are not final compliance determinations. The EPA Region 7 Air Branch case review team will make the final compliance determinations based on its review of this report and other technical, regulatory, and facility information.

This inspection was conducted to review the compliance status of Holcim with the requirements found in 40 CFR Part 63 Subpart LLL. I discussed various aspects of the regulation and Holcim's compliance approach to meeting the requirements of that regulation as well as reviewed specific selected records which are intended to document compliance with the regulation. The facility was in the middle of its winter maintenance shutdown while I was on-site, and no emission units were in operation.

The affected sources in operation at this facility are one cement kiln, one clinker cooler, two inline raw mills which are routed to the main stack, four finish mills which are controlled by individual baghouses and routed to two stacks (1 & 2) to stack 1 and (3 & 4) to stack 2, numerous raw materials, clinker storage bins, finished product storage bins, numerous conveying system transfer points, and bulk loading to both rail and barges.

These emission units are subject to emission limits for several pollutants summarized in Table 3 below. Table 3 also shows the method used to demonstrate compliance with each limit. All emission limits are in Section (§) 63.1343.

Table 3. EMISSION LIMITS AND COMPLIANCE DEMONSTRATION		
Equipment	Pollutant and Limit	Compliance Demonstration
Kiln	Particulate Matter (PM) – 0.07 lb/ton of clinker	Continuous Parameter Monitoring System (CPMS)
	Dioxins and Furans (d/f) – 0.2 ng/dscm corrected to 7% O ₂	CPMS – Temperature Sensor
	Mercury (Hg) – 55 lb/MMtons Clinker	Mercury Continuous Emission Monitor (CEMS)
	Total Hydro Carbons (THC) – 24 ppmvd corrected to 7% O ₂	CEMS used as a CPMS by Surrogate
	Hydrogen Chloride (HCl) – 3 ppmvd corrected to 7% O ₂	CEMS used as a CPMS by Surrogate
Existing Clinker Cooler	PM – 0.07 lb/ton of clinker	CPMS
Existing Raw Mill(s)	Opacity – 10%	Continuous Opacity Monitor on the Main Stack
Existing Finish Mill(s)	Opacity – 10%	Daily Method 22 Observations

According to § 63.1343(b)(2), when there is any alkali bypass or inline coal mill with a separate stack associated with a kiln, the facility must meet the Kiln PM emission limits. This facility does not have an alkali bypass or inline coal mill. Although the coal mill does receive kiln gasses to preheat the mill, according to Mr. Horrell, it is not an inline coal mill. According to him, the facility does monitor the Coal Mill stack emissions and meets the emission limits for THC, HCl, and PM as will be discussed later.

The facility does not have any open clinker storage piles § 63.1343(c).

Section 63.1345 – Emissions limits for affected sources other than kilns; clinker coolers; new and reconstructed raw material dryers.

The requirements in § 63.1345 apply to the various storage bins, transfer points, bulk loading systems, mills, and dryers in use at the facility. All are subject to an emission limit of 10 percent opacity. A list of these sources at the facility are included as **Appendix C**. The monitoring requirements for this limit are located at § 63.1350(f) – Opacity monitoring requirements but are addressed here. The facility is required to conduct a monthly 10-minute Method 22 visible emission test at Each of the units identified in **Appendix C**. In the event of six consecutive passing monthly tests, the owner or operator may decrease the frequency from monthly to semi-annually. However, given the number of sources and the complexity of tracking the frequency of observations required, Holcim elected to continue conducting all tests monthly regardless of their passing status. Holcim employs an electronic system for recording the results of the tests. Mr. Horrell explained the system to me:

The units are on a schedule, and the system sends out a work order for completing each test on a recurring monthly basis. When the employee receives the work order, they open the app and fill out the requested information. The fields in the record include the information required by Method 22. The employee cannot complete the observation

and close the work order unless all fields are filled in. Each employee has a unique identifier attached to the record. Mr. Horrell can run a report which shows the results of the observations and whether the record was completed or not.

I requested the report which shows whether the work order for each observation was completed for the calendar year of 2023 and the specific records for October 2023. The records appear to have the information required, and I did not see any records which should have been reported as deviations. The annual report for 2023 is included as **Appendix D** (VE Records Method 22 Year Tracker 2023). The October 2023 full report is included as **Appendix E** (VE Records – Oct 2023 Monthly VE Records).

Section 63.1346 – Operating limits for kilns

Section 63.1346(a) identifies the requirements for demonstrating compliance with the dioxin and furan emission limits in § 63.1343. Sections 63.1348 and 63.1349 specify requirements for conducting the performance tests which are used to determine the parameter to be monitored. The test is required every 30 months with the most recent being February 22 and 23, 2024. The parameter is updated in the software when the test report is submitted to the EPA in accordance with § 63.1349(c). Mr. Horrell said that the facility computes the temperature average from the test in accordance with the requirements in § 63.1348(a)(3). This temperature is recorded in each of the semi-annual monitoring reports that the facility submits through Compliance and Emissions Data Reporting Interface. I reviewed the records of the temperature data and compared the three-hour averages to the reports that the facility submits. I did not see any instances of exceedances which were not reported by the facility. The facility did not report any exceedances of the temperature value during 2023.

Section 63.1346(c) indicates that a source which employs sorbent injection as an emission control technique for dioxins and furans must operate the sorbent injection system according to § 63.1346(c)(1) & (2). Holcim uses dry lime injection either into the induced draft (ID) fan or

the bucket elevator when the raw mill is not in operation. The use of dry lime is required by Permit Condition 062004-005C and D of the Title V. This permit condition does not specify a rate of injection, only that dry lime be injected when the raw mill is not in operation. Sorbent injection can include dry lime; therefore, it is possible that the dry lime injection lowers the dioxin and furan emission levels. The facility does not consider the system to be an emission control technique for dioxins and furans as the permit requirement is intended to control sulfur dioxide emissions. The facility operates sulfur dioxide CEMs and monitors the emissions with respect to its permitted limits. When the emissions approach those limits, more dry lime is injected. The facility is not engaging in the activities specified by § 63.1346(c)(1) & (2). The most recent dioxin and furan performance test did not indicate the level of dry lime which was injected during the test. That performance test showed dioxins and furans significantly below (~1/50th) the 40 CFR Part 63 Subpart LLL emission limit. The facility does not employ an activated carbon system for control of dioxins and furans.

Section 63.1346(g)(1) through (4) outline the requirements for startup and shutdown. The facility uses only ultra-low sulfur diesel, distillate oil, and natural gas during startup. According to Mr. Horrell, primary fuel combustion is interlocked with a thermocouple to prevent the addition of primary fuel until the temperature reaches 1200 degrees Fahrenheit. Mr. Horrell also stated that § 63.1346(g) does not apply to this process as no sorbent or activated carbon systems are utilized to comply with hazardous air pollutants listed in Subpart LLL.

Section 63.1347 – Operation and maintenance plan requirements

Each affected source subject to 40 CFR Part 63 Subpart LLL must operate in accordance with a written operation and maintenance plan which meets the requirements of § 63.1347(a)(1) through (3). The operation and maintenance plan is included as **Appendix F**. Section 63.1347(a)(1) requires that the plan include the procedures for proper operation and maintenance for the affected source and air pollution control devices. Section 63.1347(a)(2) requires that the plan include the corrective actions to be taken when required. Section

63.1347(a)(3) requires that the plan include the procedures to be used during an annual inspection of the components of the combustion systems. The plan appears to meet these requirements.

Section 63.1348 – Compliance requirements

Section 63.1348(a) outlines the initial performance test requirements. Those were completed when the facility was initially constructed. Section 63.1348(a)(7) specifies the requirements when a facility commingles coal mill exhaust with kiln exhaust. Holcim routes some kiln gas to the coal mill to pre-heat the mill. These emissions exit through the coal mill stack. Mr. Horrell explained that these emissions are accounted for and included when comparing actual emissions to the limit. A PDF spreadsheet which shows how this is calculated is included as **Appendix G.**

Section 63.1348(b) outlines the continuous monitoring requirements. Section 63.1348(b)(1)(i) requires that the source monitors and collects data according to the site-specific monitoring plan required by § 63.1350(p). Many of the specific requirements in this section refer to § 63.1350 requirements which will be addressed below.

Section 63.1349 – Performance testing requirements

Section 63.1349(b)(1) – PM emissions tests.

Holcim establishes a site-specific operating limit for their CPMS from a PM test which is completed annually. The site-specific operating limit is a digital equivalent for both the main kiln stack and the clinker cooler stack. Those site-specific operating limits are included in the semi-annual reports and are updated when the facility submits the test to the EPA. Compliance is based on a 30-operating-day rolling average. I reviewed the data for the past three years, and I did not see any instances of exceedances of these limits which were not reported in the semi-annual reports.

Section 63.1349(b)(3) – D/F emissions tests.

The dioxin and furan emission test requirements and parameter monitoring are addressed above.

Section 63.1349(b)(5) – Mercury emissions tests.

Holcim normally operates a Hg CEMS and completes a Relative Accuracy Test Audit (RATA) annually. The facility has been having issues with its Hg CEMS and has been operating a sorbent trap monitoring system as a backup. For the first half of 2023, the Hg monitoring downtime was 3% and 8% in the second half. Mr. Horrell told me that the facility was working on the issue with MoDNR who had requested certain additional monitoring while the CEMS remains unreliable.

Section 63.1349(b)(6) – HCl emissions tests.

Holcim operates a CEMS which functions as a CPMS. The facility establishes a site-specific parameter limit under § 63.1349(b)(6)(i)(B). Mr. Horrell told me that the facility calculates a kiln specific HCl limit using Equation 11 because the kiln gases are diverted through a coal mill and exhausted by a separate stack as required by § 63.1349(b)(6)(iv).

Section 63.1349(b)(7) – Total organic HAP emission tests.

As indicated in § 63.1349(b)(7), the facility may opt to complete the total organic HAP emission test in § 63.1349(b)(7) rather than THC test in § 63.1349(b)(4) and establish an operating parameter. The calculation explaining this association is included as **Appendix G**.

Section 63.1349(c) – Performance test frequency.

Holcim conducts the Hg and HCl tests every 12 months as required when using CEMS. Mr. Horrell told me that the PM, D/F, and total organic HAP emission tests are conducted every 30 months because these are CPMS. The facility does employ a THC CEMS, but Mr. Horrell said

that this CEMS is used as a CPMS and is therefore not subject to the requirement to test annually.

Section 63.1350 – Monitoring requirements

Section 63.1350(b) – PM monitoring requirements.

To determine continuous compliance with the PM standard, the source must use the PM CPMS output data for all periods when the process is operating, and the PM CPMS is not out of control. The limit is based on a 30-operating-day rolling average. Section 63.1350(b)(1)(iii) requires certain actions when the 30-operating-day parameter limit is exceeded. Mr. Horrell told me that the facility has not exceeded a 30-day rolling average parameter limit within the last three years.

Section 63.1350(d) – Clinker production monitoring requirements.

The facility is required to determine the hourly clinker production and chooses to comply by installing, calibrating, and maintaining a permanent weigh scale system to monitor the amount of feed to the kiln. The facility is also required to calculate the hourly clinker production rate using a kiln-specific feed to clinker ratio based on reconciled clinker production determined for accounting purposes and recorded feed rates. Mr. Horrell told me that the facility confirms the ratio monthly, and it has not changed in several years. I viewed the ratio on the Data Acquisition and Handling System (DAHS) onsite, and it was 1.63.

Section 63.1350(f) – Opacity monitoring requirements.

The requirements in this section are addressed above under § 63.1345.

Section 63.1350(g) – D/F monitoring requirements.

The facility must install, calibrate, maintain, and continuously operate a CMS to record the temperature of the exhaust gases from the kiln. I reviewed the calibrations of the

thermocouples for each of the main baghouses while on-site. As discussed above, I reviewed the records of temperature used to demonstrate compliance with the D/F emission limits.

Section 63.1350(m) – Parameter monitoring requirements.

The facility does not use any liquid flow rate monitors, specific pressure monitors, specific pH monitors or mass flow rate monitors. The facility is not using any bag leak detection systems for compliance.

Section 63.1350(n) – Continuous flow rate monitoring system.

The facility uses one continuous flow rate monitor on the main stack and another on the coal stack. These are evaluated during each RATA annually to verify that they meet the requirements in this section.

Section 63.1350(p) – Development and submittal (upon request) of monitoring plans.

For any emission limit for which the facility demonstrates compliance through performance stack testing or other emission monitoring, the facility must develop a site-specific monitoring plan according to the requirements of § 63.1350(p)(1) through (4). The facility maintains a single site-specific monitoring plan for all emission limits. Holcim meets the requirements of this section by maintaining this information across three separate plans; the QA/QC Plan (included as **Appendix H**), the site-specific monitoring plan (included as **Appendix I**), and the operation and maintenance plan (included as **Appendix F**). The requirements in § 63.1350(p)(1) can be found in the QA/QC Plan. The requirements in § 63.1350(p)(2) can be found in the operation and maintenance plan.

I requested the records of the most recent performance evaluation of each CMS in accordance with the site-specific monitoring plan. Mr. Horrell said that the facility considers the quarterly inspections conducted by third party contractors and the work completed as part of the annual and 30-month performance tests to demonstrate compliance with this requirement. Mr. Horrell

informed me in the records request that the facility discovered that the third quarter PM audit was not completed as required, and the third quarter cooler PM audit was completed late.

Section 63.1354 – Reporting requirements.

I reviewed the last three years of semi-annual reports. These reports appear to satisfy the reporting requirements from this section.

Potential Finding 1: Third quarter PM audit was not completed as required, and the third quarter cooler PM audit was completed late.
Observation Summary: The facility's QA/QC plan used to demonstrate compliance with § 63.1350(p)(1) and (4) was not followed.
Citation: § 63.1350(p)(1) and (4).
Evidence: Appendix H is the QA/QC plan which indicates the schedule for calibrations and audits. This is used to demonstrate compliance with § 63.1350(p)(1). Section 63.1350(p)(4) requires that the plan be followed. Mr. Horrell informed me that the third quarter PM audit was not completed as required, and the third quarter cooler PM audit was completed late.
Description of Observation: Holcim uses the QA/QC plan to demonstrate compliance with § 63.1350(p)(1), which was not followed; therefore, this is in violation of § 63.1350(p)(4).

End of report.