

DEPARTMENT OF ENVIRONMENTAL QUALITY  
 AIR QUALITY DIVISION  
 ACTIVITY REPORT: Scheduled Inspection

B147736084

FACILITY: LAFARGE MIDWEST INC.		SRN / ID: B1477
LOCATION: 1435 Ford Ave., ALPENA		DISTRICT: Cadillac
CITY: ALPENA		COUNTY: ALPENA
CONTACT: Travis Weide, Area Environmental & Public Affairs Manager		ACTIVITY DATE: 04/27/2016
STAFF: Kurt Childs	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: 2016 FCE; PCE #2. FG KG 5, FG FUEL HAND, FG CLINK SYS.		
RESOLVED COMPLAINTS:		

Partial Compliance Evaluation (PCE): Site inspection and records review of FG KG5, FG CLINKER SYS, and FG FUEL HAND

Introduction

This activity report covers the second PCE for the 2016 Full Compliance Evaluation of the Lafarge Holcim Alpena Cement Plant. Emission groups covered by this PCE are; FG KG5 – Kilns 19,20,21 and associated air pollution control devices; FG FUEL HAND – fuel storage (piles) transportation, processing and firing; FG CLINKER SYS – conveyance of clinker from the clinker cooler to FG FINISH MILLS including the addition of limestone and gypsum.

On April 27, 2016 AQD staff Kurt Childs, Gloria Torello and Jeremy Howe met with Travis Weide of Lafarge to conduct the PCE of the Alpena plant and discuss ongoing permitting and stack testing issues. This was an unannounced inspection. Prior the inspection AQD staff made observations from off-site. The weather was clear, around 40 degrees with winds from the north at 5 – 10mph. We observed the Kiln stacks and several other stacks from around the plant. There was a water vapor plume from the KG6 wet FGD stack but no visible emissions were noted from any of the kiln stacks. We also observed the quarry and the main raw material stockpile. Vehicles were traveling in the quarry but were not raising any dust. The primary crusher was operating but there were no visible emissions observed from the crusher, conveyor or stockpile. The CKD landfill is located within the quarry and we observed what appeared to be water vapor emissions coming from the berm on the north side of the active portion. Mr. Weide later confirmed that the hot CKD when applied to the landfill releases a water vapor plume under these weather conditions.

FG KG5 ROP MI-ROP-B1477-2012a (12/22/2015)

Kilns 19, 20 and 21 each controlled by a main baghouse, SNCR, and DAA. All three Kilns were operating at the time of the inspection and no visible emissions were evident from the main stacks. We observed each of the kilns and baghouses as well as the SNCR system and DAA system which utilized CKD that is stored in a silo adjacent to the kilns and is metered into the kiln exhaust streams through a duct between each kiln and baghouse. Kiln and control system operation are monitored in the control room and many operating parameters are available including the CEMS readouts.

I. FG KG5 Emissions Limits

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping / Testing
1. VE	20% opacity	Six-minute average	FG KG5  (The limit applies to each individual kiln.)	0% observed.	
2. PM	0.25 pound per 1000 pounds of exhaust	Test Protocol <sup>a</sup>	FG KG5  (The limit applies to each individual kiln.)	NA	

3. SO <sub>2</sub>	2,088 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 19	46 ppm one minute average	
4. SO <sub>2</sub>	4.07 pounds per ton clinker	30 day rolling average determined each day	EU KILN 19	NA	
5. NO <sub>x</sub>	1530 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 19	NA	
6. NO <sub>x</sub>	4.72 pounds per ton clinker	30 day rolling average determined each day	EU KILN 19	NA	
7. CO	284 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 19	NA	
8. SO <sub>2</sub>	2,065 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 20	NA	
9. SO <sub>2</sub>	4.09 pounds per ton of clinker	30 day rolling average determined each day	EU KILN 20	NA	
10. NO <sub>x</sub>	1,513 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 20	NA	
11. NO <sub>x</sub>	4.91 pounds per ton of clinker	30 day rolling average determined each day	EU KILN 20	NA	
12. CO	280 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 20	NA	
13. SO <sub>2</sub>	2,056 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 21	NA	
14. SO <sub>2</sub>	3.93 Pounds per ton clinker	30 day rolling average as determined each	EU KILN 21	NA	

		day			
15. NOx	1,506 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 21	NA	
16. NOx	4.48 pounds per ton clinker	30 day rolling average as determined each day	EU KILN 21	NA	
17. CO	279 tons per year	12-month rolling time period as determined at the end of each calendar month	EU KILN 21	NA	
18. HCL and Chlorine gas combined emissions expressed as HCL equivalents	65 ppmv corrected to 7% oxygen on a dry gas basis	Test Protocol	FG KG5 (each individual Kiln)	NA	
19. HCL and Chlorine gas combined emissions expressed as HCL equivalents	36 pounds per hour	Test Protocol	FG KG5 (each individual Kiln)	Na	

**II. FG KG5 Material Use Limits**

The use of alternative fuels, plastics, clean wood, and shingles is limited to 65,375 TPY, 39,432 TPY, and 26,240.5 TPY respectively. None were being used as fuel at the time of the inspection according to Mr. Weide. During the inspection I requested records of alternative fuel use for 2015 which had also been requested for FG KG6 during the first PCE but not yet received. Usage records do not appear to be available but copies of shipping receipts for one load each of plastics, shingles, and wood along with lab analysis were eventually provided.

**III. FG KG5 Process/Operational Limits**

All pollution control equipment appeared to be installed and operating properly. Each kiln is equipped with SO2, NOx and CO CEMS and a COM which are calibrated, maintained and operated in accordance with the applicable performance specifications. Air emissions are controlled by a large baghouse on each kiln for particulate control as well as Selective Non-Catalytic Reduction (SNCR) and Dry absorbent Addition (DAA) systems for the control of NOx and SO2 respectively. The baghouses consist of 12 sections, bags are replaced in 2 of the sections each shutdown on a rotating basis. Baghouse differential pressure and stack opacity are continuously monitored. The SNCR system uses the same infrastructure as FG KG6 and ammonia flow rate to the kiln is continuously monitored. The DAA system utilizes cement kiln dust (CKD) as the absorbent and the amount of CKD used per hour is monitored. During the inspection the observed operating ranges were representative of proper normal operation.

**IV. FG KG5 Design Parameters**

The KG5 main baghouses are equipped with differential pressure monitoring. The SNCR system and DAA

system operating parameters are monitored in accordance with the approved MAP. During the first PCE Mr. Weide confirmed the SNCR ammonia storage tank is equipped with a vacuum breaker and pressure relief valve.

#### V. FG KG5 Testing

Required PM, HCL/chlorine gas, and Mercury (6/25/2014) testing were conducted in 2015. Results of the PM testing indicated the PM emissions were well below the lb./1,000 lb. limit. Mercury testing was completed and the results are used in the calculations for compliance with the limit in FG MERCURY. With the exception of EU KILN 19 HCLe lb./hr. the test results for HCL were determined to be unacceptable to the AQD because the emission rate could not be determined due to missing data. A violation notice for this compliance issue was sent to Lafarge on August 5, 2016 by the AQD Technical Programs Unit (TPU). The TPU test review also indicated that plastics fuel was not fired in EU KILN 19 which is not equipped to feed plastics fuel and there was a discrepancy in the amount of fuels reported to have been fired (essentially zero) and what Lafarge believes is the actual amount fired. The AQD verifies the correct quality assurance procedures are used at the time of each test.

#### VI. FG KG5 Monitoring/Recordkeeping

Kiln feed rate and clinker production are monitored and recorded by the plant's data acquisition system. SO<sub>2</sub>, NO<sub>x</sub> and CO are monitored using CEMS with readouts of one minute averages available in the control room (see Emission Limits section above). Records of past emissions are also maintained and reported in the Consent Decree Semi-Annual Report.

SNCR, Baghouse, and Wet FGD control device operating parameters are monitored in accordance with the MAP and readings are available in the control room.

Alternative fuels are used in accordance with an approved Alternative Fuels Procurement Plan. No alternative fuels were being fired at the time of the inspection. The only alternative fuels on site at the time the inspection were shingles. Records of alternative fuel usage for 2015 were not able to be provided following requests during the 1/28/2016 and 4/27/2016 inspections. These records were also requested by TPU staff regarding 2015 HCL emission testing for the Kiln Groups. Samples of shipping documents, scale receipts and material analysis from 2012 – 2016 were provided for plastics, wood, and shingle alternate fuels and are attached.

#### VI. FG KG5 Reporting

The following reports are required for FG KG5:

##### 1. ROP annual and Semi-annual reports.

The last Semi-annual 1 and Semi-annual 2 reports were received as was the Annual report for 2014.

##### 2. CEMS EER and QA quarterly.

The required quarterly CEMS reports have been received.

3. Annual report of CO, PM, PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>2</sub> emissions if actual emissions exceed the baseline actual emissions by a significant amount or pre construction projected emissions (PSD compliance for alternative fuels increase). Alternative fuels were not a significant source of fuel in 2015 for Lafarge. Annual emissions are below the Projected Actual Emissions, no report is expected.

4. Notifications: Testing notifications, Alternative fuel supplier, Alternate fuels procurement plan, MAP. The Alternate Fuels Procurement Plan and MAPs have been submitted and approved. Sample Alternate fuel supplier certification records were provided for one shipment each of plastics, shingles and wood. The analysis indicated the materials met the Alternate Fuels Procurement Plan specifications.

On November 12, 2015 AQD sent Lafarge Alpena a Violation Notice regarding failure to submit test plans and reports according to required timelines. Resolution of these violations is ongoing.

Semi-annual CAM excursion/exceedance and monitor downtime reports have been submitted and were reviewed at the time they were received.

FG KG5 has an approved MAP and a revision to the MAP is currently under review.

**VIII. FG KG5 Stack/Vent Restrictions**

FG KG5 includes one stack for each kiln (SV25-289, SV25-290, and SV25-291) Stack parameters for each are a maximum diameter of 156 inches and minimum height of 220 feet. Actual dimensions were not verified during this PCE but the stacks appear to be within these specifications.

**IX. FG KG5 Other**

Lafarge has approved versions of the required Monitoring Plan/QAQC Plan, MAP, and CAM (currently under revision). At the time of the PCE there is no State or Federal plan implement the provisions of 40 CFR Part 60 Subpart DDDD.

**FG FUEL HAND ROP MI-ROP-B1477-2012a (12/22/2015)**

The fuel handling system receives, stores, transports, and pulverizes the fuel used to fire the kilns. Fuels are delivered and stockpiled outdoors from which the fuel is transported by heavy equipment to the indirect firing system which includes the fuel pulverizers. Dust suppression is used on the fuel piles and the fuel pulverizers are equipped with dust collectors.

**I. FG FUEL HAND Emissions Limits**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping/ Testing
1. VE	20% opacity <sup>2</sup>	Six-minute average	FG FUEL HAND	No visible emissions were present from the vents we observed.	
2. PM-10	1.8 pounds per hour <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 19 EU FUEL PULV 20 EU FUEL PULV 21	NA	
3. PM-10	8.0 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU FUEL PULV 19 EU FUEL PULV 20 EU FUEL PULV 21	NA	
4. PM-10	2.9 pounds per hour <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 22 EU FUEL PULV 23	NA	
5. PM-10	12.8 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU FUEL PULV 22 EU FUEL PULV 23	NA	
6. PM	0.15 pound per 1000 pounds of exhaust gases, calculated on a dry basis <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 19 EU FUEL PULV 20 EU FUEL PULV 21 EU FUEL PULV 22 EU FUEL PULV 23	NA	

**II. FG FUEL HAND Material Use Limits**

NA

**III. FG FUEL HAND Process/Operational Limits**

1., 2., 3. MAP Requirements. An approved MAP (Operations and Maintenance Plan) is in place. Malfunctions are minimized by a scheduled maintenance program. At the time of the inspection all equipment appeared to be operating properly.

**IV. FG FUEL HAND Design Parameters**

1. Minimize emissions from fuel pile, coal blending. Water is used as a dust suppressant. At the time of the inspection we observed the coal tractor scraper transport and deposit coal into the fuel system. No visible emissions were observed.

**V. FG FUEL HAND Testing**

1. The Opacity testing requirement in MI-ROP-B1477-2012a is a PC MACT requirement that is not currently applicable to FG FUEL HAND which will be CISWI subject.
2. PM-10 testing of EU FUEL PULV 19, EU FUEL PULV 20, EU FUEL PULV 21, EU FUEL PULV 22, and EU FUEL PULV 23 is required every 5 years. The most recent test in the AQD District files occurred on 10/03/2010 and demonstrated that each EU FUEL PULV met their respective emission limits at that time. Re-testing of FG FUEL HAND is overdue.

**VI. FG FUEL HAND Monitoring/Recordkeeping**

1. and 2. Visible emissions monitoring required monthly unless no visible emissions observed in 6 consecutive monthly observations then semi-annual monitoring is allowed. If no visible emissions observed in semi-annual observations annual observations are allowed. Records were not requested, similar records for other emission units did not indicate the presence of any visible emissions.
3. Monthly PM10 emission calculations for the fuel pulverizers, provided in an electronic spreadsheet (printout attached) demonstrates compliance with the 1.8 pph and 8.0 tpy PM10 emission limits for EU FUEL PULV 19,20 and 21 and the 2.9 pph and 12.8 tpy emission limits for EU FUEL PULV 22 and 23. In 2015 the highest emissions were 0.46 tons (920 lbs.) at 737 operating hours (1.25 lbs./hr.) for EUPULV23.
4. Fuel pile dust suppressant application records were requested during the inspection and by email on 8/02/16 but have not been provided by Lafarge at the time of this report.

**VII.FG FUEL HAND Reporting**

5. This condition requires daily monitoring and recording of dust collector differential pressure. It is actually a monitoring/recordkeeping condition not a reporting condition. These records were requested during the inspection and by email on 8/02/16 but have not been provided by Lafarge at the time of this report.

**VIII. FG FUEL HAND Stack/Vent Restrictions**

During this inspection the fuel pulverizer stacks were not evaluated for compliance with the diameter and height requirements.

**IX. FG FUEL HAND Other**

This section simply requires the Permittee to comply with the PC MACT.

**FG CIINK SYS ROP MI-ROP-B1477-2012a (12/22/2015)**

The clinker handling system encompasses clinker transport and storage from the clinker coolers to either storage or to FG FINISH. Gypsum, Limestone and CKD can be added to the clinker as needed during this process. As a result, this process consists mainly of conveyors, transfer points, and storage bins and silos, Particulate matter is the air pollutant of concern and emissions are controlled by various dust collectors.

**I. FG CIINK SYS Emissions Limits**

Pollutant	Limit	Time Period/ Operating	Equipment	Emissions	Emissions from
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		Scenario		observed during inspection	Source Recordkeeping/ Testing
1. VE	10 percent opacity <sup>2</sup>	NA	FG CLINKER SYS	No VE	
2. PM	0.02 grain per dry standard cubic foot <sup>2</sup>	NA	FG CLINKER SYS	NA	
3. PM	0.10 pound Per 1,000 pounds of exhaust gases calculated on a dry gas basis <sup>2</sup>	NA	EU CLINK AD/PROP	NA	
4. PM	3.15 pounds per hour <sup>2</sup>	NA	EU CLINK AD/PROP	NA	
5. PM	13.8 tons per year <sup>2</sup>	NA	EU CLINK AD/PROP	NA	

**II. FG CLINK SYS Material Use Limits**

There are no material use limits associated with this flex group.

**III. FG CLINK SYS Process/Operational Limits**

- 1. and 3. A malfunction abatement plan has been submitted and approved.
- 2. No visible emissions were present from the vents of the dust collectors observed during the inspection. Each of the dust collectors is on a preventative maintenance schedule.

**IV. FG CLINK SYS Design Parameters**

1. The fuel pile was not reviewed during this PCE but observations during previous inspection did not indicate any fugitive emissions.

**V. FG CLINK SYS Testing**

1. Initial opacity testing was conducted in 2010 to demonstrate compliance with the PC MACT and has not been conducted since. Lafarge has proposed removal of the 5yr testing requirement in PTI 171-15 as unnecessary due to the 20% opacity limit and visible emissions monitoring.

**VI. FG CLINK SYS Monitoring/Recordkeeping**

- 1. and 2. Visible emissions monitoring required monthly unless no visible emissions observed in 6 consecutive monthly observations then semi-annual monitoring is allowed. If no visible emissions observed in semi-annual observations annual observations are allowed. Records provided by Lafarge indicate that monthly Method 22 observations are taking place. No visible emissions detected in the records I reviewed.
- 3. Monthly PM emission calculations are maintained for each emission unit in FG CLINK SYS and are provided in an electronic spreadsheet (printout attached). Calculations for the equipment in EU CLINK

AD/PROP (highlighted) demonstrate compliance with the 3.15 pph and 13.8 tpy PM emission limits for EUY CLINK AD/PROP. None of the pph emission factors are greater than 3.15 pph and in 2015 the highest 12 mos, rolling emissions were 8.19 tpy (October). This information had to be separated out from the data provided in the spreadsheet and should be isolated and captured on a separate sheet for demonstrating compliance with the emission limits.

#### VII. FG CIINK SYS Reporting

1. – 4. Standard ROP reporting requirements and test plan reporting. No testing during the review period. ROP reporting was reviewed as it was received.

#### VIII. FG CIINK SYS Stack/Vent Restrictions

Compliance with stack/vent parameters was not evaluated during this PCE. Vents appear to meet the specified parameters and no changes have been made.

#### IX. FG CIINK SYS Other

This section simply requires the Permittee to comply with the PC MACT.

#### PCE Summary:

This PCE addresses compliance with MI-ROP-B1477-2012a for Flexible Groups FG KG5 , FG CLINKERSYS and FG FUEL HAND. A site inspection was conducted as well as a records review to determine compliance with these requirements. As a result of this PCE it appears that the emission units, control devices, and monitoring equipment for FG KG5, FG CLINKERSYS, and FG FUEL HAND are operating in compliance with most of the ROP requirements with the exception of:

#### FG KG5

SC VI. 12. And 13. Records of the tons of each alternative fuel used and the percentage of each alternate fuel used were not maintained.

#### FG FUELHAND


SC V.2. PM-10 testing is required every 5 years was last conducted on 10/03/2010 and is overdue.

SC VI.4. Monthly records of water applied to EU BLD FUEL PILE as dust suppressant have not been maintained/provided.

SC VII.5. Records of daily monitoring of the pressure drop across each dust collector associated with FG FUEL HAND SYS were not maintained/provided.

Additional PCE activities for the remaining ROP Flexible Groups will be conducted during 2016 to form a complete assessment of compliance for this Source.

NAME



DATE

8-22-14

SUPERVISOR