UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
AIR AND RADIATION DIVISION
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MEMORANDUM

DATE: NOV 19 2015

SUBJECT: Un-announced Inspection of Holcim, Inc., Chicago, Illinois

FROM: Linda H. Rosen, Environmental Engineer
Air Enforcement and Compliance Assurance Section (IL/IN)
Air Enforcement and Compliance Assurance Branch

THRU: Nathan Frank, Chief
Air Enforcement and Compliance Assurance Section (IL/IN)
Air Enforcement and Compliance Assurance Branch

TO: File

Source Name and Location:

Holcim, Inc.
3020 East 103rd Street
Chicago, Illinois 60617

Date of Inspection: August 27, 2014

Attendees:

Andy Hixson, Plant Manager, Holcim, Inc.
Patrick Miller, Environmental Engineer, EPA
Linda H. Rosen, Environmental Engineer, EPA

Purpose of Inspection

Holcim, Inc. (Holcim) was inspected to determine compliance with Clean Air Act (CAA) requirements.

Regulation Overview

The facility is or could potentially be subject to the following regulations and possibly others:

(1) the Illinois State Implementation Plan (SIP) rules; and

(2) Federally Enforceable State Operating Permit (FESOP) requirements.

Facility Entry

Patrick and I arrived at the facility at about 9:50 am. We entered the main office and Mr. Andy Hixson, Plant Manager, greeted us. Patrick introduced ourselves as inspectors from the EPA and we showed Mr. Hixson our credentials. Patrick explained that we were there to conduct a CAA inspection.

We met in Mr. Hixson's office and we explained that if anything the facility provides is Confidential Business Information (CBI) (e.g., trade secrets), they should let us know. After the inspection, Mr. Hixson sent us an email stating that the copies of the facility process schematics should be marked CBI. These drawings are in my case files on this facility.

Facility and Process Overview

Mr. Hixson asked what prompted the inspection. Patrick explained that the southeast Chicago area is a concern of EPA's. Patrick explained that we would like a process overview, followed by a walk through and then we may look at some records. Patrick said that we would be taking pictures and we would provide the facility with copies before we left.

Mr. Hixson said that the facility grinds blast furnace slag to make concrete. They purchase granulated blast furnace slag from U.S. Steel with whom they have a contract. The slag comes in by truck. At the steel plant, the slag is considered a waste product that is quenched with water. Holcim dries it and grinds it into a fine powder with a consistency similar to flour. The material has hydraulic properties such that when water is added it becomes hard.

Holcim's product, which is called slag cement, is sent out by truck, rail or barge. Their customers are ready mix concrete plants like Ozinga who make concrete and use the product as a supplement for cement. The product makes the concrete stronger and typical applications include bridges. The product also makes the concrete aesthetically pleasing (more white). The brand or trade name of the product is GranCem. Total production in 2014 was about 270,000 tons. In 2013, production was about 215,000 tons. Their best year was 2007, with about 425,000 tons.

The facility has a small stock pile for the incoming slag or sometimes the material goes straight to the hopper. Trucks are tracked daily. About 10 percent more material comes in than what is shipped. They take in about 2,000 tons per day and about 110 trucks. If they dump directly into the hopper, a front end loader helps push the material into the hopper. The size and consistency of the material is similar to beach sand, although sometimes the material can develop lumps. The material is about 10 percent moisture. They facility has a sprinkler system on the stockpile but they don't use it much. The maximum amount of material in the pile (or hopper) is 9,000 tons and they have about 6,000 tons there now. The facility runs all year round and the peak is the summertime.

Since 2009, the facility has run 6 pm to 8:30 am during the week and from 6 pm Friday to Monday morning. They do this to save money on electricity. In July and August, they had to break peak. Therefore during this inspection, none of the plant operations were operating. Some load out was occurring, however, as discussed during the plant inspection section of this report. There are always at least two people on site during production. The facility has about 22 employees.

The trucks bring the granulated slag into the facility to the hopper or, sometimes, directly to the stock pile. The material then comes out of the hopper through a covered conveyor to the shaker screen. The shaker screen is not enclosed but Mr. Hixson claimed there is no dust from this operation. Then, the material goes to the covered conveyor and either to the stock pile and back to the hopper or to the day bin.

All the material has to go through the day bin. After the day bin, the material goes to the weigh feeder and then the shaft dryer. The shaft dryer burns natural gas to heat air to dry the material. A fan draws the hot air and material through to the cyclone. The air then goes to the separator and baghouse, and the material is fed to the pre-grinding roller presses which performs intermediate grinding by crushing the material.

The material leaves the roller presses to the bucket elevator and re-circulates. Once the circuit is full, the overflow material dumps to the finish mill. The finish mill was added in 1996. Mr. Hixson said the addition of the finish mill was the facility's last major equipment addition.

The finish mill consists of a tube that has 300 tons of steel balls in it that tumble and grind the material. They add balls about three to four times per year. Every four years, they do a ball sort where they replace worn out balls.

After the finish mill, the material goes to the bucket elevator and then the separator which rotates and throws out improperly sized particles. The rejected material goes back to the finish mill. The properly sized product goes to the baghouse used to capture the final product and then to via screw conveyor to the silos.

The silos hold 4,500 tons of product each. The silos are low at the end of the week and full at the end of the weekend. From the silos, the product is sent out by truck, rail or barge. According to Mr. Hixson, all the loadouts are equipped with dust collectors.

The barge load out occurs one barge at a time. First, the cover is taken off. Then the load out spout is lowered to the bottom of the barge. As the material empties into the barge, it spreads out. The facility said that barge loading is weather sensitive. It takes about eight hours to load a barge and each barge holds about 1500 tons. They load 1-2 times per week, mostly on the weekdays. Barge loading occurs during the day, not necessarily during the off peak hours. The control on the barge consists of a pulse jet cleaning cartridge system consisting of two cartridge filters.

The load out spout on the truck is equipped with a one cartridge system. Mr. Hixson wasn't sure if the rail load out was equipped with a one cartridge system or a baghouse.

According to Mr. Hixon, there is a large baghouse at the silos. There is a baghouse that draws product through the mill (this is called the mill vent baghouse). There are two nuisance baghouse and a small nuisance baghouse for use when filling the silo. Mr. Hixson said he is not aware of any stack testing having been done on any of these baghouses.

Mr. Hixson said that the facility has a fugitive dust plan. He also said that the facility has received a letter of exemption from the City of Chicago regarding the storage piles. The facility continuously measures the opacity as part of the baghouse alarm system. When the opacity is greater than 10 percent, an alarm goes off. Four baghouses at the facility are equipped with the alarm system and the rest are not. After an alarm sounds, a worker goes out and inspects the baghouse to see if there is a leak. Mr. Hixson said that the facility has been getting false positive alarms. These are spikes in the system that occur when no dust is subsequently found during the follow up inspection.

Plant Inspection

At about 11:05 am, we began watching a safety video in preparation for the plant walk through.

At about 11:25 we started the walk through. We started at the lab. Mr. Hixson explained that the facility samples at the silo for the chemistry of the material (e.g., moisture, compressive strength). The material is also sampled at other points in the process such as after drying.

Next we went out to the railcar loading area. The railcar loading operation consists of two loading spouts; however, only one is used. At this point in time of the inspection, a rail car had just completed being loaded. The hatch was still open and emissions were coming off of the top of the rail car as the material was settling. Photos 1-11 show the railcar loading area. Photos 2, 3, 4, 5, 9 and 10 show particulate matter emissions coming off the top of the railcar. Photos 7 and 8 show the one load out spout that is not used.

We observed the incoming stock pile (Photo 12). Next we saw the conveyor from the hopper to the shaker screen (Photo 13 and 17) and the spout where material would exit to the stock pile after going through the shaker screen (Photos 14 and 18). From the distance we saw the red bucket elevator which takes loads from both silos. The green bucket elevator only loads from silo 1 (Photos 15-16, 19 and 20).

We observed the place where barge loading occurs (Photos 21-22). Barge loading was not occurring during this inspection. The facility can dock only one barge at a time. According to the facility, Holcim has 1/3 of the barge space and KCBX has 2/3 of the barge space.

Next we observed the bottom of the shaft dryer used to dry the material (Photos 23-24). Next, we saw the duct where the final product goes to the final product bin (Photo 25). Photo 26 is an outside photo of the plant.

There is a duct to the rolling presses or finish (ball) mill. The baghouse on the roller presses is monitored. It is a Polycon nuisance baghouse built from 1990 to 1991 and Patrick took a photograph of the particulate matter detector on this baghouse (Photos 27-28).

The separator takes the product to a baghouse and the unacceptable material goes to the finishing mill. Patrick took a photo of the bottom of the cyclone and the cake belt used to feed material to the finishing mill (aka rolling presses). (Photos 29-30). He also took a photograph of the separator (Photos 31-33). I took photographs of the cake chute use to transfer material (Photos 34-35). The cyclone is in the background on photograph 34. Photograph 36 shows the duct between the cyclone and dryer. Photo 37 shows the rotary feeder and photos 38 and 39 show the material chute below the separator.

We then went to the process control building. Mr. Hixson showed us how there was a spike already on the day of the inspection from 7 to 8:00 am for a few minutes. The operator checked it out and there was no problem. Next we saw the conveyor which is used to feed the mill without the rolling presses (Photo 40). This conveyor is rarely used. At the time of the inspection they were fixing a rolling press.

Next we saw the main burner for the dryer (Photo 41) and the auxiliary heaters which are used to keep the lines above dew point (Photo 42). Photo 43 is an inside view of the plant. Next we saw the ball mill or finishing mill (Photo 44). The finishing mill uses steel balls to crush the material. Next we saw the mill vent baghouse (Photos 45-47). The dust material that is collected goes back into the process.

We then left the building and came out to the truck load out area again. A truck had just finished being loaded. The facility ships out material seven days per week, 24 hours per day. The drivers have cards that they used to start up the load out. The material is weighed during the loading. There are two truck loadouts. It takes about 7-8 minutes to load a truck, 45 minutes to load by rail and 8 hours to load by barge.

Finally, we observed the final product. It looks like flour (Photo 48). We ended the plant inspection at about 12:30 p.m.

Inspection Close

Mr. Hixson said he would follow up with his corporate people to determine if the plant drawings were CBI. Mr. Hixson sent us a follow up email after the inspection indicating that the facility wanted to make a CBI claim on the flow diagrams. These flow diagrams are in my case files on this facility. At the close of the inspection, Mr. Hixson also provided us a copy of the baghouse alarm printout from January 12, 2014. This is also in my case files on this facility.

Finally, Mr. Hixson said he would send us copies of the following documents: (1) fugitive dust plan; (2) most recent Federally Enforceable State Operating Permit (FESOP) which was issued in 2009 and expires in 2023; (3) copy of today's baghouse alarm printout from 7 am to 10 am; (4) copy of the City's exemption letter.

We discussed the fact that EPA wanted to observed barge loading and the facility operations when the plant was up and running. We said we would follow up with Mr. Hixson on this matter.

We then departed the facility.

Media Appendix: List and Description of Photographs Taken During Inspection with Attached CD

All photos were taken on August 27, 2014.

Photo No.	Photo Taken By	Description
1-DSCN0076	Linda Rosen	Railcar loading area
2-DSCN0077	Linda Rosen	Railcar loading area; PM emissions from top of railcar
3-DSCN0078	Linda Rosen	Railcar loading area; PM emissions from top of railcar
4-DSCN0079	Linda Rosen	Railcar loading area; PM emissions from top of railcar
5-DSCN0080	Linda Rosen	Railcar loading area; PM emissions from top of railcar
6-DSCN0081	Linda Rosen	Railcar loading area
7-DSCN0082	Linda Rosen	Railcar loading area
8-DSCN0083	Linda Rosen	Railcar loading area
9-DSCN0084	Linda Rosen	Railcar loading area; PM emissions from top of railcar
10-DSCN0085	Linda Rosen	Railcar loading area; PM emissions from top of railcar
11-DSCN0086	Linda Rosen	Railcar loading area
12-DSCN0087	Linda Rosen	Incoming stock pile
13-DSCN0088	Linda Rosen	Conveyor from hopper to shaker screen
14-DSCN0089	Linda Rosen	Spout where material exits to stock pile after shaker screen
15-DSCN0090	Linda Rosen	Red and Green bucket elevators
16-DSCN0091	Linda Rosen	Red and Green bucket elevators
17-DSCN0092	Linda Rosen	Conveyor from hopper to shaker screen
18-DSCN0093	Linda Rosen	Spout where material exits to stock pile after shaker screen
19-DSCN0094	Linda Rosen	Red and Green bucket elevators
20-DSCN0095	Linda Rosen	Red and Green bucket elevators
21-DSCN0096	Linda Rosen	Location of barge loading
22-DSCN0097	Linda Rosen	Location of barge loading
23-DSCN0098	Linda Rosen	Bottom of shaft dryer used to dry material
24-DSCN0099	Linda Rosen	Bottom of shaft dryer used to dry material
25-DSCN0100	Linda Rosen	Duct where final product goes to product bin
26-DSCN0101	Linda Rosen	Outside of plant
27-DSCN0102	Patrick Miller	PM detector on baghouse for roller presses
28-DSCN0103	Patrick Miller	PM detector on baghouse for roller presses
29-DSCN0104	Patrick Miller	Bottom of cyclone; cake Belt to finishing mill
30-DSCN0105	Patrick Miller	Bottom of cyclone; cake Belt to finishing mill
31-DSCN0106	Patrick Miller	Separator
32-DSCN0107	Patrick Miller	Separator
33-DSCN0108	Patrick Miller	Separator
34-DSCN0109	Linda Rosen	Cake chute for material transport; cyclone in background
35-DSCN0110	Linda Rosen	Cake chute for material transport
36-DSCN0111	Linda Rosen	Duct between dryer and cyclone
37-DSCN0112	Linda Rosen	Rotary feeder

38-DSCN0113	Linda Rosen	Chute below separator
39-DSCN0114	Linda Rosen	Chute below separator
40-DSCN0115	Linda Rosen	Conveyor to mill not used often
41-DSCN0116	Linda Rosen	Natural Gas fired shaft dryer
42-DSCN0117	Linda Rosen	Natural gas auxiliary heater
43-DSCN0118	Linda Rosen	Inside plant view
44-DSCN0119	Linda Rosen	Ball (Finishing) Mill
45-DSCN0120	Linda Rosen	Finishing Mill baghouse
46-DSCN0121	Linda Rosen	Finishing Mill baghouse
47-DSCN0122	Linda Rosen	Finishing Mill baghouse
48-DSCN0123	Linda Rosen	Final product