



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604**

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Graymont Western Lime Inc., Green Bay, Wisconsin

FROM: Manojkumar P. Patel, Environmental Engineer
AECAB (MI/WI)

THRU: Sarah Marshall, Section Supervisor
AECAB (MI/WI)

TO: File

BASIC INFORMATION

Facility Name: Graymont Western Lime, Inc.

Facility Location: 137 James Street, Green Bay, Wisconsin 54303

Date of Inspection: August 3 and 4, 2023

EPA Inspector(s):

1. Manojkumar P. Patel, Environmental Engineer

Other Attendees:

1. Edd Tadulan, Plant Manager, Graymont Western Lime, Inc.
2. Charles Clark, Health, Safety, and Environment, Graymont Western Lime, Inc.
3. David Kaiser, Production Supervisor, Graymont Western Lime, Inc.
4. Dan Ulman, Maintenance Supervisor, Graymont Western Lime, Inc.

Contact Email Address: etadulan@graymont.com

Purpose of Inspection: Determine compliance with the Clean Air Act and Wisconsin State Implementation Plan

Facility Type: Hydrated lime manufacturer

Regulations Central to Inspection: Title V Permit Regulations, New Source Performance Standards, and Wisconsin State Implementation Plans

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Arrival Time: 10:00 AM
Departure Time: 4:00 PM

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☐ Provided Small Business Resource Information Sheet
- ☒ Small Business Resource Information Sheet not provided. Reason: Not a Small Business
- ☒ Provided CBI warning to facility

The following information was obtained verbally from the facility personnel unless otherwise noted.

Process Description:

Graymont Western Lime, Inc. (Graymont) operates a lime manufacturing plant at 137 James Street, Green Bay, Wisconsin. Graymont receives limestone from two different quarries in Michigan. The limestone shipping season starts in April and it ends sometime in December. Graymont's lime products are mostly used in the pulp and paper industries, metallurgical industry, industrial chemical processes, construction, and water treatment facilities.

The facility receives limestone from the Michigan quarries in self-unloading boats and stores it in piles on site. Dolomite and High calcium limestones are 2" by 1" in size at the facility. The screening area is enclosed and the upper deck screens limestone at 3" and the lower deck screens limestone at ½" size. The facility uses a hopper and a belt conveyor to transfer the limestone to the top of a preheater. In the preheater, hot gases from the lime kiln are used for preheating the limestone to 1,400 °F before entering the kiln. Graymont's vibrating feeders and rams feed the limestone into the two on-site kilns. The pre-heated limestone travels from the feed end to the burner end and is turned into the quick lime.

The lime falls into a lime cooler, where ambient air is used to cool the lime. The lime is then conveyed to several large storage bins which load trucks, rail cars, and bulk bags for eventual shipment. Exhaust streams from the kilns (which initially pass through the preheater) are sent through two separate baghouses (Kiln #1 baghouse has three bays and each bay consists of 196 bags; Kiln #2 has four bays and each bay consists of 320 bags) prior to discharge to the atmosphere. Some of the pebble lime is used to produce hydrated lime. The exhaust steam from the hydrator is sent through a wet scrubber prior to discharge to the atmosphere.

Both kilns are allowed to use either coal or natural gas. Coal is delivered by truck, dumped into a hopper and conveyed to a 70-ton capacity storage bin. The bin gravity feeds to a variable speed belt conveyor which loads into a pulverizer. Adjusting the silo bin opening

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and belt speed regulate the coal feed. The pulverizer is Raymond Bowl type. Primary heated air feeds to the pulverizer and carries the powdered coal (of size less than 200 mesh) to the lime kiln through a circular pipe. The primary air/coal mixture is ignited from the heat in the lime kiln. Natural gas can be directed through the same pipe.

Some of the lime produced at the plant is passed through a crusher and a hammer mill, where it is turned into fine powder of size less than 200 mesh. The crusher is equipped with a bag type collector for controlling emissions. The powdered quick lime is mixed with water in a pug mill to produce hydrated lime. The hydrator is equipped with a wet scrubber to control particulate emissions.

Final dolomite lime has three different sizes – ¾” plus, 5/8” to 1/8” wide, and 1/8” fine. High calcium lime has two sizes – ¾” x 0 and ¼” x 0.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

EPA was led on a tour of the facility by the facility personnel. Eight percent (8%) excess air is required at the Kiln for the quality lime production. Lime Kiln temperature is approximately at 2200°F. The refractories layered is approximately at 9 inches at the burner zone.

Lime Kiln #1 has a capacity of 300 to 400 tons of stone per day, with a diameter of 10 ft and 150 feet of length. Lime Kiln #1 bag house has 3 bays and 196 bags per bay with the total of 588 bags. Each bag is 61/2 ft in diameter and 143” in height. Each bay has its own pulsing jet system in the baghouse. Last year (2022), 70 ft of refractories were replaced on the discharge end. Baghouse on Bay C was entirely replaced on November 3, 2022.

Lime Kiln #2 has a capacity of 700 tons of stone per day, a diameter of 11 ft, and 170 feet in length. At the inlet of the baghouse, the pressure is reading at -11.6” H₂O and at the outlet of the baghouse, the pressure is reading at -21.6” H₂O, with a net pressure differential of 9.90” H₂O.

Graymont performed a capital project in or around 2020 and upgraded/modified the gearbox on Lime Kiln #1. Graymont spent more than \$350,000 for the Lime Kiln Gearbox upgrades.

The facility has total of 13 baghouses in the process. The glycol system is used for cooling of the main shaft bearings for both lime kilns.

I observed lots of fine particulate of lime dust inside the Hydrating area. I was not able to locate the pressure differential readout on the Baghouse HD-200 located on the rooftop.

The hydrated plant kept the door open and the fugitive particulate were observed in the area. D-36 Baghouse pressure readout was covered with heavy dust buildup and it was difficult to read pressure differential. The facility personnel cleaned the readout thoroughly and I was then able to read 5” of H₂O on the D-36 Baghouse.

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I observed the visible emissions on the stack at Baghouse HD-200. In the product handling area, I observed lime dust build up and the door was kept open.

The Lime Kiln #2 baghouse inlet pressure reading was -11.6" of H₂O and the outlet of the baghouse pressure reading was of -21.6" of H₂O and the net pressure differential was 9.91" of H₂O.

The facility personnel stated that if the lime kiln loses the flame or the coal mill is down then the oxygen levels start increasing.

Photos and/or Videos: were taken during the inspection.

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

- Baghouses bags replacement history

CLOSING CONFERENCE

- ☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- Latest Laboratory Analysis for Lime Stones;
- Baghouses on Lime Kiln #1 and Lime Kiln #2 Operational Manuals;
- Latest Monthly Coal Analysis;
- Copies of Stack test reports for all criteria pollutants;
- Need copies of quarterly preventive maintenance report for Baghouses D-32;
- Air Emissions exceedance from Title V air permit.

DIGITAL SIGNATURES

Patel,
Report Author: Manojkumar Digitally signed by Patel, Manojkumar
Date: 2023.10.02 09:35:09 -05'00'

SARAH
MARSHALL
Section Supervisor: SARAH MARSHALL Digitally signed by SARAH MARSHALL
Date: 2023.10.02 09:58:45 -05'00'

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APPENDICES AND ATTACHMENTS

1. Appendix A: Digital Image Log

Facility Name: Graymont Western Lime, Inc.
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APPENDIX A: DIGITAL IMAGE LOG

1. Inspector Name: Manojkumar P Patel	2. Archival Record Location: CAA Inspection Pics
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Image Number	File Name	Date and Time (incl. Time zone and DST)	Latitude and Longitude	Description of Image
1	P8030246.JPG	2023:08:03 13:35:53		Lime Kilns 1 and 2 Baghouses' sample Bag with Metal Cage (Left is for LK1, Right is for LK2)
2	P8030247.JPG	2023:08:03 13:36:06		Baghouses' Bag's Closer View
3	P8030248.JPG	2023:08:03 13:36:34		Metal Cage Opening for Pulse Jet (from the Top)
4	P8040249.JPG	2023:08:04 09:43:35		Baghouse HD-100
5	P8040250.JPG	2023:08:04 09:43:42		Baghouse HD-100 Closer View
6	P8040251.JPG	2023:08:04 09:43:46		Baghouse HD-100 Pressure Differential 4" of Water Column
7	P8040252.JPG	2023:08:04 09:49:40		HD-200 Baghouse on the Rooftop(No Pressure Differential Readout)
8	P8040253.JPG	2023:08:04 09:52:54		HD-200 Baghouse Control Box
9	P8040254.JPG	2023:08:04 09:53:54		Fine Lime Dust Accumulated on the Floor
10	P8040255.JPG	2023:08:04 09:54:00		Fine Dust Accumulated on the Floor (Duplicate)
11	P8040256.JPG	2023:08:04 09:55:17		Dolomite Limestone Pile View
12	P8040257.JPG	2023:08:04 09:55:22		High Calcium Limestone Pile View
13	P8040258.JPG	2023:08:04 09:56:43		Hydrated Lime Plant Door Open - Fugitive Particles Observed
14	P8040259.JPG	2023:08:04 10:00:59		Limestone Screening Area High Line is for LK1; Lower Line is for LK2
15	P8040260.JPG	2023:08:04 10:02:26		Baghouse D-36
16	P8040261.JPG	2023:08:04 10:05:04		Baghouse D-36 Pressure Differential Readout 5" Water Column
17	P8040262.JPG	2023:08:04 10:11:26		D-37 Baghouse
18	P8040263.JPG	2023:08:04 10:14:31		Baghouse D-37 Readout
19	P8040264.JPG	2023:08:04 10:14:42		Baghouse D-37 Pressure Differential Readout
20	P8040265.JPG	2023:08:04 10:14:50		D-37 Baghouse Manufacturer Information
21	P8040266.JPG	2023:08:04 10:15:23		D 37 Manufacturer Model and Tag

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22	P8040267.JPG	2023:08:04 10:20:52		HD 200 Stack (Hydrating Process) Visible Emissions
23	P8040268.JPG	2023:08:04 10:24:44		D-31 Baghouse
24	P8040269.JPG	2023:08:04 10:24:48		D-31 Baghouse Closer View
25	P8040270.JPG	2023:08:04 10:24:58		D-31 Baghouse Pressure Differential 5" of Water Column
26	P8040271.JPG	2023:08:04 10:34:25		D-32 Baghouse
27	P8040272.JPG	2023:08:04 10:34:39		D-32 Baghouse Closer View
28	P8040273.JPG	2023:08:04 10:39:12		D-32 Product Handling Dust Built up on the door and Door is wide open
29	P8040274.JPG	2023:08:04 10:39:19		D-32 Door Open
30	P8040275.JPG	2023:08:04 10:39:24		Closer View of Lime Dust Build Up at D-32
31	P8040276.JPG	2023:08:04 10:58:02		Coal Mill #1 Coal Prep Area
32	P8040277.JPG	2023:08:04 10:58:16		Coal Mill 2 (Coal Prep Area)
33	P8040278.JPG	2023:08:04 11:01:59		Coal for Lime Kiln 2
34	P8040279.JPG	2023:08:04 11:02:13		Coal Line 2 (Fed into Coal Mill #2)
35	P8040280.JPG	2023:08:04 11:02:16		Coal Line 2 (Closer View)
36	P8040281.JPG	2023:08:04 11:03:45		Coal Dust from Coal Mill #2 to ID Fan Inlet
37	P8040282.JPG	2023:08:04 11:04:02		Coal Dust from ID fan blown into Lime Kiln 2
38	P8040283.JPG	2023:08:04 11:04:21		Discharge End (aka Burner End) Lime Kiln 2
39	P8040284.JPG	2023:08:04 11:04:23		Discharge End (Duplicate Pic)
40	P8040285.JPG	2023:08:04 11:06:22		Lime Kiln 2 Coal Line and Natural gas Line
41	P8040286.JPG	2023:08:04 11:11:54		Lime Kiln 2 Control Room Display
42	P8040287.JPG	2023:08:04 11:12:21		Lime Kiln 2 Baghouse Process Operating Display
43	P8040288.JPG	2023:08:04 11:25:40		Lime Kiln 2 Preheater Operating Display
44	P8040289.JPG	2023:08:04 11:26:59		Lime Kiln 1 Operating Display
45	P8040290.JPG	2023:08:04 11:27:44		Lime Kiln 1 Baghouse Operating Display
46	P8040291.JPG	2023:08:04 11:28:15		Lime Kiln 1 Cooler Operating Display
47	P8040292.JPG	2023:08:04 11:30:30		D-131 Baghouse
48	P8040293.JPG	2023:08:04 11:32:50		D-31 Pressure Differential Readout
49	P8040294.JPG	2023:08:04 11:36:48		Glycol System for Lime Kilns Gear Drive (for cooling)

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50	P8040295.JPG	2023:08:04 11:37:10		Pressure Differential Readout
51	P8040296.JPG	2023:08:04 11:40:27		Glycol System for Gear Cooling
52	P8040297.JPG	2023:08:04 11:41:58		Coal Mill #2 Rejects
53	P8040298.JPG	2023:08:04 11:45:09		D-231 Baghouse
54	P8040299.JPG	2023:08:04 11:50:58		D -231 Baghouse
55	P8040300.JPG	2023:08:04 11:51:26		D-231 Baghouse Pressure Differential Readout
56	P8040301.JPG	2023:08:04 11:52:29		Pressure Readout (<90 PSI) at D-231 Baghouse
57	P8040302.JPG	2023:08:04 11:52:50		Pressure readout
58	P8040303.JPG	2023:08:04 11:54:27		Lime Kiln 2 from the Upper Deck View
59	P8040304.JPG	2023:08:04 11:54:59		Lime Kiln 1 View from the Upper Deck
60	P8040305.JPG	2023:08:04 12:02:47		Baghouse Bay A for Lime Kiln 1
61	P8040306.JPG	2023:08:04 12:03:08		Baghouse Bay B for Lime Kiln 1
62	P8040307.JPG	2023:08:04 12:03:28		Baghouse Bay C for Lime Kiln 1
63	P8040308.JPG	2023:08:04 12:04:16		Lime Kiln 1 Stack
64	P8040309.JPG	2023:08:04 12:08:02		LK1 Baghouse Sideview
65	P8040310.JPG	2023:08:04 12:08:27		Lime Kiln 1 Preheater Building
66	P8040311.JPG	2023:08:04 12:09:03		Preheater Building (Duplicate)
67	P8040312.JPG	2023:08:04 12:09:06		Preheater Building (Duplicate)
68	P8040313.JPG	2023:08:04 12:10:12		Truck Loadout Silos with Baghouse on the Top
69	P8040314.JPG	2023:08:04 12:10:17		Baghouse on the Soils
70	P8040315.JPG	2023:08:04 12:11:21		Lime Kiln 2 Preheater
71	P8040316.JPG	2023:08:04 12:11:23		
72	P8040317.JPG	2023:08:04 12:12:29		Lime Kiln 2 Baghouse
73	P8040318.JPG	2023:08:04 12:12:30		Lime Kiln 2 Baghouse Inlet
74	P8040319.JPG	2023:08:04 12:13:47		Lime Kiln 2 Baghouse Raws Information
75	P8040320.JPG	2023:08:04 12:18:59		D 289 Baghouse
76	P8040321.JPG	2023:08:04 12:19:00		D 289 Display
77	P8040322.JPG	2023:08:04 12:19:15		D 289 Display (Duplicate)
78	P8040323.JPG	2023:08:04 12:19:25		D 289 Pressure Differential Readout