

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection**

A390072151

FACILITY: Martin Marietta Magnesia Specialties, LLC		SRN / ID: A3900
LOCATION: 1800 Eastlake Rd., MANISTEE		DISTRICT: Cadillac
CITY: MANISTEE		COUNTY: MANISTEE
CONTACT: Zac Chisholm , EHS Manager (2024)		ACTIVITY DATE: 10/26/2023
STAFF: Lindsey Wells	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: on-site inspection for FY24. Records review will be addressed in a separate report. -LW;		
RESOLVED COMPLAINTS:		

On Thursday, October 26, 2023, Lindsey Wells and Rob Dickman of the Department of Environment, Great Lakes, and Energy (EGLE) – Air Quality Division, conducted a scheduled field inspection and records review of Martin Marietta Magnesia Specialties (SRN: A3900), herein referred to as Martin Marietta or MM, located at 1800 Eastlake Road in Manistee, Manistee County, Michigan. The field inspection and records review were conducted to determine compliance with renewable operating permit MI-ROP-A3900-2021a and permit to install 53-22. AQD staff were accompanied by Zac Chisholm of Martin Marietta during the inspection.

Summary:

The on-site inspection indicates that the facility is in general compliance with those conditions of MI-ROP-A3900-2021a that were reviewed at the time of the site inspection. No further action is recommended at this time. Records review will be addressed in a separate report.

On-site Inspection:

During the field inspection weather conditions were overcast with slight winds from the southwest, light drizzle, temperature 61 degrees Fahrenheit, humidity 92%, and barometric pressure 29.89.

The facility manufactures magnesium oxide and magnesium hydroxide products for use in various industrial applications. Magnesium hydroxide is manufactured in the “Hydrate” area by an exothermic reaction of natural brine (from wells in the Filer Sandstone formation) and dolomitic lime in separate reactor systems. The slurries from each of the reactor systems flows through a series of settling basins (thickeners and clarifiers) where magnesium oxide settles. The slurry from the thickener’s underflow is pumped to vacuum drum filters, where it is washed and dewatered. Slurry is pumped to storage tanks prior to being transferred to either the #3 rotary kiln (#3 Packhouse area) or Herreshoff furnaces and shaft kilns in FGPERICLASEPLANT, depending on the type of product desired. A rotary kiln (EURK3) and multi-hearth Herreshoff furnaces (EUHERFUR1, 2, and 3) are used to remove free and molecularly bound water from magnesium hydroxide to form different grades of magnesium oxide. Some of the magnesium oxide is processed further in vertical shaft kilns (EUSHAFTKILN2 and EUSHAFTKILN3) to generate periclase for use in refractory brick. The facility also has separate pumping, drying, and milling systems for magnesium hydroxide stabilized slurries and dry powders.

There are many material handling, transfer, storage, packaging, and loading operations located throughout the plant (primarily in the packhouse areas), that have particulate matter (PM) emissions that are controlled by many individual dust collectors. The MM plant operates 24 hours per day and 7 days per week although not all processes or equipment are always operating.

After check-in at the security building, AQD staff proceeded to the administration building where we were met by Zac Chisholm for a pre-inspection briefing. Zac provided a process overview using maps and engineering diagrams, and communicated that recently, Martin Marietta has transitioned from continuous production to operational campaigns for some of their products due to changes in product demand. AQD also requested clarification on the configuration of emission units and control device pathways for the Herreshoff furnaces and shaft kilns, identified in the permit as FGPERICLASEPLNT. Zac detailed that #1 Herreshoff electrostatic precipitator (HF-ESP1) controls emissions from only #1 Herreshoff furnace (EUHERRFUR1), and that #1 Herreshoff emissions are not ducted to any other control devices; #2 Herreshoff ESP (HF-ESP2) is ducted to control emissions from both the #2 shaft kiln (EUSHAFTKILN2) and the #2 Herreshoff furnace (EUHERRFUR2), but it is not possible to meet the 0.2 lb particulate/1000 lbs exhaust gas emission limit (SC1.2 in FGPERICLASEPLNT) under this operating scenario. Instead, #2 shaft kiln emissions are always routed to #3 Herreshoff ESP (HF-ESP3). #3 ESP is larger in particulate control capacity than #2 ESP and #1 ESP. Historically, all of the light-burn (LB) product was produced using EUHERRFUR1. The capability to produce LB was expanded to EUHERRFUR2, then EUHERRFUR3 at later dates for operational flexibility. Previously, product demand resulted in EUHERRFUR3 being dedicated to Periclase production. EUHERRFUR2 and EUHERRFUR3 were not operating due to low product demand and EURK3 was in maintenance outage at the time of this inspection.

AQD staff then proceeded on a site walkthrough with Zac Chisholm. Staff noted ROP required readings from those control devices which were operating at the time of the inspection. Field readings are presented in the table below and conform to the ranges in the malfunction abatement plan (MAP).

Field readings from October 26, 2023 On-site Inspection:

Readings and ranges are differential pressure in inches water unless noted otherwise

Gauge Read	Control Device (Plant Name)	ROP Identifier	Associated EU	Site Location	MAP Range
0.5"	South Raymond Mill DC	25-0769	EUNSMILLS FGGROUP-A	#4 packhouse	1-10
2"	6 Track #2 loadout DC	25-0828	EUCHANGE-LS FGGROUP-A	#4 packhouse	1-8
2"	North Raymond Mill DC	PJBH 25-0770	EUNSMILLS FGGROUPA	#4 packhouse	1-10
7"	Hardburn change bin DC	25-0768	EUCHANGE-LS	#4 packhouse	0.5-10
-3.45"	Top of Tower, HCL scrubber	Packed-bed water fume scrubber	EUHCLTANK	HCl Acid Tank	-4-(+3)
4 GPM	HCL scrubber	See above	EUHCLTANK	HCl Acid Tank	None listed
4"	#1 LB DC	25-1067	EU1+2LB-DC	Periclase plant	0.5-6
0.9"	#2 LB DC	25-1068	EU1+2LB-DC	Periclase plant	0.5-6
1.68"	D3 Dryer BH	25-1111	EUDRYMAGDRYER	FGDRYER&MILL	1-12
2.9"	D3 MILL BAGHOUSE	25-2222	EUDRYMAGMILL	FGDRYER&MILL	1-12

During the site walk through, Zac pointed out the D4 mill stack which is horizontal and confirmed the D4 dryer stack is 135' in height.

Staff obtained the following readings from the EUHERRFUR1 ESP panel during the walkthrough of the periclase plant:

Parameter	ESP Field A	ESP Field B	ESP Field C
Voltage	220	215	235
Spark	0	0	0
Primary/Secondary (A)	87 / 0.42	88 / 0.44	88 / 0.54
Total Power (kW)	18.4	17.9	19.7
Other notes	Over amp limit illuminated	Over amp and theta angle illuminated	

After completing the site walkthrough, staff had a debrief discussion in Zac's office prior to departure. Records review for this source will be evaluated and addressed in a separate report. No further action recommended at this time.

NAME Lindsay Wells

DATE 7-30-24

SUPERVISOR Shane Nixon