

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

N280248681

FACILITY: Leco Corporation		SRN / ID: N2802
LOCATION: 1920 Yore Avenue, BENTON HARBOR		DISTRICT: Kalamazoo
CITY: BENTON HARBOR		COUNTY: BERRIEN
CONTACT: David Visser, Maintenance Supervisor Ceramics		ACTIVITY DATE: 04/24/2019
STAFF: Matthew Deskins	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced Scheduled Inspection		
RESOLVED COMPLAINTS:		

On April 24, 2019 AQD Staff (Matt Deskins) went to conduct an unannounced scheduled inspection of the LECO Corporation (facility) located in Benton Harbor, Berrien County. According to district file information, the facility is a minor source that has two active air permits (PTI Nos. 1157-90A and 75-07) issued to them by the AQD. The facility manufactures ceramic items for laboratory use and for the steel/metal industry and the two permits basically contain opacity conditions related to a couple of their operations. The intent of staff's inspection was to determine compliance with the two aforementioned permits and any other state and/or federal air regulations. Staff departed for the facility at approximately 9:00 a.m.

Staff arrived at the facility at approximately 10:10 a.m. Prior to entering the office area, staff took time to see if any visible emissions could be observed coming from the facility and none were noted. Staff then proceeded into the reception area. Once there, staff signed in and introduced them self to the receptionist (Brett) and stated the purpose of the visit. She then contacted David Visser (Maintenance Supervisor of Ceramics) who works at this location as well as Tracy Tibbitts (Environmental Manager?) who works out of their St. Joseph facility. Staff then spoke directly with Tracy and she asked staff if they were in the reception area to which staff replied that they were. Unfortunately, there ended up being some confusion because Tracy thought staff was at her location and by the time she figured out where staff actually was, she arrived at the Benton Harbor location at approximately 11:25 a.m. Fortunately, staff was assisted by David who said he could show staff around and answer any questions regarding operations. Staff said that would be great and before viewing equipment asked if they had a conference room where staff could go over current operations first. David said there was and let staff to it and the following is a summary of staff's conversation with David and facility operations.

According to David, the facility employs approximately 50 people and operates 24/7, 365 days a year. He said that the kilns run almost continuously. He said that business has been steady and that they still manufacture ceramic products for use in labs and the steel and metal industry. Staff then asked if any facility operations might have changed since staff's last inspection back in 2007 and Dave said he wasn't sure since he wasn't employed there at that time. Staff then went over the previous inspection report with David to get up to date information on things. The following is what staff noted.

Building No.1 – This was also known as Investment Castings in the past and is where the facility manufactures Ceramic Crucibles and Ladles that can handle temperatures 3200 degrees Fahrenheit for the steel and metal industries. The process starts by weighing out the ceramic mixture which consists of sand, alumina, silica, calcium, etc. Except for the sand, David said all the other materials are shipped to the facility in 50 pound bags. Once the material has been weighted, it is then loaded into one of three mixers (Mullers, Landcaster, or Erich). The Landcaster Mixer can both stir and pulverize while the Mullers and Eric are just stirring mixers. These units are exempt from permits under Rule 282(l)(vi) since the emissions from the mixing operations are all controlled by a Torrit Dust Collector which is vented inside the building. Once the mixing operation has concluded, the ceramic material is basically a white paste that is put into plaster molds. This can be done with either their refractory press (LAEIS 1250) or by a vibrating table that shakes the paste down into the molds to ensure no bubbles are present. Once the ceramic mixture is in the mold, it then will go into a natural gas fired drying oven to partly cure and to remove the moisture from the molds. The oven is set at around 200 degrees Fahrenheit and they operate it every night for 12 hours. This oven is exempt from permits under Rule 281(e). Once this step is complete, the ceramic crucibles and ladles are removed from the molds and will go into one of two kilns for the final curing process. The kilns are exempt from permits under Rule 282(2)(a)(iii). There is also cold cleaner (parts washer) in this area that is rented from and serviced by Safety Kleen. It had its lid closed and instructions posted.

Sand Magnification Process – This process was once housed in Building No. 1 but is now in a separate building called Building 4. The facility receives a tanker filled with 40,000 pounds of sand each month that is used in the ceramic making process. The tanker is unloaded by pumping the sand into a silo for storage. Prior to being able

to use the sand, it is blown through piping to a magnification process located inside the building that is equipped with rare earth metals (magnets). The rare earth magnets are used to collect any magnetic materials that might be in the sand. These materials, such as iron compounds, have to be removed so they don't blemish the ceramic finish in the final product. The sand is then collected in bags and distributed throughout the facility to the various mixing operations. The collected materials are disposed of in the trash. The magnification process is controlled by a Torrit dust collector that vents inside and would appear to be exempt from permitting.

Maintenance Area – This had previously been referred to as Building 2. This building consists of their warehouse area where they store all their supplies and raw materials. There is also a Blanchard Wet Grinder in this area that vents inside which is used to grind down molds that have a really strict tolerance required. The grinder would be exempt under Rule 282(l)(vi). There is still a cold cleaner (parts washer) located here that is also rented from and serviced by Safety Kleen. It had its lid closed and instructions posted.

Building No. 3 – This area houses several operations. The first are two vacuum pumps and four mixers. The process done here is to manufacture refractory grade ceramic products for the steel industry and involves the use of alumina silica. The first step in the process involves paraffin wax and it is used as a binder because the alumina silica/sand composition is so fine. The wax is melted by a boiler rated at 50 hp and the boiler is exempt from permits under Rule 282(2)(a). The alumina silica and sand then get added to the melted wax prior to the mixing process which is done by the two vacuum pumps and these operations are controlled by Torrit dust collector that exhausts inside the building. This process is also exempt from permits under Rule 282(l)(vi). After mixing is complete, the ceramic mixture is then loaded into vats by an overhead crane system. The material will then get poured into one of 5 injection machines (3 are currently in production use and 2 are slated to be scrapped) that will compress it into molds. The molds are then water cooled. After cooling, the parts are taken out of the molds and they need to have the wax taken out of them and the facility has four natural gas fired drying ovens for doing this. The parts are first put into small steel drums which then has clay particles (clay beads) added to it and the clay absorbs the wax once the parts get heated up. Once this process is done, the steel drum is taken over to a vacuum system where the clay gets vacuumed out for reuse. There is also a heated power washing booth next to the ceramic storage vats that is used for washing various equipment that might get ceramic material dried on it.

Building No. 3 also contains three ceramic kilns that are used for curing the ceramic parts. All of the units are NuTec Bickley but only the two are used with the third slated to be scrapped this year. The two in use are rated at 6 million/btu/hr and are exempt from needing a permit under Rule 282(2)(a)(iii). They have an operating range up to 2850 degrees Fahrenheit.

Building No. 3 also contains another mixing operation that consists of two Mullers and a Erich mixer that are controlled by a brand new dust collection system equipped with HEPA filters as a secondary control before exhausting back inside the building. The mixers here are in their own room that is under negative pressure. The process done here is for the manufacturing of small crucibles made of either alumina silica or zircon. Once the materials are mixed, they are poured into crucible molds which are then stacked onto a cart that will go through a tunnel kiln. There are currently two tunnel kilns located here but the older one is slated to be scrapped out. The tunnel kiln in use operates 24 hours a day and one cart will go through approximately every 90 minutes. Located near the tunnel kiln is an Elevator (Periodic) Kiln that is used periodically for curing really small parts. The tunnel kiln is capable of operating at 3150 degrees Fahrenheit if necessary with the use of liquid oxygen enhancement. These kilns were either grandfathered in or met the Rule 282(2)(a)(iii) permit exemption. The third and last cold cleaner (parts washer) is located here. As with the previous two, it is rented and serviced by Safety Kleen. It has its lid closed and instructions posted.

Lastly, Building No. 3 contains a Fiber Operation. In this process, chopped ceramic fiber is added to vats and mixed with colidal silica and water. Once it is mixed, the ceramic mixture is transferred into a tank. Vacuum is then used to pump the mixture from the tank into molds of various shapes and sizes. Once in the molds, they will be placed in a drying oven to drive off any moisture. Once dried, the ceramic parts are removed from the molds and take to the machining area where employees will cut and shape the part until it meets customer specifications. These processes are controlled by a dust collector that vents outside. These operations are exempt from permitting under Rule 285(l)(vi)(c).

Lab Area - This is a small room located off of Building 3 where they do QA/QC on the ceramic parts.

After going over all the current operations at the facility in the conference room, staff then went on a tour of the facility with David to verify all the above equipment was present along with the described operations/processes. It was toward the end of the tour that Tracy arrived at around 11:25 a.m. as mentioned earlier. After the facility

tour, staff proceeded back to the conference room with both David and Tracy to review records. The following are the Special Conditions of PTI Nos. 1157-90A and 75-07 and staff's comments regarding them.

SPECIAL CONDITIONS PTI No. 1157-90A

13. There shall be no visible emissions from the DO-1 and DO-2 ceramic ovens.

AQD Comment: Appears to be in Compliance. Staff did not observe and VEs from the ovens.

14. The exhaust gases from the DO-1 ceramic oven shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 8 inches at an exit point not less than 36 feet above ground level.

AQD Comment: Appears to be in Compliance.

15. The exhaust gases from the DO-2 ceramic oven shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 10 inches at an exit point not less than 35 feet above ground level.

AQD Comment: Appears to be in Compliance.

SPECIAL CONDITIONS PTI No. 75-07

Emission Unit Identification

Emission Unit ID	Emission Unit Description	Stack Identification
DeWaxOven1	An 800,000 BTU per hour natural gas fired dewax oven.	SVOvenStack1
DeWaxOven2	An 800,000 BTU per hour natural gas fired dewax oven.	SVOvenStack2
DeWaxOven3	A 1,500,000 BTU per hour natural gas fired dewax oven.	SVOvenStack3
DeWaxOven4	A 1,500,000 BTU per hour natural gas fired dewax oven.	SVOvenStack4
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

Flexible Group Identification

Flexible Group ID	Emission Units Included in Flexible Group	Stack Identification
FG-DeWaxOvens	DeWaxOven1	SVOvenStack1
	DeWaxOven2	SVOvenStack2
	DeWaxOven3	SVOvenStack3
	DeWaxOven4	SVOvenStack4

The following conditions apply to: FG-DeWaxOvens

Visible Emission Limits

1.1 Visible emissions from each oven portion of FG-DeWaxOvens shall not exceed a six-minute average of 10 percent opacity. (R 336.1301, R 336.1303, R 336.2802)

AQD Comment: Appears to be in Compliance. No documented opacity has ever been observed.

Monitoring

1.2 The permittee shall perform visible emission observations at least once each calendar month on each oven portion of FG-DeWaxOvens using Federal Reference Test Method 9 (40 CFR Part 60, Appendix A). A certified reader shall perform each reading. If excessive visible emissions are observed, the permittee shall implement the following procedures:

- a) Immediately cease using the ovens which have the excessive visible emissions;
- b) Determine the cause of the excessive visible emissions within four hours of discovery;
- c) Identify and implement corrective measures to reduce/eliminate the excessive visible emissions within eight hours. (R 336.1301, R 336.1303)

AQD Comment: Staff will consider them to be in Compliance. The readings are being done monthly as required and no VEs have ever been documented, however; the readings for the past couple years weren't being conducted by a certified reader. Staff will not send them a violation notice but will require that they submit a PTI application to modify their permit to remove that it has to be done by a certified reader.

Recordkeeping/Reporting/Notification

1.3 The permittee shall keep, in a satisfactory manner, records of all visible emission readings for each oven portion of FG-DeWaxOvens. At a minimum, records shall include the date, time, name of observer/reader, whether the reader is certified, and status of visible emissions. The permittee shall keep all records on file at the facility for a period of at least five years and make them available to the Department upon request. (R 336.1301, R 336.1303)

AQD Comment: Appears to be in Compliance. The facility uses the EPA Method 9 form for conducting the monthly VE readings.

INSPECTION SUMMARY: Staff will consider them to be in COMPLIANCE with PTI Nos. 1157-90A and 75-07 at the present time. However, staff will require that they modify PTI No. 75-07 to remove the requirement that VE readings be done by a Certified Reader. Staff departed the facility at approximately 12:15 p.m.

NAME Matt Darkin

DATE 4-26-19

SUPERVISOR RIL 4/29/19