AIR COMPLIANCE INSPECTION REPORT

U.S. Environmental Protection Agency
Region 7 Enforcement and Compliance Assurance Division

Clarios, LLC
2015 Fernwood Ave
Red Oak, Iowa 51566

TELEPHONE NUMBER: (712) 623-6200

FRS PLANT I.D.: 110020518821

Inspection Date: December 14, 2021

INTRODUCTION

At the request of the U.S. Environmental Protection Agency (EPA), Region 7, Enforcement and Compliance Assurance Division's Air Branch, Scott Postma and I conducted an unannounced, Clean Air Act (CAA), partial compliance evaluation inspection at Clarios LLC in Red Oak, Iowa on December 14, 2021, pursuant to Section 114 of the Act, as amended. This narrative report and attachments present the findings and observations made during the CAA inspection.

PARTICIPANTS

Clarios, LLC.:
Jason Goltz, Plant Manager – Jason.a.goltz@clarios.com
Beth Beeson, EHS Coordinator
Melissa Bitter, EHS Cluster Manager

U.S. Environmental Protection Agency:
Luke Rodriguez, Life Scientist (Report Author)
Scott Postma, Environmental Engineer

INSPECTION PROCEDURES

Mr. Postma and I arrived outside Clarios at approximately 9:40 am. We conducted off-site observations of the surrounding area, the facility grounds and the various vents and stacks. We did not observe any dust leaving the facility grounds nor any visible emissions from any stacks or vents. We entered the facility shortly afterwards and were directed to the office of the Plant Manager, Mr. Goltz. In attendance from Clarios were Mr. Jason Goltz, Mrs. Beth Beeson, the on-site Environment, Health and Safety (EHS) Coordinator, and Mrs. Mellissa Bitter by telephone, the EHS Cluster Manager. Mr. Postma presented his EPA credentials. I informed the facility representatives that we would be conducting a CAA inspection to review the facility's

equipment, processes and various selected permit conditions relevant to establishing whether the facility was subject to certain federal regulations under the authority of section 114 of the CAA. I described the framework of the inspection, including that it would start with an introductory meeting followed by questions about the facility, a walk-through, a review of records, and conclude with a closing conference. I informed Mr. Goltz of the facility's right to claim confidential business information (CBI).

After this initial conference, Mrs. Bitter informed Mr. Goltz and Mrs. Beeson that she would be available for questions but was otherwise engaged that morning and left. We began the inspection by asking Mr. Goltz and Mrs. Beeson to thoroughly outline the equipment, control equipment, processes and products at the facility. We discussed the facility's operations as well as site safety and areas I wished to inspect. During this meeting, I requested and received information and diagrams relevant to the CAA (see list of appendices for more information). Next, we conducted a walkthrough to look at the equipment previously identified. During the walkthrough, Mr. Postma collected images with a digital camera at my request. A photo log including a description of each photo is attached to this report (Attachment 1) and the photos are included as (Attachment 9.)

After the facility walkthrough, we discussed additional questions about the equipment and process. Mrs. Beeson called Mrs. Bitter to explain the calculation methodology for fugitive lead emissions and to answer several clarifying questions.

Once these questions were answered to our satisfaction, I conducted a closing conference and discussed my findings with the facility. At the closing conference, Mr. Goltz indicated that none of the information or documents provided or photographs taken would be considered Confidential Business Information. He signed and we provided him a copy of the Confidentiality Notice (Attachment 2). Mr. Goltz also signed the Receipt for Documents and Samples form at this time (Attachment 3). I did not collect samples for laboratory analysis or conduct measurements with handheld equipment during the inspection. We obtained background information and data pertaining to the facility from the Iowa Department of Natural Resources' (IDNR) and the EPA's files.

FACILITY DESCRIPTION

Clarios in Red Oak, Iowa operates a facility which produces lead grids to be used in the production of various types of batteries. Mr. Goltz called his facility a "component plant" which is the name used internally for the facilities which separately manufacture the components that will ultimately be assembled into a battery at a separate location. Mr. Goltz indicated that many of the grids produced at the Red Oak facility are shipped to the Clarios facility in St. Joseph, Missouri to be assembled into the battery casing.

A process flow diagram provided by the facility is included as an attachment to this report (Attachment 4). The Clarios facility consists of five identical process lines. The process is continuous and is limited by the melting of the lead in the melt pot. Each pot has a capacity of 120,000 pounds (lb(s)) and the furnaces operate between 850 degrees and 900 degrees Fahrenheit (F°). The lead comes in 2,000 lb. blocks called "hogs" as seen in image 1 (Attachment 9). There are additional smaller blocks of tin used to alter the rigidity of the grids depending on the specific application of the grid being produced. These tin blocks are 200 lbs.

and are called “pigs.” During the melting process, lead oxide is naturally produced through combustion. This powder is removed from the melted lead by transfer to the dross barrel. This dross, consisting exclusively of lead oxide powder, is captured in super sacks that are returned to the lead supplier for recycling. The lead oxide is weighed and shipped back intermittently along with the lead contaminated filters from the ventilation control system which will be detailed later in this document. The entire furnace is enclosed and under negative pressure, as seen in image 2 (Attachment 9). The dross barrel is also enclosed, as seen in image 6 (Attachment 9).

After the lead is melted to a liquid state, it enters the casting section where it flows into thin sheets and is cooled back to a stable temperature. There is no additional processing of the lead to alter it beyond the addition of tin. Mr. Goltz said that the lead is not chemically reduced nor is there a change in purity at any point in the process. The casting section is not entirely enclosed but negative pressure hoods are positioned over the two drop points in this section. Post casting section, there are no more direct vent hoods anywhere in the process as the lead is solid from this point on and assumed to have no lead emissions. From the casting process, the lead enters the mill where it is rolled to the required thickness for the battery grid being produced. From there, the lead sheets are stamped into the grid shape. Stamping scrap is returned to the furnace as seen in image 7 (Attachment 9). The stamped grids are then cured for 6-8 hours in the curing ovens.

After the grids are cured, they are shipped off-site. Mr. Goltz estimated that the facility receives and ships out 12 trucks per day of operation. The entire facility was composed of paved roadways. There are three shipping and three receiving bays.

The entire facility is under negative pressure. Fans pull air through the facility and out the uncontrolled roof vents. The furnace, dross/recovery barrel and casting process are all controlled by negative draft vent hoods which direct the air to the filtration system. The filtration system includes three stages; paper, a filter Mr. Goltz referred to as a 95% filter and a HEPA filter. Each section of the filtration system has its own magnehelic pressure gauge. The magnehelic gauges appeared to be operating and each showed a non-zero pressure differential. There is a separate filter system for each process line; five total filtration systems each consisting of the three different filters. HEPA filter specification pages from the manufacturer are included as an attachment to this report (Attachment 5). The specification pages indicate that the filters are certified to meet a control rate of 99.99%. A hand-drawn schematic outlining the control system is included as an attachment to this report (Attachment 6).

FINDINGS AND OBSERVATIONS

There is an array of Federal regulations which apply to facilities involved in the handling and processing of lead (Pb), including standards for lead processing, smelting and battery production facilities. For example, in the code of federal regulations 40 CFR Part 60, Subpart KK and 40 CFR Part 63, Subpart PPPPPP are applicable to those facilities engaged in the production of lead acid batteries. The definition of a “Lead-Acid Battery Manufacturing Plant” at 40 CFR Part 60, Subpart KK is any plant that *produces* a storage battery using lead and lead compounds for the plates and sulfuric acid for the electrolyte. As determined by Clarios and confirmed by IDNR staff in a 2009 letter; the Clarios Red Oak, Iowa facility does not produce a lead acid battery and

is therefore not a lead acid battery manufacturing plant and therefore not subject to 40 CFR Part 60, Subpart KK or 40 CFR Part 63 Subpart PPPPPP.

Grid casting, among other activities, at a lead-acid battery manufacturing plant is specifically identified at 40 CFR Part 63, Subpart PPPPPP. While this facility is a 'grid casting facility' for the casting of grids used in battery manufacturing as defined in 40 CFR Part 60 Subpart KK, it is not subject to the standards and requirements applicable to grid casting processes of 40 CFR Part 63, Subpart PPPPPP because it is not a lead acid batter manufacturing plant, as previously noted.

This inspection was conducted to determine whether the activities and equipment as described by Clarios in its correspondence with, and permit applications submitted to, IDNR were accurately represented and whether those activities and equipment might constitute regulated processes under the these or other lead-related regulations such as the regulations for primary and secondary lead smelters (e.g., 40 CFR Part 63 Subparts TTT X). In addition, we attempted to determine whether lead emissions were adequately estimated for the purposes of Major Source categorization. Below, the applicability of each regulation and the various evidence concerning that applicability will be addressed, followed by the methodology the facility uses for calculating stack and fugitive lead emissions and finally some general comments on the state of the facility and the likelihood of uncaptured or unaccounted for fugitive lead emissions.

Throughout this section, the emission source or standard will be **bolded** and the inspection findings will be in regular text. The inspection guide contains my observations (Attachment 10).

40 CFR Part 63, Subpart PPPPPP & 40 CFR Part 60 Subpart, KK

These regulations apply to owners or operators of lead acid battery manufacturing plants that are also area sources of hazardous air pollutant (HAP) emissions [63.11421(a)]. Clarios was issued several permits which limit the facility wide single HAP emissions to less than 10 tons and combined HAP emissions to less than 25 tons per year. During my tour of the facility, I saw no evidence that any product besides lead grids were produced at the facility.

40 CFR Part 63, Subpart PPPPPP requires that a facility meet an emission limit for lead of 0.40 milligram of lead per dry standard cubic meter of exhaust (0.000175 gr/dscf) as determined by EPA regulatory test Method 12. Although not subject to the testing requirement in 40 CFR Part 63, Subpart PPPPPP, Clarios completes a Method 12 test from one of its production lines every five years. This test is performed to meet the "Boss Standards" which is the highest rating in an internal rating system which grades facilities according to certain criteria including cleanliness and environmental performance. The most recent test was conducted in 2019, but not submitted to IDNR or EPA Region 7. I requested and received the results summary for this test (Attachment 7). The Method 12 test determined that the emission rate from Line 5 was 0.017 milligram of lead per dry standard cubic meter of exhaust. Additionally, Subpart PPPPPP requires that a facility which is using a HEPA filter use a pressure drop monitoring device and record the pressure drop at least once per week. Clarios has a pressure drop monitoring device set up on each of the fifteen total filters at the facility and has a maintenance contract with a third party who visits the facility weekly and records the pressure drop for each filter. When this pressure drop exceeds a designated value of inches of water, the filter is replaced. The results of the pressure drop reading are sent to Mrs. Beeson on a monthly basis. She keeps these in a

spread sheet that color flags any high result and verifies that the contractor has changed the filter as required. These lead contaminated filters are then shipped back intermittently to the facility's lead suppler. The filters are weighed but no attempt is made to determine the weight of the lead separately from the contaminated filters as a whole. Shipping manifests document the number of filters shipped and the total weight of the shipment. The facility is not currently conducting visible emissions on the stacks. Mrs. Beeson said that there are almost never visible emissions unless there is a fire in the furnace area.

In summary, even though not subject to 40 CFR Part 63, Subpart PPPPPP, Clarios has implemented many of the requirements and has conducted testing to demonstrate an emission rate lower than the emission limitation in Subpart PPPPPP for grid casting facilities.

40 CFR 63 Subpart TTT

The provisions of 40 CFR Part 63, Subpart TTT apply to any facility engaged in producing lead metal from ore concentrates [63.1541(a)]. During the course of my inspection, I saw no evidence that any raw materials were in use besides the lead and tin blocks. The lead was already lead metal and was labeled so by a third-party shipping label. There were no additional furnaces which might be put to this use. All equipment in the building was in service of the melting and grid casting lines.

40 CFR Part 63, Subpart X

The provisions of 40 CFR Part 63, Supbart X apply to secondary lead smelters. Per the regulation, "***Secondary lead smelter*** means any facility at which lead-bearing scrap material, primarily, but not limited to, lead-acid batteries, is recycled into elemental lead or lead alloys by smelting." [63.542]

Mr. Goltz said that the only source of lead used in the process are the pure lead block "hogs". The shipping tags are visible but not readable in image 1 in (Attachment 9), but the tags indicated that the material was elemental lead. These appeared to have been made specifically for this purpose and I saw no indication that these blocks were "lead-bearing scrap material" or that there was any additional source of lead which was used in the furnace. Lead stamping scrap was recycled immediately after the stamping process back to the furnace for remelting.

Lead Emissions – Stack and Fugitive

The facility is required to submit an emission inventory every 3rd year with the most recent being in 2020. I reviewed the 2020 emission inventory submittal on site. In 2020, Clarios reported 61 tons of volatile organic compound (VOC) emissions and 0.0199 tons of Lead emissions. The VOC emissions are the result of a lubricating oil used in the stamping process burning off during stamping and in the curing oven. This oil is the only solvent in use at the facility and is the reason the facility required a permit condition to limit it to area source thresholds for VOC. These permit conditions are located in several permits but are also included as a facility wide requirement for Permit Number 10-A-308-S1 Condition #5. This solvent is limited to 6.5 lbs/gallon of VOC and 0.62 lbs/gallon of single HAP. The solvent used is Renoform SVO, a Fuchs product. A review of the safety data sheet (SDS) confirmed that Renoform SVO meets the

permitted requirements for VOCs. All VOCs contained in the solvent volume used are assumed emitted.

Lead emissions result from the furnace and casting sections which travel through the filtration systems and then exit the stacks to the north of the building and fugitive uncontrolled emissions which exit the building from the roof vents. The stack emissions are calculated using the emission factor from the most recent test conducted. The test is conducted with two runs on one of the five lines. Fugitive emissions are estimated. Once per year, Mrs. Beeson obtains and distributes 10 air pump samplers as seen in image 18 (Attachment 9) around the process area. These filters stay in place for 8 hours during a regular shift. The pumps are sent off-site to a third party where they are weighed and concentration of lead derived. This concentration is multiplied by the manufacturer supplied throughput of the roof vent fans and the total hours of operation for that year. There are 6 roof vents. There were twelve previously, but 6 were recently closed. See Attachment 8 for an aerial image of the roof vents currently in use. The fugitive lead emissions as calculated by this method are included in the TRI submission. I reviewed the spreadsheet used to prepare the TRI submission and the calculation was set up as described above.

General Comments

The nearest school to the facility is 1.7 miles. The closest residence to the fence line was approximately a quarter mile away. In general, the facility was very tidy. There was very little accumulated dust and no visible lead oxide dust in the building. Mrs. Beeson explained that the facility holds two intensive cleaning days a year to remove any dust build up and that there are housekeeping preventative maintenance tasks to be completed by staff daily. All facility personnel wore powered air-purifying respirators while on the floor and Mr. Goltz indicated that all staff are enrolled in a medical monitoring program to test for lead levels.

There were no open doors visible during my time in the building. There were two trucks being unloaded at the dock. There is a shroud which forms a loose seal around the truck to keep the building closed off from the outside. Once the truck has docked and the rear section of the truck is within the shroud, the door light changes color from red to green and the door may be opened. There are minor gaps in this shroud as seen in image 14 (Attachment 9), but the air flowed inward at that point.

The facility reported 1.7 million lbs of lead processed for the calendar year 2020 in its annual Toxics Release Inventory report. This value is based on the number of lead “hogs” the facility purchased minus any in current inventory for that year. Lead is assumed to exit the facility through the grids produced, lead oxide and contaminated filters returned to the supplier, lead contained on contaminated PPE transferred to a third-party hazardous waste facility, and lead emitted as fugitives out the roof vent stacks. The facility does not calculate a percent yield for the lead and currently does not attempt to calculate the weight of the elemental lead in the lead oxide powder or the lead contaminated filters transferred back to the lead supplier for recycling.

SUMMARY

Information necessary to make an applicability determination for 40 CFR Part 60, Subpart KK, and 40 CFR Part 63 Subparts PPPPPP, X, and TTT was either observed or collected at the facility.

Based on the areas reviewed during this inspection, I did not note any areas of concern with the referenced permit conditions relating to limiting VOC emissions to below major source thresholds.

LUKE RODRIGUEZ Digitally signed by LUKE RODRIGUEZ Date: 2022.01.14 09:21:39 -06'00'

Luke Rodriguez, CAA Inspector Date

Scott Postma Digitally signed by Scott Postma Date: 2022.01.14 09:40:46 -06'00'

Scott Postma, CAA Inspector Date

TRACEY CASBURN Digitally signed by TRACEY CASBURN Date: 2022.01.16 07:42:58 -06'00'

Tracey Casburn, Air Branch Chief Date

ATTACHMENTS:

1. Photolog (3 pages)
2. Confidentiality Notice (1 page)
3. Receipt for Documents and Samples (1 page)
4. Process Flow Diagram (1 page)
5. HEPA Manufacturer Specifications (2 pages)
6. Filter System Schematic (1 page)
7. 2019 Stack Test Result Summary (4 pages)
8. Arial Image of Roof Vents marked up by Facility (1 page)
9. Photos (18 pages)
10. Observations (9 pages)