



United States Environmental Protection Agency
Region 7
Enforcement and Compliance Assurance Division

Air Branch

Air Branch Inspection Report
Unannounced Partial Compliance Evaluation
Doe Run – Buick Resources Recycling Facility
18594 Highway KK
Boss, MO 65440
FRS# 110017990478

Inspection Date(s):
June 6, 2023

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APPENDICES

A August 30, 2019 AOC (46 pages)
B Receipt for documents (5 pages)
C Photo log (17 pages)
D Standard operating procedures manual (46 pages)
E Baghouse SOP (6 pages)
F Baghouse Maintenance (18 pages)
G 2022 Triboflow Logbook (2 pages)

INSPECTION OVERVIEW

INSPECTION OBJECTIVE

The objective of the partial compliance evaluation (PCE) inspection was to determine compliance of the facility with the Clean Air Act (CAA), specifically those requirements located in the code of federal regulations at 40 CFR Part 63 in Table 1. The inspection was part of the U.S. Environmental Protection Agency's (EPA) Creating Cleaner Air for Communities National Enforcement Compliance Initiative.

Table 1. APPLICABLE REGULATIONS AND STANDARDS	
Code of Federal Regulation	Standard Name
40 CFR Part 63	Subpart A, General Provisions Subpart X, National Emission Standards for Hazardous Air Pollutants From Secondary Lead Smelting

Table 2 lists the inspection team members.

Table 2. PROJECT TEAM MEMBERS		
Team Member	Organization	Project Role
Luke Rodriguez	EPA, Region 7, ECAD, Air Branch	Lead Inspector
Todd Raney	Missouri Department of Natural Resources (MoDNR) Southeast Regional Office	Field team member

FACILITY CONTACT INFORMATION

Table 3 lists the primary facility contacts.

Table 3. FACILITY CONTACT INFORMATION		
Name, Title	Phone No.	Email Address
Phillip Saller, Environmental Compliance Supervisor	(573) 538-4473	psaller@doerun.com
Maggie Crocker, Environmental Compliance Manager	(573) 538-4399	mcrocker@doerun.com

FACILITY OVERVIEW

Doe Run Resources Corporation owns and operates the Buick Resources Recycling Facility, a lead-acid battery recycling operation and secondary lead smelter in operation since 1991. According to the December 31, 2018, Part 70 Operating Permit, the installation is a major source of oxides of sulfur (SO_x), oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀) and lead compounds (hazardous air pollutants) (HAP). The facility

is an existing source according to the definition of “New source” in 40 CFR 63 Subpart X. The following affected sources are in use at the facility: one blast furnace, one reverberatory furnace, two sweat or reclamation furnaces, twelve refining kettles, process fugitive emissions sources, buildings containing lead bearing materials and fugitive dust sources.

This facility is located in Iron County, Missouri. Iron County was designated by EPA as a nonattainment area on November 22, 2010, because the area violated the 2008 Lead NAAQS three-month rolling average of 0.15 micrograms per cubic meter.

The Buick Resource Recycling Facility and the Missouri Department of Natural Resources agreed to an Administrative Order on Consent (AOC) on August 30, 2019. This AOC was created to resolve alleged violations including failed stack tests; failure to conduct stack test and/or failure to demonstrate compliance with emission limits within required timeframe; failure to establish or maintain compliance with operating parameter limits; Continuous Emissions Monitoring System (CEMS) and Continuous Monitoring System (CMS) violations; capture, control, and ventilation violations; and reporting and notification violations. A copy of the AOC is included as **Appendix A**. The recent compliance of the facility with certain requirements of Subpart X and the AOC are reviewed in Investigation, Observations and Potential Findings section below.

FACILITY OPERATIONS SUMMARY

The Buick Resources Recycling Facility, LLC employs approximately 300 people and operates 24 hours a day and 7 days a week. The facility receives and processes approximately 460 million pounds of lead-bearing materials annually, including approximately 13.5 million recycled lead-acid batteries each year. Other recycled lead-bearing materials include ammunition, submarine ballasts, lead-bearing glass, and lead-based paint blasting grit material and debris, as well as cathode ray tube (CRT) glass. Approximately 75 percent or more of the lead recycled at the installation comes from automotive and industrial batteries.

Truck loads containing lead-acid batteries and other lead bearing materials are unloaded at the receiving dock. The batteries are either stored in areas adjacent to the dock or immediately processed. The breaking, separation and neutralization (BSN) process consists of the separating of battery components into usable furnace feed including battery paste. Two sweat furnaces (also

known as reclamation furnaces) are used to remove metal and nonmetal contaminants from lead bearing scrap cables and related lead scrap metal.

The smelting process produces lead by melting and separating the lead from other metal and non-metal contaminants and by reducing oxides to elemental lead. The installation performs smelting in two different furnaces - the blast furnace or the reverberatory furnace. The feed to the blast furnace consists of metallurgical coke, iron scrap, lime (limestone), silica, lead bearing scrap, and any dross and slag generated by the smelting and refining operations. The component "blend" sent to the blast furnace is dependent on the specific metallurgical properties desired for the product lead. The blast furnace utilizes several different types of raw materials to produce a hard lead. Hard lead has a high antimony content lead ($<3.0\%$). The reverberatory furnace produces a soft lead. Soft lead is a product with low antimony content. Soft lead is typically produced from the battery paste from the BSN Process.

The refinery area receives crude lead from the smelting area. In the refinery area, the installation softens, alloys, and/or oxidizes the lead to achieve the desired degree of purity and the desired type of lead alloy.

FIELD ACTIVITIES SUMMARY

I arrived at the facility on June 6, 2023, and completed a drive by surveillance inspection at 8:30 AM. The sky was clear and there were no visible emissions at that time. I made entry at the front gate and introduced myself and members of the inspection team, presented my credentials, and provided my business card to Ms. Crocker and Mr. Saller. I conducted an opening conference during which I explained that the purpose of the visit was to conduct an inspection to determine compliance with the CAA specifically, to determine compliance with the conditions listed in Table 1. I explained that after asking for some general business information, I would observe work practices, process units, emission units, control equipment and review associated records demonstrating compliance with the regulations listed in Table 1. I explained to Ms. Crocker and Mr. Saller that the facility could make a claim of business confidentiality and provided them with a Confidential Business Information form. Mr. Saller declined to make a determination of whether to claim of confidentiality at that time and deferred the decision until he had reviewed the information which I requested to be submitted by email.

I was given a facility tour by Mr. Saller. I reviewed the condition of emission units the operating status of the equipment, and any required record keeping for the equipment for compliance with the regulations and permit conditions noted in Table 1 only. I requested digital copies of the records indicated on the Receipt for Documents (**Appendix B**) to be submitted by June 16, 2023. I conducted a closing conference with Ms. Crocker, Mr. Saller, Mr. Gregory Thies, the General Manager and Michael Montgomery, the Vice President of EHS Doe Run. I provided the facility with a copy the Receipt for Documents form. The records were submitted by June 16, 2023, as requested. Mr. Saller did not make a claim of confidentiality at the time of submittal.

INVESTIGATION OBSERVATIONS AND POTENTIAL FINDINGS

Ambient weather, site conditions and activities were documented in field records. All photographs are attached as **Appendix C**. I made the following observations during the inspection. I discussed all observations with facility representatives during the closeout meeting unless otherwise noted in the observation description.

These observations are not final compliance determinations. The EPA Region 7 Air Branch case review team will make the final compliance determinations based on its review of this report and other technical, regulatory, and facility information.

§63.543 What are my standards for process vents?

Doe Run Buick Resources Recycling Facility is subject to the emission standards in §63.543(a) for lead, and the limits in Table 2 to Subpart X for total hydrocarbons and dioxins and furans. The facility conducts the tests required annually in two separate tests; one for the main stack which covers the furnace emissions and one for the remainder of the lead emitting sources. As required by §63.543(g) the facility is to conduct a performance test no later than 12 calendar months following the previous compliance test for lead emissions. As required by §63.543(h) the facility is required to conduct a performance test no later than 12 calendar months following the previous compliance test for total hydrocarbon emissions. As required by §63.543(i) the facility is required to conduct a performance test at least once every 6 years following the previous compliance test for total hydrocarbon emissions. The August 31, 2019, Administrative Order on Consent includes details of failed or late tests required by 40 CFR 63 Subpart X, which occurred in 2014, 2015, 2016 and 2017.

The facility is required to operate according to the parameters established by the most recent performance test. The facility reports its time operating outside of these parameters in its quarterly Subpart X report required by the August 30, 2019, AOC noted above. Table 3 below is a review of the 9 most recent quarterly submittals which show the percent of the time that the facility operated outside of the parameters from the most recent performance test prior to the quarter to which it was reported.

Table 4. PERCENT OPERATING TIME OUTSIDE PARAMETERS AND DOWNTIME									
Parameter	1Q 2021	2Q 2021	3Q 2021	4Q 2021	1Q 2022	2Q 2022	3Q 2022	4Q 2022	1Q 2023
Reverb Furnace Afterburner Temperature	9.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.7%
Reverb Furnace Monitor Downtime	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	24.7%	0.0%	0.0%
Blast Furnace Exhaust Temperature	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.3%	1.0%	2.9%
Blast Furnace Monitor Downtime	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	35.9%	0.0%	0.0%

§ 63.544 What are my total enclosure standards?

The facility has six total enclosures subject to the requirements in § 63.544. These are identified in their Part 70 Operating Permit. Total Enclosure #1 is the Covered Material Storage Bins Building (CMSB). Total Enclosure # 2 is the Blast Furnace Feed Building. Total Enclosure # 3 is the Reverberatory Furnace Feed Building. Total Enclosure # 4 is the Hot Metals Building. Total Enclosure # 5 is the BSN Building and Total Enclosure # 6 is the Steel Processing Building.

As required by § 63.544(c), the total enclosures must be free of significant cracks, gaps, corrosion or other deterioration that could cause lead bearing material to be released from the

primary barrier. I walked around the entire perimeter of each of the six total enclosures and I did not see any cracks, gaps, corrosion or other deterioration in the primary barrier. These enclosures are visible in the Photo Log included as **Appendix C**.

§ 63.544(c)(1) requires that each total enclosure be ventilated continuously to ensure negative pressure values of at least 0.013 mm of mercury (0.007 inches of water). Table 5 shows the percent of the time when the pressure was above this minimum value in each of the last 9 quarters of operation.

Table 5. TOTAL ENCLOSURE NEGATIVE PRESSURE DEVIATION									
Total Enclosure	1Q 2021	2Q 2021	3Q 2021	4Q 2021	1Q 2022	2Q 2022	3Q 2022	4Q 2022	1Q 2023
TE #1 (CMSB)	10.6%	18.1%	0.5%	6.9%	3.1%	3.7%	1.8%	1.2%	3.6%
TE #2 (Blast Feed)	1.9%	10.5%	7.1%	14.3%	13.8%	12.7%	22%	7.0%	14.2%
TE #3 (Reverb Feed)	5.7%	13.8%	1.8%	8.6%	9.4%	3.9%	4.7%	1.4%	6.0%
TE #4 (Hot Metals)	1.2%	21.5%	0.4%	8.7%	1.8%	5.6%	12.1%	3.8%	1.6%
TE #5 (BSN)	0.0%	0.1%	0.1%	0.0%	0.1%	0.7%	3.8%	0.0%	0.0%
TE #6 (Steel Processing)	4.2%	1.3%	0.3%	0.2%	0.4%	0.7%	0.5%	2.2%	8.8%

§ 63.544(c)(2) requires that each total enclosure maintain an inward flow of air through all natural draft openings. I opened doors in each of the total enclosures and in each building, and there was an inward flow of air in all cases.

§ 63.544(d) specifies inspection requirements for the total enclosures and facility structures. The facility includes these inspections in its quarterly Subpart X reports as required by the August 30, 2019, AOC.

§ 63.545 What are my standards for fugitive dust sources?

§ 63.545(a) specifies a requirement to operate in accordance with a standard operating procedures manual that includes the sources in § 63.545(a)(1) – (7) and specifies the minimum controls listed in § 63.545(c)(1) – (7). The standard operating procedures manual is included as **Appendix D**. I reviewed the manual which was last revised on March 31, 2021. By my review I was able to determine that the manual included all of the sources in § 63.545(a)(1) – (7) and specifies the minimum controls listed in § 63.545(c)(1) – (7).

§ 63.545(d) indicates that the manual noted above must specify that records be maintained of all pavement cleaning, vehicle washing and battery storage inspection activities. The daily records for roadway wetting and sweeping are submitted as part of the Subpart X quarterly report. The facility is keeping these records as required. The facility keeps records of vehicle washing at all total enclosure vehicle exists. There are clip boards which are supposed to be filled out each time a vehicle exits a total enclosure. Each week, the environmental staff audits these clipboards to see if the records have been completed. There is no record of how many vehicle cleanings should have occurred, the audit only determines whether the number seems consistent with historical averages. The Resource, Conservation and Recovery Act (RCRA) requires daily inspections of the battery storage areas. I reviewed a binder with these records onsite. I reviewed the last 3 months of records prior to my visit and there appeared to be a record for each day.

§ 63.545(e) requires that all grounds on the facility be paved or planted with groundcover sufficient to prevent wind-blown dust. All production areas of the facility were paved. The facility does not use any dust suppressants. I did not see any windblown dust on the day I was on-site at the facility.

§ 63.548 Monitoring requirements.

§ 63.548(a) requires that a source prepare, and at all times operate according to, a standard operating procedures manual that describes in detail procedures for inspection, maintenance, and bag leak detection and corrective action plans for all baghouses (fabric filters or cartridge filters) that are used to control process vents, process fugitive, or fugitive dust emissions from any source subject to the lead emissions standards in §§ 63.543, 63.544, and 63.545, including those used to control emissions from building ventilation. I requested and reviewed the Baghouse SOP in use by the Buick Resources Recycling Facility. The SOP was last updated in November of 2012 is included as **Appendix E**.

§ 63.548(c) requires that the SOP include the requirements of § 63.548(c)(1) – (9). The SOP includes each of § 63.548(c)(1) – (9).

§ 63.548(d) requires that the SOP manual for baghouse maintenance includes at a minimum, a preventative maintenance schedule that is consistent with the baghouse manufacturer's instructions for routine and long-term maintenance. The SOP does not describe any preventative maintenance schedules for any of their baghouses. I separately requested a record of the work orders which had been completed on the baghouses during all of 2022. This record is included as **Appendix F**. The maintenance records indicate that a preventative maintenance schedule is in place for the equipment and that the work orders were completed as required.

§ 63.548(e) The bag leak detection system required by paragraph (c)(9) of this section, must meet the specification and requirements of paragraphs (e)(1) through (8). The Baghouse SOP specifically addresses each specification and requirement in paragraphs (e)(1) through (8).

§ 63.548(f) requires that the Baghouse SOP include a corrective action plan that specifies the procedures to be followed in the case of a bag leak detection system alarm. The corrective action plan must include, at a minimum, the procedures that will be used to determine and record the time and cause of the alarm as well as the corrective actions taken to minimize emissions as specified in paragraphs (f)(1) and (f)(2) of this section. The Baghouse SOP in use by the facility specifically cites the requirements of § 63.548(f)(1) and (2).

§ 63.548(i) requires the monitoring and recording of the pressure drop and water flow rate values at least once every hour and you must maintain the pressure drop and water flow rate at levels no lower than 30 percent below the pressure drop and water flow rate measured during the initial performance or compliance test. There is one wet scrubber at the facility, and it controls the BSN process. Table 6 summarizes the reported operations outside of the scrubber parameters during the preceding 9 quarters of operation.

Table 6. BSN SCRUBBER PARAMETER DEVIATIONS REPORTED									
Parameter	1Q 2021	2Q 2021	3Q 2021	4Q 2021	1Q 2022	2Q 2022	3Q 2022	4Q 2022	1Q 2023

Differential Pressure / Flow Rate	0.05%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
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§ 63.548(j) specifies requirements for demonstrating continuous compliance with the total hydrocarbons and dioxins and furans emissions standards. I requested records sufficient to demonstrate compliance with § 63.548(j)(3) for the fourth quarter of 2022 as noted in **Appendix B**. Section 63.548(j)(3) requires the facility to monitor and record the temperature of the afterburner or the furnace exhaust streams every 15 minutes during the initial performance or compliance test for total hydrocarbons and dioxins and furans and determine an arithmetic average for the recorded temperature measurements. I compared this temperature data to the fourth quarter Subpart X report which the facility submitted. The facility reported all incidents when the 3-hour block temperature dropped more than 28 °Celsius (50 °Fahrenheit) below the average established in the most recent accepted test.

§ 63.548(k) specifies the monitoring requirements for total enclosures. My review of the facility's reported compliance with these requirements is included under the heading **§ 63.544** *What are my total enclosure standards?* and Table 5 above.

§ 63.548(l) specifies a requirement for new or reconstructed sources to install and operate a CEMS for measuring lead emissions. The Buick Resources Facility did not have any new or reconstructed sources subject to the requirements under § 63.543 at the time of this report.

§ 63.548(m) specifies requirements for the use of CEMs. This section was not applicable at the time of this report.

§ 63.550(c)(2) specifies the records which a facility is required to maintain relating to the operation of its bag leak detection system. I requested records sufficient to demonstrate compliance with § 63.550(c)(2) for all of 2022 as noted in **Appendix B**. I received the document titled "2022 Triboflow Logbook" which is included as **Appendix G**. This record did not contain the information required by § 63.550(c)(2), specifically, the time that procedures to determine the cause of the alarm were initiated, and an explanation of the corrective actions that were taken.

Potential Finding 1: Incidence of non-compliance with August 31, 2019, AOC and 40 CFR 63 Subpart X
Observation Summary: A review of the last two years of reported data relating to Subpart X requirements shows ongoing non-compliance.
Citation: § 63.543 & § 63.544(c)(1)
Evidence: Quarterly Subpart X Reports summarized in Tables 4, 5 & 6
Description of Observation: A review of the preceding 9 quarters of operations shows ongoing non-compliance with August 31, 2019, AOC and 40 CFR 63 Subpart X.

Potential Finding 2: Standard operating procedures manual required by § 63.548(a) does not contain the information required by § 63.548(d).
Observation Summary: The facility provided a SOP manual for its baghouses which does not include a preventative maintenance schedule.
Citation: by § 63.548(d)
Evidence: Appendix D
Description of Observation: I reviewed the SOP manual required by § 63.548(a). The manual did not include preventative maintenance schedule that is consistent with the baghouse manufacturer's instructions for routine and long-term maintenance. The facility produced a separate preventative maintenance schedule for the baghouses but should include this information and any additional manufacturer instructions or recommendations in the SOP.

Potential Finding 3: Records associated bag leak detection alarms do not have required information.
Observation Summary: The facility provided a record to demonstrate compliance with § 63.550(c)(2) which did not have all of the information required.
Citation: § 63.550(c)(2)
Evidence: Appendix G
Description of Observation: I requested records specifically sufficient to demonstrate compliance with § 63.550(c)(2). The record provided in response to this request did not contain certain information required; specifically, the time that procedures to determine the cause of the alarm were initiated, and an explanation of the corrective actions that were taken.