RCRA Inspection Report

1) Inspector and Author of Report

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2) Facility Information

CORMETECH, Inc.
304 Linwood Road
Kings Mountain, NC 28086

EPA ID# NCD982146235

3) Responsible Officials

Lanette Plyler, Director Environmental, Health & Safety
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4) Inspection Participants

Ryan Abernathy, CORMETECH
Lanette Plyler, CORMETECH
Nick Guglielmi, NCDEQ
Mark Vasco, CORMETECH
Brad DeVore, Womble Bond Dickinson
Laurie Benton DiGaetano, USEPA

5) Date of Inspection

December 15, 2021

6) Applicable Regulations

Resource Conservation and Recovery Act (RCRA) Sections 3002 (42 U.S. Code – Annotated U.S.C.A. 6925 and 6927), Title 15A of the North Carolina Administrative Code (NCAC), Chapter 13; and 40 Code of Federal Regulation (C.F.R.), Parts 260 - 270, 273, 278, & 279.

Pursuant to 15A NCAC 13A .0107(a) [40 C.F.R. § 262.17], an LQG may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, as required by 130A-294(c) and (g) of the NCSWML, N.C.G.S. § 130A-294(c) and (g) [Section 3005 of RCRA, 42 U.S.C. § 6925], provided that the generator complies with the conditions listed in 15A NCAC 13A .0107(a) [40 C.F.R. § 262.17] (hereinafter referred to as the "LQG Permit Exemption").

Pursuant to 15A NCAC 13A .0107(a) [40 C.F.R. § 262.15(a)], a generator may accumulate as much as 55 gallons of non-acute hazardous waste in containers at or near any point of generation where wastes initially accumulate, which is under the control of the operator of the process generating the waste, without a permit or without having interim status, as required by 130A-294(c) and (g) of the NCSWML, N.C.G.S. § 130A-294(c) and (g) [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with 15A NCAC 13A .0107(a) [40 C.F.R. § 262.16(b) or § 262.17(a)], except as required in 15A NCAC 13A .0107(a) [40 C.F.R. § 262.15(a)(7) and (8)], provided that the generator complies with the satellite accumulation area conditions listed in 15A NCAC 13A .0107(a) [40 C.F.R. § 262.15(a)] (hereinafter referred to as the "SAA Permit Exemption").

7) Purpose of Inspection

The purpose of this inspection was to conduct an unannounced compliance evaluation inspection to determine CORMETECH Inc.'s compliance with the applicable requirements of RCRA and the corresponding NCDEQ regulations. This was an EPA lead inspection.

8) Previous Inspection History

NCDEQ conducted two RCRA Focused Compliance Inspections (FCIs) in 2009 and one FCI in 2011 at the subject facility and found no potential violations. This is the first RCRA CEI at this location.

9) Facility Description

CORMETECH manufactures and regenerates Selective Catalytic Reduction (SCR) catalyst modules, which are used in SCR systems to remove nitrogen oxides from flue gas emitted by power plant boilers. A complete SCR system includes the SCR reactor beds, an ammonia storage and delivery system and an ammonia injection grid. Catalyst modules, which are typically 3.3 feet by 6.6 feet in area and 3.3 feet in height, are composed of highly porous metal plates or ceramic honeycomb elements placed into a frame. Although the modules may be constructed using a plate, corrugated or honeycomb design, CORMETECH's SCR catalyst manufacturing facilities, which are located in Durham, North Carolina and in Cleveland, Tennessee, only manufacture using the honeycomb design.

In order to reduce the amount of pollutants emitted from the burning of fossil fuels at a power plant, flue gas is sent through a series of treatment processes before it is released into the atmosphere. Typical flue gas treatment processes begin with a device to remove ash and other particulates. Next, the flue gas enters a denitrification process, like the ones manufactured and regenerated by CORMETECH. Most flue gas treatment processes then involve some type of scrubber to remove sulfur dioxide and may include units to remove mercury and carbon dioxide.

The SCR catalyst denitrification processes involve injecting ammonia into the flue gas and allowing the components to mix together before entering the catalyst reactor bed. Catalyst modules are stacked together at the customer's site to achieve the total catalyst volume required for that reactor bed. As the hot flue gas and ammonia reagent diffuse through the catalyst and contact the activated catalyst sites, NOx in the flue gas chemically reduces to nitrogen and water. The nitrogen, water vapor, and any other flue gas constituents then flow out of the SCR system. SCR catalysts have also been found to oxidize a significant portion of elemental mercury to oxidized mercury. CORMETECH's mercury control technology uses highly porous carbon to adsorb oxidized mercury and dissolve it for removal downstream via the flue gas desulphurization (FGD) absorber slurry or the SO2 scrubbers.

While the SCR system is in use, activated sites within the pores of the catalyst module structure reactivate via rehydration or oxidation, but the catalyst activity decreases over time. This may be a result of the catalyst becoming plugged with fly ash and particulate matter that deposits on the surface of the active pore sites and causes blinding, plugging, or fouling of the catalyst. The main cause of catalyst deactivation, however, is catalyst poisoning. The poisons, including calcium oxide, magnesium oxide, potassium, sodium, arsenic, chlorine, fluorine, and lead, deactivate the catalyst by diffusing into active pore sites and occupying those sites. Arsenic poisoning occurs when arsenic oxides that are formed during combustion deactivate the catalyst by occupying active pore sites. Injecting limestone into the furnace has been shown to be an effective method of controlling this poisoning because calcium oxide that is formed by combusting the limestone reacts with arsenic to form calcium arsenate, which does not bind to the catalyst but passes through the reactor.

When catalyst activity decreases, the catalyst layers require washing / cleaning, rejuvenation, regeneration, or replacement. Catalyst washing / cleaning typically means the removal of physical restrictions to the catalyst (blinding layers and large particle ash), rejuvenation means the removal of poisons without replenishing the catalytically active compounds in the catalyst, and regeneration typically means the removal of poisons and the restoration of catalytic activity by restoring catalyst active ingredients. At the subject facility in Kings Mountain, North Carolina, CORMETECH performs washing / cleaning, rejuvenation, and regeneration services for all three catalyst module designs (plate, corrugated and honeycomb), and also repairs damage caused to the elements during operation of the SCR or during transport of the catalyst modules for rework.

The subject facility occupies approximately 15 acres, and houses corporate offices, regeneration and processing areas, a wastewater pretreatment system, a maintenance area, a laboratory, receiving docks, and raw material and finished goods storage. Numerous warehouses at the facility provide the capacity to store around 20,000 customer catalyst modules onsite. CORMETECH began operations at this location in 2007, and currently operates under the NAICS Code 333413 for Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing. The facility is about 250,000 square feet

and enables CORMETECH to process between 40 and 50 catalyst modules per day by concurrently running two highly customized batch productions lines. Operations run from 6:00 am until 2:30 am seven days per week using two production shifts, and the facility currently has approximately 80 employees.

SCR catalyst modules are bagged at the customer site and brought to the subject facility where CORMETECH services the modules using a multi-stage process. First, each module is removed from the bag and inspected to identify areas in need of repair. Next, the module is mechanically cleaned to remove fly ash and other particulates and then immersed in a series of chemical baths to remove deposits. During the first dry phase, poisons such as silica arsenic and iron are removed from the module. Next, the modules are rinsed and reactivated by infusing chemicals and various metals used in the original manufacturing process into the surface of the module. These materials are reimpregnated into the module during the second dry phase. Finally, the module undergoes a heated drying process called Recalcination to ensure that the catalyst module is re-established, and its mechanical strength is regained. Module repairs and replacement is done during the rebuild phase, and the finished product is inspected, wrapped, and prepared for shipment.

The subject facility uses fresh water from the municipal water service to perform the final rinse during module servicing. Rinsate from this process is conveyed to an on-site holding tank for use as an ingredient in the product cleaning solution. Contaminant levels are monitored as the cleaning solution is recirculated and reused on-site. When it becomes unfit for reuse, the solution is sent to the on-site wastewater treatment system, which may treat 60,000 – 80,000 gallons of process wastewater per day. Treatment is done using single stage precipitation and a filter press, and the system discharges to the Kings Mountain wastewater treatment plant. CORMETECH samples filter cake once each month and sends the samples offsite for TCLP and total metals analysis. According to facility personnel, the analytical results, which indicate that the filter cake is a nonhazardous waste, remain fairly consistent. The facility ships about 3-4 roll-off containers of filter cake to a solid waste landfill each day, Monday - Thursday.

Historically, CORMETECH has operated as a very small quantity generator (VSQG) of hazardous waste at this location. In early 2021, however, routine testing of liquids in an open-air basement revealed that the “rainwater” contained elevated levels of heavy metals. As a result, CORMETECH initiated an investigation, which led to a project to clean and seal historical underground sewer system lines at the facility. This project has been conducted under the review of the NCDEQ Inactive Hazardous Sites and NCDEQ Brownfields Programs. CORMETECH generated hazardous waste liquids and solids while performing clean-up activities as part of this project. Personnel stated that they notified as a large quantity generator (LQG) of hazardous waste 04/12/2021, because the facility exceeded the time allowed under 15A NCAC 13A .0107(a) [40 C.F.R. § 262 Subpart L] for manifesting and sending hazardous waste that was generated as an episodic event to a designated facility.

The company submitted a notification to NCDEQ 01/06/2022 to resume the VSQG status. During the time that the facility was operating as an LQG, CORMETECH performed an inventory and clean-out of the on-site laboratory and maintenance areas. These clean-out events generated additional hazardous waste materials, which were manifested off-site in late 2021. At the time of the inspection, CORMETECH was operating as a VSQG of hazardous waste, and was preparing to notify NCDEQ to resume their VSQG status.

The facility currently generates three hazardous waste streams, and two of these are generated from new laboratory testing that began about six months ago. The facility generates D002 hazardous waste chemical kits from ammonia testing vials and mercury analyzer hazardous waste in the on-site laboratory. The facility also generates D001 hazardous waste liquids from puncturing aerosol cans used on-site. Facility personnel stated that they anticipate shipping hazardous waste off-site once every three months but estimate that the facility will generate hazardous waste at a rate of two or three five-gallon buckets over that timeframe. The facility also routinely generates used oil and universal waste batteries.

10) Opening Conference

On December 15, 2021, EPA inspector Laurie Benton DiGaetano, accompanied by NCDEQ inspector Nick Guglielmi, arrived at the subject CORMETECH, Inc. facility at approximately 10:00 a.m. Mr. Ryan Abernathy, Director of Operations, was offsite at the time of their arrival, but immediately headed to the facility upon notification of their presence. The inspectors entered through the security gate with Mr. Abernathy at approximately 10:20 a.m. The inspectors introduced themselves, showed their credentials to Mr. Abernathy, and explained the purpose of the visit. Mr. Abernathy contacted Ms. Lanette Plyler, Director of Environmental Health and Safety, who joined the opening conference via telephone before arriving at the facility. Upon arrival, Ms. Plyler connected Mr. Mark Vasco, Vice President and General Counsel, to the opening conference via a virtual connection and Mr. Vasco connected Mr. Brad DeVore, Outside Counsel. The inspectors described the anticipated potential use of a digital camera during the inspection and provided a request for records. The inspectors discussed the company's ability, pursuant to 40 C.F.R. §2.203, to assert a business confidentiality claim for information submitted to EPA. The company did not assert a business confidentiality claim. The inspection participants also discussed health and safety protocols and required personal protective equipment before Mr. Abernathy and Ms. Plyler led the inspectors on a tour of the Facility operations.

Facility representative provided an overview of the facility's history and current operations during the opening conference. The company may meet the Small Business Regulatory Enforcement Fairness Act's classification of a "small business," which is generally set by the Small Business Administration using the business' SIC/NAICS code and annual receipts or number of employees. A copy of the agency's information sheet

for small businesses can be found at https://www.epa.gov/sites/production/files/2017-06/documents/smallbusinessinfo.pdf.

11) Findings

Laboratory: The facility tour began in the on-site laboratory, where the inspectors observed two satellite accumulation areas (SAAs) for managing hazardous waste generated in the laboratory. The first SAA is located next to the mercury analyzer. The area was identified with a hazardous waste sign, but no waste or waste container was observed in this area during the inspection. The second SAA is located next to the ammonia testing area. This area is also identified with a sign, and one 5-gallon bucket was observed in the SAA. The sign identified this area for managing hazardous waste, and it included an OSHA pictogram to indicate the hazards of the hazardous waste managed in this area. The container was labeled D002 hazardous waste chemical kits, but it was not marked with an indication of the hazards of its contents.

Hazardous waste generated by a VSQG is not subject to the requirements found in the SAA Permit Exemption. However, if CORMETECH becomes a small quantity generator (SQG) or LQG of hazardous waste again in the future, please be aware that, pursuant to 15A NCAC 13A .0107(a) [40 C.F.R. § 262.15(a)(5)], which is a condition of the SAA Permit Exemption, a generator is required to mark or label its containers with the words "Hazardous Waste" and with an indication of the hazards of the contents.

A small closet in the laboratory is used to store full 5-gallon containers of hazardous waste until they are picked up for shipment off-site. A sign on the closet door indicated that this area is designated for managing hazardous waste. The inspectors observed two 5-gallon containers of hazardous waste inside the closet. The containers were labeled D002 hazardous waste corrosive liquid and marked with an accumulation start date (11/15/2021 and 12/15/2021).

Liquid samples are routinely pulled from the on-site acidic and caustic cleaning baths and brought to the laboratory for analytical testing. The pH of the acidic samples is typically between 2 and 5, and the pH of the caustic samples is typically about 9. The facility manages one 55-gallon drum in the laboratory for accumulating excess liquids from each of these bath samples. The drums were each labeled, and facility personnel explained that their contents are returned to the on-site wastewater treatment system for processing on-site.

The inspectors also observed one 3-gallon container of universal waste batteries in the laboratory. The container was closed, labeled universal waste batteries, and dated 06/24/2021.

Maintenance Area: The inspectors observed one 55-gallon drum of used oil in the Maintenance Area. This drum was closed and labeled with the words "used oil."

The inspectors also observed one drum labeled hazardous waste on a secondary containment pallet in this area. The drum was equipped with an aerosol can puncture device, and personnel explained that maintenance employees bring aerosol cans that are generated throughout the facility to this area and puncture them on Saturdays. The inspectors observed a trash can outside the break room labeled for the accumulation of used aerosol cans to be brought to this area. Although hazardous waste generated by a VSQG is not subject to the requirements found in the SAA Permit Exemption, please note that those requirements will apply if CORMETECH becomes an SQG or LQG of hazardous waste at this location in the future.

Wastewater Treatment System: Because contaminants in catalyst relate back to the type of coal used by CORMETECH's customers in the power generation sector, the facility sends samples of filter cake generated by the on-site wastewater treatment system for TCLP and total metals analysis once each month. The inspectors reviewed analytical results for filter cake samples taken during calendar year 2021.

Maintenance Area: CORMETECH manages universal waste bulbs in the Maintenance Area. The inspectors observed one box of 8-foot bulbs, dated 11/12/2021, and one box of 4-foot bulbs, dated 08/03/2021, in this area during the inspection. The boxes were both closed and in good condition.

Contingency Plan: The actions that facility personnel should take in response to an emergency are described in the facility's contingency plan, which was created in April 2021. The plan describes actions facility personnel must take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. The plan describes arrangements agreed to with the local police department, fire department, other emergency response teams, emergency response contractors, equipment suppliers, local hospitals or the Local Emergency Planning Committee. The plan lists the names and emergency telephone numbers for persons identified as primary and alternate emergency coordinators. The plan includes a list of emergency equipment at the facility. The list includes fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment. The plan includes an evacuation plan for personnel. This plan describes signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.

A copy of the contingency plan was submitted to the Cleveland County Emergency Management, Kings Mountain Fire Department, North Carolina Division of Emergency Management, Kings Mountain Hospital, Cleveland County Sherriff's Office, and Kings Mountain Police Department on 04/13/2021. Although CORMETECH did not include the required quick reference guide with the contingency plan, this requirement was only applicable during the time that the facility was operating as an LQG.

Pursuant to 15A NCAC 13A .0107(i) [40 C.F.R. § 262.262(b)], an LQG that first becomes subject to these provisions must submit a quick reference guide of the contingency plan to the local emergency responders.

Training Records: The inspectors reviewed facility job descriptions and employee names that were provided for facility personnel. Each description included the requisite skill, education, or other qualifications, and duties of facility personnel assigned to that position. CORMETECH provided a written description of the type and amount of both introductory and continuing training to be given to each person filling the positions with hazardous waste responsibilities. The inspectors reviewed records of employee annual hazardous waste training for the past three years and of contingency plan training, which was provided to employees on 04/15/2021. In addition, the inspectors reviewed a certificate for hazardous waste training completed by Ms. Plyler on 05/06/2021.

Waste Manifest Records: The inspectors reviewed available hazardous waste manifest records and land disposal restriction forms for shipments of hazardous waste sent since January 2021.

Inspection Records: The inspectors reviewed CORMETECH's available records of inspections of the hazardous waste central accumulation area (CAA) since 04/14/2021. The records indicate that the facility was conducting inspections approximately twice each week while hazardous wastes were stored on-site.

12) Closing Conference

The inspectors conducted the exit meeting with Ryan Abernathy, Mark Vasco, Lanette Plyler, and Brad DeVore. During this meeting, the inspectors stated their preliminary conclusions of the inspection. Personnel agreed to provide records to document that the contingency plan was provided to local emergency response entities, and Ms. Plyler provided those records via email on 12/16/2021.

13) Inspection Findings

Based on the observations made during the inspection, and subsequent actions made by the facility, COREMETECH has resolved an apparent deficiency with the following RCRA requirement:

- **Pursuant to 15A NCAC 13A .0107(i) [40 C.F.R. § 262.262(b)], an LQG that first becomes subject to these provisions must submit a quick reference guide of the contingency plan to the local emergency responders.**

14) Signed

Digaetano, Laurie

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Laurie Benton DiGaetano
Senior Enforcement and Compliance Specialist

Concurrence

ARACELI CHAVEZ

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Araceli B. Chavez
RCRA Enforcement Section
Chemical Safety and Land Enforcement Branch
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