



REGION 3

PHILADELPHIA, PA 19103

Report Title: Clean Air Act Inspection of Solenis, Inc. (formerly Clearon Corporation)
Inspection Date(s): 8/28/2024
Regulatory Program(s): NESHAPS, NSPS, Title V
Company Name: Innovation Water Care, LLC.
Facility Name: Solenis
Facility Location: 95 MacCorkle Ave., SW
South Charleston, WV 25303
Latitude: 38.365333 **Longitude:** -81.706116
County/Parish: Kanawha County
AFS/ICIS-Air Number: WV00003900011
Permit Number: R30-03900011-2019
NAICS Code: 325181 **SIC:** 2812
DSB ID #: ECAD-302

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I. Introduction

The United States Environmental Protection Agency (EPA) conducted a Clean Air Act (CAA) inspection at Solenis, Inc. formerly Clearon Corporation (Solenis or Facility) to verify compliance with applicable State and Federal regulations. The WVDEP was notified of the inspection on August 13, 2024, via email. On August 22, 2024, EPA notified the Facility of the planned inspection via phone. On August 26, 2024, EPA emailed a list of records for review to Katie Musick, prior to the inspection (see Attachment 1). These records are listed in the Records Review section of the report.

The inspection included an evaluation of the Facility's processes and its compliance with the CAA. All information included in this report is the result of statements by the Facility representatives, materials shown to the inspectors by the Facility representatives, and/or documents provided by the Facility representatives to the inspectors at the time of, or subsequent to, the inspection. In addition, information gathered prior to the inspection from a review of EPA and State records may be included in Section A. Summary of the Facility.

A. Summary of the Facility

The Facility is located at 95 MacCorkle Ave, S.W., South Charleston, WV 25303. The primary products manufactured are purified cyanuric acid and chlorinated isocyanates or dry bleaches (CDB). Solenis offers more than 100 different finished goods, their products are used in water treatment applications to maintain safe drinking water standards and in cleansers, disinfectants, sanitizers, and swimming pool treatment chemicals.

The Facility received a Title V permit (R30-03900011-2019) from WVDEP issued on April 9, 2019. They are a major source for NO_x.

The Facility is subject to, or potentially subject to the following federal regulations:

- 40 CFR 63 Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- 40 CFR Part 63 Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing

B. Inspection Opening Conference

At 8:55 am on August 28, 2024, EPA inspectors arrived at the Facility for a CAA Inspection and conducted a brief opening conference after reviewing a safety video. Solenis was represented by Scott Farley, Production Manager; Ray Stuart, Plant Manager; Katie Musick, EHS Leader; Cory Nicholson, Environmental Specialist, and Sydney Stauffer, Environmental Consultant, ARC. Also, Angela Chestnut, Engineer, from WVDEP was present. EPA inspectors, Stafford Stewart, Scott Yanos and Steve Ott, presented their credentials and explained the purpose of the visit was to conduct a CAA inspection to determine compliance with their permit and any applicable regulations. Additionally, EPA informed the facility representatives of their right to claim any confidential business information (CBI). At that time,

Solenis did not claim any photos or documentation as CBI, however some of the handouts distributed during the conference including the site plan, process flow diagram and production process were stamped "Confidential".

II. Site Activity/Process Description

Solenis commenced operations at this 42-acre location in September 2022. The Facility was acquired from the Clearon Corporation which was the previous operator. The Facility's legal business name is Innovative Water Care, LLC., which is a subsidiary of Solenis. Prior to 1960, a Naval Ordnance Center operated at this location. FMC Corporation acquired the facility in 1962 and began producing chlorinated dry bleach (CDB) products. FMC was purchased by the Olin Corporation in 1985 who operated the plant until 2016 when they were purchased by Clearon Corporation.

Solenis operates seven days a week, 24 hrs. per day, there are currently 110 employees who work two 12 hour rotating shifts. The Facility is shut down for about 4 weeks in the Fall every year for maintenance. There are other periods of unplanned shutdowns driven by policy, procedures, and business dictates. During the inspection all operations were shut down in preparation for Fall maintenance.

The current process involves the pyrolysis of urea to produce crude cyanuric acid. Crude cyanuric acid is purified after further processing and is sold as an intermediate product, which is used as feedstock to produce various CDB products. The cyanuric acid at this location is subjected to further processing to be sold as CDB 90 or CDB 56. The CDB products are produced after the purified cyanuric acid undergoes chlorination and is then dried and compacted before being packaged for sale. Current production levels are: (130,000 – 140,000) lbs/day CDB 90 and (65,000 – 70,000) lbs/day CDB 56. CDB 90 and CDB 56 generate more than 100 finished products that are sold in various forms, including tablets, granules, sticks, bags and supersacks. CDB 90 contains a higher chlorine content (about 90%) as an active ingredient and CDB 56 contains about 56% chlorine. Products are also sold as custom blends and can include specific customer branding upon request. Customers include big box stores as well as smaller "mom and pops" operations. CDB 56 products are sold to be used as bleaches, cleansers, detergents, and are also used in swimming pools and in eye products. CDB 90 is used in water treatment applications, the trichloroisocyanuric acid (Trichlor) present in this product allow for the higher chlorine content to be released slowly in water and allows for safety and regulatory levels of chlorine to be maintained.

All raw materials, which include urea, caustic soda, and sulfuric acid, are received by trucks and rail cars. Finished goods are shipped out via trucks.

Solenis is currently classified as an area source for HAPS, including chlorine (Cl_2), this assessment was done during a technical review for WVDEP associated with the permit application process.

The Facility inherited a Title V permit from Clearon Corporation which expired on April 9, 2024. The current permit application was submitted on August 6, 2024, and is currently being reviewed and is in the comment period. The main emission sources at the Facility include: boilers, urea storage silos and

baghouses, feed tanks, reactor tanks, urea dissolution tanks, calciners A-D ("B" and "D "currently not operating due to business dictates), digesters, flash tanks, slurry tanks, mix and purge tanks, surge tanks, neutralization tanks, condensers, centrifuges, clarifiers, strippers, scrubbers, chlorinators, sulfuric acid storage tanks, granulator, conveyors, compactors, hoppers, bucket elevators, sizing screens, feed bins, mills, generators, heaters, and dryers.

The Facility's last stack test was conducted in 1995, this test was done to determine the Facility's potential to emit (PTE), no further stack tests have been required since then.

The opening conference concluded at 10:10 am.

III. Observations

EPA inspectors were led on a walkthrough of the Facility at 10:15 am by Scott Farley, Ray Stuart, Katie Musick, Corey Nicholson of Solenis and Sydney Stauffer, Consultant of ARC. Angela Chestnut, Inspector of WVDEP was also present for the walkthrough. EPA inspectors noted photos would be taken during the Facility walkthrough (Attachment 2).

The plant walkthrough commenced with an inspection of the railcar unloading area where chlorine, caustic soda, and sulfuric acid, which are used in the cyanuric acid (CA) production process, are off-loaded. There are other raw materials that are off loaded by trucks in this area, these are hydrogen peroxide, urea, and hydrochloric acid. Feed tanks T432 and T433 were observed, these tanks are used as holding tanks for sulfuric acid and caustic soda, respectively. Three batch tanks used in the CA manufacturing process were also observed. Urea is mixed with water then converted to CA after pyrolysis and acidification. The finished product is then dewatered and is subjected to several finishing steps such as drying, compacting, screening, and sizing before being bagged. Supersacks that store some of the finished goods were observed. The inspection team was able to observe the scrubber used to control Cl₂ emissions during production, Solenis representatives stated that the scrubbing agent used is caustic soda and the destruction reduction efficiency (DRE) of the scrubber is 98.9 %. Some of the by-products from the production process are recycled and reused and some of the effluents are subject to waste treatment before sent to an outfall.

The inspection team proceeded to the control room to observe parameters that are monitored during production. Some of the parameters that are monitored include: baghouse pressure drop and air flow rates, temperature of the afterburner (incinerator), chlorinators, kilns, and waste treatment plant, and the scrubbing liquid solution throughput.

After exiting the control room, the Facility walkthrough continued with an inspection of the compactor area, one of the finished products, CDB-90 was stored in Supersack in this area during the inspection. EPA inspectors inquired about the Calciner that was observed, Solenis representatives stated that due to operating costs this process, the "D" Calciner, which is located adjacent to the crude CA unloading area is out of service. The flash dryer for the CDB-56 process was then inspected. Solenis representative explained that this process involves the centrifuging of the liquids that exits the chlorinator, which is then conveyed via a chute to the flash dryer, there is a baghouse associated with

this operation to control particulates. The inspection team was able to observe a titanium tank that is associated with the CDB-56 process, the role of titanium is to prevent chlorine corrosion to the equipment.

The inspection team then completed the walkthrough with an observation of the boilers and emergency generators (EGENs). A list of boilers and EGENs inspected is located below:

Boiler H-110, this is an older 26.8 MMBtu/hr model natural gas fired boiler that supplies steam to the entire plant, it was installed in 1996. The temperature gauge displayed a reading of 75⁰ C during the inspection.

Boiler H-112, this is a 32.5 MMBtu/hr natural gas fired low NOx boiler that supplies steam to the entire plant, it was installed in 2003.

EMERGENCY GENERATORS

EGEN ID	Unit description	Installation date	Capacity (hp)	Meter hour reading
EG-100	Diesel generator	1997	1340	2397.5
EG-200	Diesel generator-Caterpillar-C32 1000kW	2012	1474	1183.6
EG-400	Diesel generator	1991	743	1004.7
EG-514	Diesel generator Caterpillar-D100-6	2012	157	300.6

The walkthrough concluded at 11:48 am.

IV. Records Review

The records review commenced after a lunchbreak at 1:02 pm. EPA inspectors reviewed documents requested in the on August 26, 2024, email to Katie Musick. Records were provided at the time of the inspection by Sydney Stauffer. Below are the records requested and what was provided:

1. Process flow diagram and plot plan. ***A process flow diagram and plot plan were provided for review.***
2. A list of all air emissions sources and corresponding dates of installation. ***This information was provided for review.***
3. A list of all air pollution control (APC) devices . ***This information was provided for review. APC devices include baghouses, scrubbers, ammonia afterburners, and a condenser.***
4. A list of all combustion sources, including but not limited to boilers, engines, furnaces, and heaters. ***This information was provided for review. Combustion sources include boilers, dryers, heaters, and diesel generators.***

5. A list of all volatile organic compound (VOC) emitting sources. ***This information was provided for review.***
6. A list of all hazardous air pollutant (HAP) emitting sources. ***This information was provided for review. HAPs include aldehydes, chlorine, and hydrochloric acid (HCl)***
7. Provide a list of all applicable NESHAP or NSPS regulations for your air emission source(s). ***This information was provided for review***
8. For the emergency generators provide the following information:
 - a. The make, serial number, model number or other model designation, model year and date of installation
 - b. The hours of operations for each month for the past 5 years
 - c. The rated capacity and type(s) of fuel used
 - d. Indicate and describe if each engine has manufacturer installed or add-on emission controls.***This information was provided for review.***
9. Results of visual emission evaluations for the past 5 years, including the monthly Method 22 visual emission inspection forms. ***This information was provided for review.***
10. The daily, monthly, and annual fuel usage records for the past 5 years. ***This information was provided for review.***
11. Records of scheduled and unscheduled maintenance of APC equipment for the past 5 years. ***This information was provided for review.***
12. Any reports of occurrences of excess emissions, malfunctions, shutdown, or failure associated with APC equipment for the past 5 years. ***This information was provided for review. Documentation provided showed a malfunction at boiler H-112 on December 5, 2023, due to human error. The set point at the steam header pressure controller was set at a higher-than-normal level resulting in an increased steam demand and increased natural gas usage. This deviation is included in the Facility's Title V report for this period.***

V. Closing Conference

After the records review, EPA inspectors, Scott Farley, Ray Stuart, Katie Musick, and Cory Nicholson from Solenis, Sydney Stauffer, Consultant from ARC representing Solenis, and Angela Chestnut from WVDEP had a brief closing conference to ask additional questions and discuss observations. The EPA inspectors noted that the investigation is on-going, and any areas of concern identified in the final report do not necessarily reflect a violation or deviation, rather, they are areas that will require further investigation. EPA also noted that they would issue an inspection report within 60 days, with a copy to the State. Simultaneously, EPA will perform a detailed review of records and may have additional questions. The inspection concluded at 2:30 pm.

The following have been identified as *potential* issues during the inspection. They are issues that require either further investigation by EPA or additional information or explanation by Solenis.

- A review the Facility's emission sources will be conducted for HAPs for regulatory applicability
- A review of the boilers will be conducted for regulatory applicability

VI. List of Attachments

Attachment 1: Inspection sign-in-sheet

Attachment 2: Photo Log