

RCRA Inspection Report

1) Inspector and Author of Report

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U.S. Environmental Protection Agency, Region 4
Enforcement and Compliance Assurance Division
Chemical Safety and Land Enforcement Branch
61 Forsyth Street, S.W.
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2) Facility Information

SI Group, Inc.
725 Cannon Bridge Road
Orangeburg, South Carolina 29115-
7221

EPA ID# SCD043384072

3) Responsible Officials

Jason Canterbury
Senior Manager
Environmental Health and Safety
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4) Inspection Participants

Julian Smalls	SI Group, Inc.
Curtis Jeffcoat	SI Group, Inc.
William Flake	SI Group, Inc.
Gerald Shealy	SC DHEC Columbia
Alan Risa	SC DHEC
Daryl R. Himes	US EPA Region 4 Atlanta

5) Date of Inspection

December 1, 2022, at 9:15 a.m. EDT

6) Applicable Regulations¹

Resource Conservation and Recovery Act (RCRA) Sections 3002 (42 U.S. Code – Annotated U.S.C.A. 6925 and 6927), and 40 Code of Federal Regulation (C.F.R.) Parts 260 - 270, 273, 278, & 279; South Carolina Hazardous Waste Management Act, S.C. Code Ann. § 44-56-10 *et seq.*, and South Carolina Hazardous Waste Management Regulations (SCHWMR), S.C. Code Ann. Regs. 61-79.260-270, 61-79.273 and 61-79.279; and Hazardous Waste Permit SCD043384072.

¹ As the State's authorized hazardous waste program operates in lieu of the federal RCRA program, the citations of those authorized provisions will be to the authorized State program. However, for ease of reference, the federal citations will follow in brackets.

Pursuant to S.C. Code Ann. Regs. 61-79.260.10 [40 C.F.R. § 262.10], a Large Quantity Generator (LQG) is a generator who generates greater than or equal to 1,000 kilograms (2200 lbs) of non-acute hazardous waste in a calendar month.

Pursuant to S.C. Code Ann. Regs. 61-79.262.17 [40 C.F.R. § 262.17], a LQG may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, as required by Section 44-56-60(a)(2) and (b) of the SCHWMA, S.C. Code Ann. § 44-56-60(a)(2) and (b) [Section 3005 of RCRA, 42 U.S.C. § 6925], provided that the generator complies with the conditions listed in S.C. Code Ann. Regs. 61-79.262.17 [40 C.F.R. § 262.17] (hereinafter referred to as the “LQG Permit Exemption”).

Pursuant to S.C. Code Ann. Regs. 61-79.262.15(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 Section 44-56-60(a)(2) and (b) of the SCHWMA, S.C. Code Ann. § 44-56-60(a)(2) and (b) [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with S.C. Code Ann. Regs. 61-79.262.16(b)(2) or [40 C.F.R. § 262.16(b) or § 262.17(a)], except as required in S.C. Code Ann. Regs. 61-79.262.15(a)(7) and (8) [40 C.F.R. § 262.15(a)(7) and (8)], provided that the generator complies with the satellite accumulation area conditions listed in S.C. Code Ann. Regs. 61-79.262.15(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 SI Group, Inc.’s compliance with the conditions of its RCRA Hazardous Waste Facility Operating Permit SC1750216169, the applicable requirements of RCRA and the corresponding SC DHEC regulations. This was an EPA lead inspection.

8) Facility Description

SI Group, formerly Albemarle Corporation, is a specialty chemical manufacturing facility located in Orangeburg that has been in operation since 1937. The facility was owned and operated by the Wannamaker Co. from 1937 to 1953. Ethyl Corporation owned the company from 1953 to 1994. Albemarle Corporation acquired the facility in February of 1994 and operated the facility until 2014.

SI Group is on approximately 300 acres of land, of which approximately 100 acres have been developed for manufacturing operations. The facility is completely fenced and the entrance is monitored by 24-hour security. All visitors are required to sign-in and be escorted by SI Group’s personnel. SI Group operates 24-hour per day, 7 days per week with four rotating 12-hour shifts.

The facility manufactures fuel additives and pharmaceutical products. SI Group divides its operations into 11 plants. Three production operations are performed using these plants which produce Ibuprofen, Plasticizers, and Isobutyl Benzene which is subsequently used in the

Ibuprofen manufacturing operations. Routine hazardous waste streams generated at the facility include production stream distillation heels, off-spec chemical products, by-products, contaminated personal protection equipment (PPE) and laboratory wastes. Except for the distillation heels, the facility typically ships all hazardous waste off-site.

SI Group manages its distillation heels in four aboveground permitted hazardous waste storage tanks and accumulates hazardous waste for up to 90 days in tanker trucks. These wastes are fed to and treated within an industrial boiler (Boiler No. 4). The operations of these units are covered by the facility's RCRA Permit. The permit allows the facility to store the distillation heels in four tanks (total volume of 170,000 gallons) for one year and to operate one direct burn system (i.e. direct transfer system) and to treat liquid hazardous wastes in Boiler No. 4. The direct burn area includes the concrete containment area located immediately adjacent to, and east of, the storage tank containment structure.

Tank No.	Capacity (gallons)
T-100M-5 (T-8332)	100,000
T-30M-61 (T-8333)	30,000
T-30M-66 (T-8331)	30,000
T-10M-32 (T-8345)	10,000

Boiler No. 4 is a Cleaver-Brooks 800 P packaged firetube boiler. It includes an ancillary hazardous waste feed equipment, a computerized boiler controller, an oxygen trim system, a soot blower system, an economizer, an air pollution control system (baghouse collector), and an exhaust stack. The boiler has a thermal input rating of 32 million British thermal units per hour for production of 27,600 pounds per hour steam at 200 PSIG. The distillation bottoms are pumped from hazardous waste storage tanks or the direct transfer system through filters and feed rate monitoring equipment and into the burner system. When burning hazardous wastes, the boiler is fired 100 percent on waste and no auxiliary fuel is introduced to the boiler.

Permit Established Feed Rate Limits:

- Minimum heating: 5,000 British thermal units per pound (Btu/lb)
- Maximum viscosity: 150 centipoises
- Maximum total ash: 10,053 grams per hour
- Maximum total chlorine/chloride: 2.05 grams per second.
- Maximum total metal feed rates from all feed streams entering the industrial boiler:

Constituent	Grams per second
Antimony	2.54e-03
Arsenic	1.13e-04
Barium	1.24e-03
Beryllium	3.80e-05
Cadmium	4.81e-05
Chromium (T)	3.11e-04

Lead	1.27e-03
Manganese	2.39e-02
Mercury	No known sources in boiler feed streams
Silver	3.34e-05
Thallium	1.49e-04

Sides streams from the facility's distillation operations are reused back into one of the three columns.

SI Group's most recent Hazardous Waste Generator Notification (EPA Form 8700-12) dated July 28, 2018, described the facility as a Large Quantity Generator (LQG) of hazardous waste and a Permitted Treatment, Storage, and Disposal Facility (TSDF). The notification listed the following EPA Waste Codes: D001-D009, D018, D021-D025, D028, D035-D040, D042, F001-F005, F027, P005, P012, P022, P028, P030, P048, P098, P102, U001-U003, U006, U007, U012, U019, U029, U037, U044, U080, U092, U103, U108, U117, U122, U140, U144, U154, U159, U165, U169, U170, U188, U190, U196, U208, U209, U211, U213, U220, U223 and U239.

9) **Previous Inspection History**

This facility was last inspected on August 17, 2021, by SC DHEC. No issues were observed during the inspection.

10) **Opening Conference**

On December 1, 2022, EPA inspector Daryl Himes, accompanied by SC DHEC inspector Gerald Shealy, arrived at SI Group, Inc. at approximately 9:15 a.m. Julian Smalls, the facility's Environmental Health and Safety Manager, immediately received the inspectors in the lobby of the facility's main office building. The inspectors presented their credentials and were escorted to a conference room for an opening conference and discussion of facility operations. The inspectors were joined in the conference room by Curtis Jeffcoat, the facility's Wastewater and Boiler Supervisor and briefly by William Flake, a Production Engineer. Introductions were conducted and the inspectors explained the purpose of their visit and stated their desire to see all active generation, accumulation and storage locations of hazardous waste in addition to the facility's hazardous waste permitted treatment unit (boiler).

The inspectors described the anticipated use of a digital camera during the inspection and provided a request for records. The SI Group, Inc. exceeds the number of employees to be considered a small business. The EPA inspector also 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 facility representatives stated that, for the most part, operations at the facility remained the same as those observed in previous inspections.

11) Inspection Observations

A walk-through inspection of the facility was then performed.

Unless notes otherwise, all containers of hazardous waste observed within SAAs were closed, labeled with the words “Hazardous Waste,” and marked with an indication of the hazard associated with the waste contained.

In addition, unless noted otherwise, all containers of hazardous waste observed within central accumulation areas (CAAs) for less than 90 days were closed, marked with an accumulation start date, labeled with the words “Hazardous Waste,” and marked with an indication of the hazard associated with the waste contained.

Plant Area 8

Hazardous waste is accumulated in Tank T8155 (T-15M-42) in this area. Tank 8155 (Photographs 1-4) is a 15,000-gallon, less than 90-day hazardous waste accumulation tank for hazardous waste solvents. Tank T-8155 manages spent solvent wastes having the EPA Waste Codes D001, F003 and F005 which are generated in Area 2. The contents of the tank are pumped into tanker trucks and transferred to the permitted tank farm in the area of Boiler #4. The tank had secondary containment which exceeded the 15,000-gallon volume of the tank (Photograph 3). The secondary containment was free of cracks and gaps and was coated at the time of the inspection. The top of the tank was inspected and found to have all openings equipped with proper closure devices. Ancillary equipment associated with the tank was properly marked and all pumps, flanges and valves were tagged for air monitoring purposes (Photograph 4).

Boiler # 4 Area

At the time of the inspection, Boiler #4 was shut down for maintenance. Both ends of the permitted hazardous waste treatment device were disassembled at the time of the inspection (Photograph 5). Facility personnel indicated that Boiler #4 would be operational in the next several weeks.

A 55-gallon container was connected to a baghouse silo connected to the emission stack for Boiler #4 for the collection of hazardous waste ash. The container was identified as SAA “S” (Photograph 6).

The tank farm in the area of Boiler #4 has four permitted hazardous waste tanks (Photographs 4 - 6) The tanks (T-8332, T-8333, T-8331 and T-8345 (Photograph 7)) receive distillation heels from the facility’s production areas. When a tank is full, the valves are shut off and a sample of the tank contents are sent for analysis. Once the analysis is returned, the tank’s contents are fed to the Boiler #4, generally from the 100,000-gallon tank to be used as fuel. As stated above, Boiler #4 was not operating at the time of the inspection.

Tanker Trailer Pad

The facility also operates a concrete pad for the accumulation of hazardous waste solvents generated on-site in 6,000-gallon tanker trucks (Photograph 9). The pad is sloped and coated. At the time of the inspection, one tanker (Photograph 8) was observed on the pad which contained approximately 4,800 gallons of hazardous waste. The tanker truck was closed, labeled with the words "Hazardous Waste" and was marked with an indication of the hazard of the waste contained. The trailer was marked with an accumulation start date of November 17, 2022.

Contractor's Work Area and Bone Yard

In a paint shed, the inspectors observed one 55-gallon container (Photograph 10) of hazardous waste within (SAA "N") that contained spent solvent hazardous wastes from painting activities (D006/D007/D008/D035 characteristic hazardous wastes and F003/F005 listed hazardous waste).

South Maintenance Shop

In the South Maintenance Shop, the inspectors observed one 55-gallon container (Photograph 11) that contained Universal Waste aerosol containers. The container was labeled with appropriate universal waste language and was dated with an accumulation start date of less than one year. One container of hazardous waste spent solvents (D002/D035 F003/F005) was also observed in a SAA in this area.

South 330 Process Area

One 55-gallon container of hazardous waste spent heptane filters was observed in SAA "R" in this area. The container was open at the time of the inspection. (Photograph 12)

Pursuant to S.C. Code Ann. Regs. 61-79.262.15(a)(4) [40 C.F.R. § 262.15(a)(4)], which is a condition of the SAA Permit Exemption, a generator is required to keep containers of hazardous waste closed at all times during accumulation, except when adding, removing, or consolidating waste; or when temporary venting of a container is necessary for the proper operation of equipment, or to prevent dangerous situations, such as build-up of extreme pressure.

In addition, one 55-gallon container of hazardous waste process samples (D001/D002 F002) were observed in SAA "M" in this area.

Plant 9

One 55-gallon container of hazardous waste raw material/intermediate/product sample residues containing hexane and isopropyl alcohol were observed in SAA "L" in this area.

Area 3 Maintenance Shop

One 55-gallon container of solvent contaminated shop rags were observed in SAA “BB” in this area.

SAA - KK

One 55-gallon container of hazardous waste was observed in this SAA for the collection of samples from a fuel oil process performed at the facility.

B-Street Warehouse

One 55-gallon container of hazardous waste was observed in SAA-G in this location. The container was used for the collection of phenol samples from a facility process.

6th-Street by Tank 1452

One 55-gallon container of hazardous waste was observed in SAA-V in this location for the collection of spent heptane filters (D001).

Central Accumulation Area SP-1

This area contained a CAA for the 90-day accumulation of hazardous waste in containers (Photographs 13 and 14). Eighteen 55-gallon containers of hazardous waste were observed in this area. At the time of the inspection, the area was not equipped with a fire extinguisher.

Pursuant to Ga. Comp. R. and Regs. 391-3-11-.08(1) [40 C.F.R. § 262.17(a)(6)], which incorporates Ga. Comp. R. and Regs. 391-3-11-.08(1) [40 C.F.R. § 262.252], and is a condition of the LQG Permit Exemption, a generator is required must equip container accumulation areas with fire extinguishers the actual hazardous waste generation or accumulation area does not lend itself for safety reasons to have a such equipment.

North Production Area

One 55-gallon container of D001 characteristic hazardous waste was observed in SAA “B” in this area.

Plant 12

At the time of the inspection, operations in this area were shut down. Facility personnel stated that the Facility is trying to find new operations for this area.

Area 2

In this area, the inspectors observed two SAA areas, each containing hazardous waste in 55-gallon containers. SAA “F” contained spent solvent contaminated absorbent/spill control

material. SAA “HH” contained hazardous waste methyl acrylate.

Area BL -1

One 35-gallon container of D009 characteristic hazardous waste was observed in SAA “E” in this area.

CAA in next to Area BL-1

One 55-gallon of lab waste D001/F001/F002/F003/F005 was observed in this area. The area was equipped with proper signage, spill equipment and a fire extinguisher.

Area 2 Maintenance Shop

In the maintenance shop, the inspectors observed three separate 55-gallon hazardous waste accumulation containers within separate SAAs. The containers were managing aerosol cans as a universal waste in one 55-gallon container. The container was marked with appropriate universal waste markings and was dated with an accumulation start date of less than one year. Two separate 55-gallon containers managing solvent contaminated rags and DID crude samples were contained in separate SAA containers.

Plant 14

In this plant, the inspectors observed two 55-gallon hazardous waste accumulation containers within SAAs. SAA “V” contained spent AN-330 product filters. SAA” HH” contained heptane/methanol contaminated filters.

Inspection Records

After the walkthrough, the inspectors requested and reviewed the facility’s applicable training records, contingency plan, inspection records and manifests.

Closing Conference

The inspection team conducted an exit meeting at the end of the walk-through inspection and review of the facility’s hazardous waste records with facility personnel which included Julian Smalls and Curtis Jeffcoat. During this meeting, the inspectors discussed their preliminary findings made during the inspection.

12) Signed

DARYL HIMES Digitally signed by DARYL HIMES
Date: 2022.12.22 16:48:36 -05'00'

Daryl R. Himes
Environmental Engineer

Date

13) **Concurrence**

ARACELI
CHAVEZ

Digitally signed by
ARACELI CHAVEZ
Date: 2022.12.23 12:08:49
-05'00'

Araceli B. Chavez
Chief
RCRA Enforcement Section

Date

ATTACHMENT A

SI Group, Inc.

Orangeburg, South Carolina

COMPLIANCE EVALUATION INSPECTION

SCD043384072

December 1, 2022

Photographs taken by Daryl R. Himes

Photographs taken with Canon Power Shot Elph 360 HS



Photograph 1 – Tank 8155 (center foreground)



Photograph 2 – Labeling on Tank 8155



Photograph 3 – Secondary Containment for Tank 8155



Photograph 4 – Ancillary equipment to Tank T8155



Photograph 5 – Boiler #4



Photograph 6 – Container for ash from Boiler #4's Baghouse



Photograph 7 – Hazardous Waste Tank T-8345



Photograph 8 – Tanker truck on Tanker Pad



Photograph 9 – Tanker Trailer Pad



Photograph 10 – 55-gallon container in SAA in the Contractor’s Work Area and Bone Yard



Photograph 11 – 55-gallon drum in SAA in South Maintenance Area for the collection of Universal Waste Aerosols.



Photograph 12 – 55-gallon drum in SAA in South 330 Process Area collection of hazardous waste filters



Photograph 13 – CAA Area



Photograph 14 – CAA Area