United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

National Enforcement Investigations Center

NEICVP1544E01

NEIC CIVIL INVESTIGATION REPORT
Polynt Composites
Forest Park, Georgia 30297

Investigation Dates:
November 13-17, 2023

LAURA KANOPKIN Digitally signed by LAURA KANOPKIN Date: 2024.07.02 12:29:43 -06'00'

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NEIC

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APPENDICES (*NEIC-created documents)

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INVESTIGATION OVERVIEW

PROJECT OBJECTIVE

At the request of U.S. Environmental Protection Agency (EPA) Region 4 (Region), EPA's National Enforcement Investigations Center (NEIC) conducted a Resource Conservation and Recovery Act (RCRA) compliance investigation of Polynt Composites (Polynt), located at 71 Barnett Road, Forest Park, Georgia (the Facility). The scope of the investigation was to evaluate Polynt's hazardous waste determinations, waste management practices including potential treatment and incineration of solid or hazardous wastes, and compliance with hazardous waste air emissions regulations (40 Code of Federal Regulations [CFR] Part 265, Subparts BB and CC).

Table 1 lists the project team members.

Table 1. PROJECT TEAM MEMBERS		
Team Member	**Organization**	**Project Role**
Laura Kanopkin	NEIC	Project manager
Brian Kennedy	NEIC	Field team member
Olivia Salmon	NEIC	Field team member
Tanner Cheney	NEIC	Analytical project manager, laboratory team member, field team member
Justin Bordoff	NEIC	Laboratory team member
Aaron Johnson	NEIC	Laboratory team member
Bryan Locher	NEIC	Laboratory team member
Richard Martinez	NEIC	Laboratory team member
REGIONAL AND OTHER CONTACTS		
Brooke York	EPA Region 4	Regional field team member
Robert Nakamoto	EPA Region 4	Regional field team member
Kayla Acosta	EPA Region 4	Regional field team member
Sarah Rowell	Georgia Environmental Protection Division (GAEPD)	State field team member

FACILITY CONTACT INFORMATION

Table 2 lists the primary Facility contacts.

Table 2. FACILITY CONTACT INFORMATION		
Name, Title	**Phone No.**	**Email Address**
Natalie Brandeberry, Regional EHS Manager	404-362-4033	natalie.brandeberry@polynt.com
Toni Shields, Site Manager	404-362-4050	toni.shields@polynt.com

FACILITY OVERVIEW

Polynt (EPA Registry Identification No. 110070329555) manufactures alkyd and unsaturated polyester resins (UPRs) for use in the coatings, inks, and composites industries. Alkyd resins are primarily used for paints, enamels, and inks, while UPRs are used in the composites industry for cast or fiberglass-reinforced products such as boats or countertops. In addition to resin manufacturing, the Facility historically melted solid-phase phthalic anhydride into molten form for outside sale. At the time of the NEIC inspection, the Phthalic Anhydride Melting Building was under construction to reverse the process (i.e., convert molten phthalic anhydride to solid flake form for outside sale).

The Facility was constructed in 1976 and has been owned and operated by various resin manufacturing entities since that time, including Cargill, Valspar, McWhorter Technologies, Eastman Chemical, Resolution Specialty Materials, Hexion Momentive, PCCR, and Polynt.

The Facility is located on 12.5-acres which includes offices, a maintenance shop, two process buildings, a Polyester Blend Building (PEBB), warehouses for raw materials and finished goods storage and drumming, tank farms for raw materials and finished goods, a Quality Control (QC) Lab, a Phthalic Anhydride Melting Building, and a waste storage and treatment area. Polynt operates in two shifts, 24 hours a day, seven days a week and employs approximately 60 full-time employees.

Polynt is a large quantity generator (LQG) of hazardous waste (EPA ID No. GAD084823301). The Facility's 2021 biennial waste report indicates that hazardous waste generated on-site includes water of reaction (WOR) from resin manufacturing processes, off-specification product and solvent from process equipment cleanouts, waste filter bags and filter media, obsolete and overage raw materials, resin quality control samples, and phthalic and maleic anhydrides from cleanouts and small spills.

EPA's Enforcement and Compliance History Online database (ECHO) indicates that the Facility was a significant noncomplier under RCRA for five quarters prior to NEIC's inspection following a previous EPA inspection in November 2022 which identified numerous compliance concerns.

The Facility has a Corrective Action Hazardous Waste Permit HW-035(CA) (Corrective Action Permit), issued by the Georgia Environmental Protection Division (GAEPD) on April 20, 1998, and effective on May 20, 1998. The Corrective Action Permit expired on April 20, 2008, but has been administratively continued, and the Facility continues to be subject to it.

According to the ECHO database, this Facility has the following North American Industry Classification System (NAICS) code (**Table 3**):

Table 3. APPLICABLE NAICS CODE	
NAICS Code	**Description**
325211	Plastics material and resin manufacturing

FACILITY OPERATIONS SUMMARY

Polynt is equipped for both alkyd resin and UPR batch manufacturing processes. Four resin reactors (“kettles”) are located in the Main Process Building. Kettles 1, 3, and 4 are used for alkyd resin batches. Kettle 2 is used for UPR batches. A fifth resin kettle, Kettle 5, is located in the K5 Process Building and is used for UPR batches. The Main Process Building and K5 Process Building house mix tanks associated with each reaction kettle. Blending of final UPR products occurs in polyester blend tanks located in the PEBB. Phthalic anhydride melting historically occurred in a dedicated building adjacent to the K5 Process Building; this building is currently under construction to reverse the process (i.e., convert molten phthalic anhydride to solid flake form).

Alkyd Resin Process

A process flow diagram of the alkyd resin manufacturing process is shown in **Appendix A**. Alkyd resin production can be a one- or two-stage reaction. The alkyd resin process at Polynt is more often carried out as a two-stage batch reaction and can take between 16 and 50 hours. Raw materials charged to the reactors in the first stage of the reaction (alcoholysis) consist of oils, a polyol, and a catalyst. Alcoholysis is the reaction of a polyol with a triglyceride to form monoglycerides. In the second stage of the reaction (esterification), dibasic acids are charged to the reactor. The ratio of oil to dibasic acid can be adjusted to create short, medium, or long-chain alkyd resins with varying viscosities. At the end of a batch, the resin is pumped or gravity fed from the kettle into mix tanks (also located in the Main Process Building) where solvents may be added to adjust viscosity and create the desired final product. After mixing, alkyd resin product is stored in an on-site tank farm or transferred to containers for shipment off-site.

During the esterification (second) stage of the alkyd resin reaction, water is produced. Because the esterification reaction is reversible, removal of water is an important factor in the rate of the reaction. Facility personnel stated that reflux solvent, typically xylene, is used in the alkyd resin process to “drive off” water generated in the kettle during the reaction. Facility personnel later clarified that the most common reflux solvent used to drive off water in the alkyd resin process is a mixture comprised of 60% to 100% xylene and 10% to 30% ethylbenzene. If the xylene and ethylbenzene mixture is not used, then a petroleum naphtha blend and a mineral spirits blend may be used. Fresh solvents can be charged directly to the kettle at the beginning of a batch or while a batch is in process. Alternatively, reflux solvents from cleaning operations or a prior batch can be directed from the kettle’s decanter back to the kettle if the solvent is compatible with the next batch’s recipe.

Each alkyd resin kettle at the Facility is equipped with a condenser and a decanter. The condenser receives solvent vapor and water vapor from the kettle during batch reactions.

Uncondensed vapors from the condenser are directed to the vapor collection system. Condensed vapors from the condenser are directed to the kettle's decanter, where the liquid separates into solvent and water layers. The decanter is equipped with two outlets; the first outlet allows the solvent layer to reflux back to the kettle and the second directs the solvent and/or water layers to the Liquid Knockout Tank (described in the **Water of Reaction Waste Process** section below). Facility personnel described that the line between the decanter and the Liquid Knockout Tank has a valve that is closed while a batch is reacting. The water/solvent interface in the decanter is monitored via a computer control screen as well as a sight glass which allows for adjustments to be made to batch operations if necessary. Between batches, when the water/solvent interface reaches a predetermined level, the valve between the decanter and the Liquid Knockout Tank is opened. If the solvent layer in the decanter is compatible with the next resin batch, the (bottom) water layer is drained to the Liquid Knockout Tank, while the solvent layer is retained and/or returned to the kettle. If the solvent layer is incompatible with the next alkyd resin batch, both the water and solvent layers are discharged to the Liquid Knockout Tank.

Each kettle and mix tank in the Main Process Building is piped to a vertical Rupture Tank located between the Main Process Building and PEBB. When pressure thresholds are exceeded in a kettle or mix tank, waste liquid and/or vapor from the kettle or mix tank is directed to the Rupture Tank.

Unsaturated Polyester Resin Process

A process flow diagram of the UPR resin manufacturing process is shown in **Appendix A**. The UPR reaction can take place in one or two stages but is more often conducted in two stages. Raw materials charged to the reactor consist of a glycol and dibasic anhydrides and/or acids. In the two-stage process, a glycol is reacted with a dibasic acid to create a prepolymer, which is then reacted in the second stage with additional glycol and dibasic acid to create the final UPR product. As with the alkyd resin process, water is produced during esterification, some of which must be removed to keep the reaction moving toward product. In the UPR process, this is achieved by keeping the system under pressure (sparging with inert gas) to drive off water while bringing the kettle up to temperature. Reflux solvents are not used in the UPR batch process. According to Polynt representatives, the second stage of the reaction is sometimes conducted under a vacuum when a recipe is for a heavier resin product. When a batch is complete, the resin is gravity fed or pumped from the kettle to a mix tank (located in the same building as the kettle), where solvent is added. UPR is transferred from the mix tanks to blend tanks located in the PEBB, where a variety of promotors, inhibitors, and other constituents are added to create the final product. After mixing and blending, UPR product is stored in an on-site tank farm or transferred to containers for shipment off-site.

Each UPR kettle is equipped with a packed column, a total condenser, and a receiver. Pressurized water and glycol driven off from the kettles during the batch reaction are directed to the packed column, which partially separates the water and glycol. Glycol separated in the packed column is directed back to the kettle. Kettle 5 is equipped with a partial condenser on top of the packed column, which directs a portion of the condensed water back into the packed column to wet the packing and optimize glycol recovery. From the packed column (Kettle 2) or partial condenser (Kettle 5), water entrained with glycol travels to the total condenser. Uncondensed vapors from the total condenser are directed to the vent collection system. Condensed water and entrained glycol from the total condenser travel to the receiver. The receiver outlet directs water and residual glycol to the Liquid Knockout Tank (described in the **Water of Reaction Waste Process** section below).

In addition to the primary receiver for each UPR kettle, vacuum receivers are also present at Kettles 2 and 5 for batches in which vacuum is used. Vacuum receivers receive liquids from the total condenser (vacuum pumps are located downstream of the total condensers) and discharge to the Liquid Knockout Tank.

According to Polynt representatives, the lines between the UPR receivers and Liquid Knockout Tank are valved shut while a batch is reacting. During the NEIC inspection, inspectors also observed that process control screens for the UPR kettles had the following indicator message: “Close receiver drain when processing.” Polynt representatives described that keeping this valve shut allows operators to monitor the water/glycol level via a computer control screen and to adjust based on how much water is being removed from the batch. Between batches, when the water/glycol level reaches a predetermined height, the valve to the Liquid Knockout Tank is opened to drain the water with entrained glycol from the receivers.

The UPR kettle and mix tanks in the Main Process Building are piped to a vertical Rupture Tank located between the Main Process Building and PEBB. Kettle 5 and its mix tank are piped to a different vertical Rupture Tank to the southeast of the K5 Process Building. When pressure thresholds are exceeded in a UPR kettle or mix tank, waste liquid and/or vapor from the kettle or mix tank is directed to its associated rupture tank.

Water of Reaction Waste Process

Polynt representatives explained that Water of Reaction (WOR) is generated during the alkyd resin and UPR manufacturing processes when a combination of water, acids, glycols, and/or solvents (in the case of alkyd resin processes) are driven out of the reaction kettles. The Facility collects the WOR and manages all WOR together in the on-site waste system. The Facility process for managing WOR waste is described below.

Overview of System Design

Polynt staff described that the WOR waste system is designed to function as follows:

- WOR from process decanters and receivers travels through a filter into the Liquid Knockout Tank, where additional solids that were not caught by the initial filter are collected and removed.

- WOR from the Liquid Knockout Tank is pumped to Waste Tank 4, where it separates by gravity into organic solvent and aqueous layers (WOR organic and WOR aqueous layers, respectively).

- The upper WOR organic layer is pumped from Waste Tank 4 to Waste Tank 3. At the time of the NEIC inspection, the Facility characterized the WOR organic layer as D001 hazardous waste prior to transporting it off-site by tanker truck.

- The lower WOR aqueous layer is pumped from Waste Tank 4 to Waste Tank 2, where it is neutralized to a pH greater than 3. Following neutralization, Polynt characterizes the waste as non-hazardous, claiming the exclusion found in the characteristic of ignitability at 40 CFR § 261.21(a)(1) (Alcohol Exclusion). The neutralized WOR aqueous layer is then fed to an on-site Incinerator for disposal by thermal oxidation.

A general schematic of the WOR waste system design at Polynt is presented in **Appendix B**. A detailed description of the WOR waste process system components and how they were functioning at the time of the NEIC inspection is presented below.

WOR Waste System Tanks

Between process batches, WOR that collects in the three alkyd resin process decanters and the four UPR process receivers are pumped to the Liquid Knockout Tank. The individual waste streams from each process decanter and receiver are manifolded together upstream of the Liquid Knockout Tank and enter the Liquid Knockout Tank in a single inlet, with the exception of the Kettle 5 primary and vacuum receivers. The primary and vacuum receivers for Kettle 5 are piped together in the K5 Process Building and enter the Liquid Knockout Tank through a second inlet.

According to Polynt representatives, the primary function of the Liquid Knockout Tank is collection of solids, which include precipitated acid salts from normal process operations and larger resin solids from process upsets. A baffle is present in the interior of the Liquid Knockout Tank to facilitate solids collection and removal. Polynt representatives described that after liquid in the Liquid Knockout Tank reaches a predetermined level, it is batch-pumped to Waste

Tank 4. Waste Tank 4 is a 12,180-gallon vertical tank located to the north of the Liquid Knockout Tank. The purpose of Waste Tank 4 is to separate organic solvent and aqueous phases of the WOR before delivering the two phases of the waste stream to separate waste tanks. A liquid waste outlet from the base of Waste Tank 4 is piped to a pump and manifold, where the waste can be directed to Waste Tank 2 or Waste Tank 3.

Under the system design, Polynt staff briefed that the lower WOR aqueous layer from Waste Tank 4 is intended to be pumped in batches to Waste Tank 2, while the upper WOR organic layer is intended to be pumped in batches to Waste Tank 3. However, Polynt representatives stated that operators sometimes transfer some or all of the Waste Tank 4 WOR organic layer to Waste Tank 2 and some or all of the Waste Tank 4 WOR aqueous layer to Waste Tank 3; this practice occurs when the capacity of one or more of the waste tanks in the system is exceeded.

Waste Tanks 2, 3, and 4 are equipped with interface sensors that are intended to transmit the interface level (depth) and mass of each WOR layer to a control screen. However, according to Polynt representatives, these readings are not considered reliable by operators because of the sensor's inaccurate reading of the dielectric constants of water and xylene and the fact that the weight of each layer is calculated as a function of the density of pure xylene and pure water. (Xylene and water are major components of the WOR layers, but the WOR layers do not consist of pure xylene or water). As a result, when pumping individual WOR layers between Waste Tanks 2, 3, and 4, Polynt's senior management staff stated that operators rely primarily on visual observation of the interface level shown on each tank's sight glass. According to Polynt representatives, these sight glasses were installed about three years prior to the NEIC inspection in an effort to more accurately manage the WOR layers.

Waste Tank 2 is a 9,500-gallon vertical tank located in a roofed area to the west of Waste Tank 4. This tank's stated purpose is to receive the aqueous layer of the WOR waste stream, but as described above, it also receives solvent when the capacity of one or more of the other waste tanks is exceeded. According to Polynt representatives, Waste Tank 2 is used for neutralization of the aqueous layer of the WOR waste stream, which can sometimes enter the tank at a pH of less than 3. Neutralization is accomplished by adding ammonium hydroxide and bubbling with nitrogen to agitate and mix the contents of the tank. Following neutralization, the Facility characterizes the aqueous layer of WOR in Waste Tank 2 as non-hazardous by claiming the Alcohol Exclusion.

Waste Tank 3 is a 10,400-gallon vertical tank located adjacent to Waste Tank 2. This tank is intended to receive the organic solvent layer of the WOR waste stream, but as described above, also receives aqueous portions of the WOR waste stream when the capacity of one or more of the other waste tanks is exceeded. The bottom outlet from Waste Tank 3 is piped to a line that feeds to the Incinerator pump; this line was valved closed at the time of the NEIC inspection, and Polynt representatives stated that waste has not been transferred from Waste Tank 3 to the Incinerator since the 1990s. The bottom outlet of Waste Tank 3 and several side ports on Waste Tank 3 are also piped to the Waste Tank 3 transfer pump which connects to a manifold that can deliver waste to Waste Tank 2, Waste Tank 4, or a tanker truck. According to Polynt representatives, the organic layer in Waste Tank 3 is shipped off-site by tanker trucks at intervals of less than 90 days.

Solids are also generated in the WOR waste process. As discussed above, solids are collected in the Liquid Knockout Tank and removed from either a port at the bottom of the tank or from manways located on the sides of the tank. Solids are also collected in strainers and filters that are located immediately upstream and downstream, respectively, of the following pumps: 1) the pump between the Liquid Knockout Tank and Waste Tank 4, 2) the pump between Waste Tank 4 and the manifold leading to Waste Tanks 2 and 3, and 3) the pump between the Vapor Knockout Tank and the Incinerator. Solids removed from the Liquid Knockout Tank, strainers, and filters are sent off-site as hazardous waste.

A tank referred to by the Facility as the “Vapor Knockout Tank” is also located in the WOR waste process area. The Vapor Knockout Tank receives vapors from process kettles, mix tanks, catalyst tanks, the Main Process Building and Floor Wash Tank, and Waste Tanks 2, 3, and 4. Vapors from the Vapor Knockout Tank are pulled by a fume fan through a knockout pot to the on-site Incinerator, or to a backup activated carbon drum absorption system. Liquids that condense in the Vapor Knockout Tank are piped to a pump which can transfer the liquid in batches to Waste Tanks 2, 3, or 4. At the time of the NEIC inspection, the valves between the Vapor Knockout Tank and Waste Tanks 2 and 4 were closed, and liquid from the Vapor Knockout Tank was only being directed to Waste Tank 3. According to Polynt representatives, minimal volumes of condensed liquid are generated in the Vapor Knockout Tank, and the liquid height in the tank is typically maintained at a few inches.

Incinerator

Polynt management staff briefed that neutralized aqueous waste from Waste Tank 2 is pumped to an on-site Incinerator. The Incinerator is a Brule Model LVF-20 and operates by thermal oxidation in a single cylindrical horizontal chamber. It was historically operated under RCRA Hazardous Waste Permit HW-065(T), issued by GAEPD on September 29, 1988. HW-065(T) allowed for the treatment of both aqueous and organic components of the Facility’s WOR in the Incinerator. In March 1998, the Facility owner (which at the time was McWhorter) submitted a renewal application for HW-065(T) that stated their intent to discontinue incineration of the organic layer of the WOR waste stream. In a letter dated November 12, 1999, based on the information provided by the Facility, GAEPD indicated agreement with the Facility’s request to exclude aqueous WOR as a D001 ignitable hazardous waste based on the Alcohol Exclusion

(**Appendix C**). The GAEPD letter stated, "*McWhorter's aqueous wastewater, which appears to have a high water content of approximately 90% and a low energy content, less than 2000 Btu's per pound should not sustain combustion. Based on the information provided by McWhorter about the aqueous wastewater and EPA' s apparent intent to remove characteristic liquid wastes which do not sustain combustion, we agree with McWhorter's request to exclude their reaction water as a characteristic waste for ignitability, D001. According to our files the reaction water is still a characteristic waste for corrosivity (i.e., pH less than 2.0), D002*."

In first quarter 2001, the Facility initiated the waste neutralization process for the aqueous portion of the WOR waste stream being fed to the Incinerator. On December 15-17, 2002, the Facility conducted closure activities for the Incinerator, which consisted of neutralization and rinsing of the Incinerator and waste feed piping, along with removal of soot/scale from the interior of the Incinerator. Incineration of aqueous WOR (classified by the Facility as non-hazardous) resumed on December 18, 2002. GAEPD terminated the Permit prior to the closure of the Incinerator and entered into an agreed order with the company which allowed the continued operation of the Incinerator. In August 2003, GAEPD requested additional data to support its determination for the closure of the Incinerator under HW-065(T). In July 2011, the Facility submitted a Part B renewal application for Hazardous Waste Permit HW-065(T). On March 27, 2014, GAEPD issued a letter approving "clean closure" of the Incinerator, without reference to Hazardous Waste Permit HW-065(T).

The Incinerator is fueled by natural gas and/or fuel oil and operates continuously outside of maintenance or upsets. The aqueous waste feed to the Incinerator is atomized with plant air prior to injection into the combustion chamber. Feed to the Incinerator also includes vapors collected from the Facility's vent collection system that have been directed to the Vapor Knockout Tank. The combustion gases from the Incinerator are fed to a steam boiler where they cool before being pumped through a stack and discharged to the atmosphere.

Other Waste Stream Processes

Other hazardous waste streams generated by the Facility include process filters, laboratory QC samples, precipitated solids from process decanters and receivers, spent solvent from drum washing operations, solvent from flushing of the drumming lines, and off-specification product. These hazardous wastes are generally stored in dedicated satellite accumulation areas before being transferred to the Facility's central accumulation area, located in the Upper Warehouse. Waste streams characterized as non-hazardous by the Facility include spent activated carbon from primary and backup air pollution control systems, and sludge collected in an oily water separation system for contact stormwater. Liquids that accumulate on the floors of the Main Process Building and PEBB are also characterized as non-hazardous waste and pumped to a vertical tank (referred to as the Floor Wash Tank by the Facility) located in a containment structure to the west of the PEBB.

FIELD ACTIVITIES SUMMARY

The NEIC inspection team consisted of Tanner Cheney, Laura Kanopkin, Brian Kennedy, and Olivia Salmon. Kayla Acosta, Robert Nakamoto, and Brooke York from EPA Region 4 and Sarah Rowell from GAEPD also joined the inspection. Not all team members were present for every day of the inspection. On November 13, 2023, NEIC conducted an opening meeting and presented credentials to Toni Shields and Natalie Brandeberry of Polynt. With the participation of Region 4 and GAEPD, NEIC performed the following activities to accomplish the investigation objectives:

- Interviewed Facility personnel to discuss process operations, waste determinations, waste management practices, and recordkeeping associated with RCRA
- Conducted a walk-through tour of the Facility to observe process operations and waste management practices
- Photographed and documented site conditions at Polynt (photographs are included in **Appendix D**)
- Reviewed compliance with the RCRA air emission regulations at 40 CFR Part 265 Subparts BB and CC
- Conducted leak detection and repair (LDAR) fugitive emissions monitoring with a toxic vapor analyzer (TVA) and surveyed the site for volatile organic compound (VOC) emissions with a FLIR® GF320 forward-looking infrared camera (FLIR)
- Collected samples of liquid waste from waste tanks and the Incinerator feed line
- Reviewed documents, including process flow diagrams, waste profiles, analytical records, hazardous waste manifests, LDAR monitoring records, and inspection logs

Measurement and Sampling Activities

The NEIC field team provided support to this investigation by collecting nine samples of liquid waste from Polynt's waste system, specifically from the Incinerator feed line and Waste Tanks 2, 3, and 4. All samples were collected in 32-ounce glass jars by Polynt representatives while under observation by NEIC inspectors and immediately provided to the NEIC inspection team. Replicate samples were collected at the same time and provided to Polynt. NEIC inspectors also conducted leak detection and repair (LDAR) monitoring of equipment using toxic vapor analyzers (TVA). Brian Kennedy screened equipment for fugitive emissions using a FLIR® Gx320 infrared (IR) camera. **Table 4** summarizes field measurement and field sampling activities. A copy of the chain of custody record for collected samples is provided in **Appendix E**.

All environmental measurement activities were performed in accordance with the NEIC quality system. All field sampling, field measurements, monitoring, and laboratory measurements described in this report are within the scope of NEIC's ISO/IEC 17025 accreditation issued by the ANSI National Accreditation Board (certificate No. FT-0303), excluding the physical collection of the samples by Polynt representatives.

<table>
<tr><th colspan="7">Table 4. FIELD MEASUREMENT AND FIELD SAMPLING ACTIVITIES</th></tr>
<tr><th colspan="2">Location Identifier</th><th>Date(s)</th><th colspan="3">Method, and/or Procedure[1], and Equipment</th><th>Measurer Name</th></tr>
<tr><th colspan="7">MEASUREMENTS</th></tr>
<tr><td colspan="2">Waste Tank Farm, Main Process Building, K5 Process Building</td><td>November 14, 2023</td><td colspan="3">Method: EPA Method 21: Determination of Volatile Organic Compound Leaks
NEIC procedure: Toxic Vapor Analyzer (TVA), NEICPROC/00-016
Equipment: Thermo Fischer Scientific TVA 2020, EPA property Nos. B24213 and B24355</td><td>Tanner Cheney, Laura Kanopkin</td></tr>
<tr><td colspan="2">Used to screen location for safety; RadEye used additionally to screen samples for radiation</td><td>November 14 and 15, 2023</td><td colspan="3">NEIC procedure: Safety and Sample Screening Instruments, NEICPROC/17-002
Instrument guides:
MSA Altair 5X Multi-Gas Monitoring Equipment
RadEye B20-ER – Radiation Detection Equipment
Equipment:
• MSA Altair 5X multiple gas meter, S84656
• RadEye B20-ER radiation detector, S84634</td><td>Laura Kanopkin, Brian Kennedy</td></tr>
<tr><th colspan="7">SAMPLING</th></tr>
<tr><th>Sample No.</th><th>Sample Location</th><th>Appendix D Photo Nos.</th><th>Date and Time</th><th>Sampling Technique</th><th>Method and Equipment</th><th>Sampler Name</th></tr>
<tr><td>S01A</td><td rowspan="3">Incinerator feed line sample port</td><td>66</td><td>November 14, 2023, 9:01 a.m.</td><td rowspan="3">Grab sample</td><td rowspan="3">Method: Valved sample port was opened by Polynt representatives and samples were collected directly into sample containers
Equipment: None
Sample Container: 32-ounce glass jar</td><td rowspan="3">Polynt representatives (received by Laura Kanopkin)</td></tr>
<tr><td>S01B</td><td>66</td><td>November 14, 2023, 9:03 a.m.</td></tr>
<tr><td>S01C</td><td>66</td><td>November 14, 2023, 9:02 a.m.</td></tr>
<tr><td>S02</td><td>Waste Tank 2, lower sight glass (pH) sample port</td><td>67, 68</td><td>November 14, 2023, 9:08 a.m.</td><td>Grab sample</td><td>Method: Valved sample port was opened by Polynt representatives and sample was collected directly into sample containers
Equipment: None
Sample Container: 32-ounce glass jar</td><td>Polynt representatives (received by Laura Kanopkin)</td></tr>
</table>

Table 4. FIELD MEASUREMENT AND FIELD SAMPLING ACTIVITIES

S03	Waste Tank 2, sample port, third port above lower sight glass (pH) sample port	69, 70	November 14, 2023, 9:23 a.m.	Grab sample	**Method**: Valved sample port was opened by Polynt representatives and sample was collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S04	Waste Tank 2, upper liquid layer through roof hatch	71, 72	November 14, 2023, 9:45 a.m.	Grab sample	**Method**: Weighted steel pail with rope was lowered into tank roof hatch by Polynt representatives and submerged into upper liquid layer, then lifted and poured directly into sample containers **Equipment**: Weighted steel pail with rope **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S05	Waste Tank 4, sample port directly above lower sight glass sample port	73, 74	November 14, 2023, 9:56 a.m.	Grab sample	**Method**: Valved sample port was opened by Polynt representatives and sample was collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S06	Waste Tank 4, lower sight glass sample port	73, 74	November 14, 2023, 9:58 a.m.	Grab sample	**Method**: Valved sample port was opened by Polynt representatives and sample was collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S07A	Waste Tank 2, lower sight glass (pH) sample port	95	November 15, 2023, 1:38 p.m.	Grab sample	**Method**: Valved sample port was opened by Polynt representatives and samples were collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S07B						
S07C						

Table 4. FIELD MEASUREMENT AND FIELD SAMPLING ACTIVITIES						
S08	Waste Tank 2, sample port, third port above lower sight glass (pH) sample port	96, 97	November 15, 2023, 1:42 p.m.	Grab sample	**Method**: Valved sample port was opened by Polynt representatives and sample was collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
S09	Waste Tank 3, third sample port above lower sight glass sample port	98, 99	November 15, 2023, 1:46 p.m.	Grab sample	**Method**: Valved sample ports were opened by Polynt representatives and samples were collected directly into sample containers **Equipment**: None **Sample Container:** 32-ounce glass jar	Polynt representatives (received by Laura Kanopkin)
[1] The current version of each procedure, at the time of the investigation, was followed.						

On November 14, 2023, the NEIC team conducted LDAR monitoring on equipment in the waste tank area, Main Process Building, and K5 Process Building following EPA Method 21, using a Thermo Scientific TVA 2020. The equipment was monitored using a leak definition of 10,000 parts per million (ppm), as specified by the 40 CFR Part 265 Subpart BB regulations that apply to the equipment. NEIC simultaneously surveyed the same equipment with a FLIR camera. No leaks were detected from valves or pumps conveying hazardous waste in these areas. NEIC inspectors observed nine open-ended lines, further described in the **Investigation Observations** section of this report.

The NEIC team also used TVAs to perform LDAR monitoring of equipment on the roofs of Waste Tanks 2 and 4 which are subject to 40 CFR Part 265 Subpart CC regulations. Inspectors were unable to access the top of Waste Tank 3. Leaks were detected using the TVA from equipment on the tops of Waste Tanks 2 and 4. NEIC surveyed the same equipment with a FLIR camera while conducting the LDAR monitoring. Visible emissions of volatile organic compounds were also observed from equipment on both Waste Tanks 2 and 4. Videos and photographs collected using a FLIR® Gx320 IR camera are attached as **Appendix F**. **Table 5** summarizes the leaking tank components that were detected. These observations are further described in the **Investigation Observations** section of this report.

Table 5. SUMMARY OF HAZARDOUS WASTE TANK MONITORING			
Tank	**Leaking Component**	**TVA Reading**	**FLIR Observation**
Waste Tank 2	Flame arrestor, cover plate was missing two bolts (**Appendix D**, photo 84)	12,000 ppm before flamed out	Visible emissions (**Appendix F**, video FLIR0006.mp4)
Waste Tank 2	Emergency relief vent hatch (**Appendix D**, photo 85)	2,600 ppm	Visible emissions (**Appendix F**, video FLIR0007.mp4)
Waste Tank 4	Emergency relief vent hatch (**Appendix D**, photo 75)	7,100 ppm	Not surveyed
Waste Tank 4	Conservation vent	Not measured	Visible emissions (**Appendix F**, video FLIR0001.mp4 and FLIR0002.mp4)

Site activities were documented in field records, and field photographs are attached as **Appendix D**. Additional photos are maintained in the project file. Samples collected during the field activities were shipped via FedEx to the NEIC laboratory in Denver, Colorado, for analysis.

LABORATORY ACTIVITIES SUMMARY

Tanner Cheney received the samples at the NEIC laboratory in Denver, Colorado on November 20, 2023, via FedEx. The laboratory team analyzed the samples for water content, pH, flash point, organic compounds with alcohol functional groups, and volatile organic compounds to determine if they exhibited the RCRA characteristics of ignitability, corrosivity, and toxicity.

Table 6 summarizes the analytical methods followed, as well as the analysts and dates of the analyses. Data quality summaries, including uncertainty measurements, for all laboratory measurements are maintained in the project file.

Table 6. ANALYTICAL OBJECTIVE, TECHNIQUE, AND METHOD; ANALYST; AND DATE PERFORMED			
Analytical Objective, Technique, and Method	**NEIC Analyst**	**Samples Analyzed by Method (Station Nos.)**	**Dates Performed**
Analytical Objective: Determination of the finite flashpoint **Technique:** Setaflash Closed-Cup Tester **Method:** Setaflash closed tester by ASTM Method D3278-78: *Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus*	Richard Martinez	S01A 1-L S01A 2-L S01B 1-L S01B 2-L S01C 1-L S01C 2-L S02 1-L S02 2-L S03 1-L S03 2-L S04 1-L S04 2-L S05 S06 S07A S07B S07C S08 S09	December 28, 2023 – January 24, 2024
Analytical Objective: Quantitative determination of corrosivity **Technique:** Potentiometry **Method:** EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 9040C: pH Electrometric Measurement and *Potentiometric pH Determination of Aqueous Samples and Extracts*, NEICPROC/00-070	Bryan Locher	S01A S01B S01C S02 S03 S04 S07A S07B S07C S08 S09	December 12 – 13, 2023
Analytical Objective: Preparation of the TCLP extract for volatile organic compound analysis **Technique:** Extraction **Toxicity Characteristic Leaching Procedure (TCLP):** EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 1311: Toxicity Characteristic Leaching Procedure and *Toxicity Characteristic Leaching Procedure,* NEICPROC/00-024	Tanner Cheney	S01A S01B S01C S02 S03 S04 S05 S06 S07A S07B S07C S08 S09	December 20 – 21, 2023

Table 6. ANALYTICAL OBJECTIVE, TECHNIQUE, AND METHOD; ANALYST; AND DATE PERFORMED			
Analytical Objective, Technique, and Method	**NEIC Analyst**	**Samples Analyzed by Method (Station Nos.)**	**Dates Performed**
Analytical Objective: Quantitative determination of volatile organic compounds by purge-and-trap analysis **Technique:** Purge-and-trap extraction, gas chromatography with mass spectrometry **Method:** Gas chromatography/mass spectrometry by EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 8260B: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry **Preparatory method:** EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 5030C: Purge-and-Trap for Aqueous Samples, and EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 5035A: Closed-system Purge-And-Trap And Extraction For Volatile Organics In Soil And Waste Samples	Justin Bordoff	S01A S01B S01C S02 S03 S04 S07A S07B S07C S08 S09	January 5 – 19, 2024
Analytical Objective: Quantitative determination of alcohols **Technique:** Direct-inject gas chromatography with mass spectrometry **Method:** *Organic Compound Analysis*, NEICPROC/00-049	Aaron Johnson	S01A 1-L S01A 2-L S01B 1-L S01B 2-L S01C 1-L S01C 2-L S02 1-L S02 2-L S03 1-L S03 2-L S04 1-L S04 2-L S07A S07B S07C S08 S09	December 12, 2023 – March 21, 2024

Table 6. ANALYTICAL OBJECTIVE, TECHNIQUE, AND METHOD; ANALYST; AND DATE PERFORMED			
Analytical Objective, Technique, and Method	**NEIC Analyst**	**Samples Analyzed by Method (Station Nos.)**	**Dates Performed**
Analytical Objective: Quantitative determination of water content **Technique:** Coulometric titration **Method:** EPA *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846) Test Method 9000: Determination of Water in Waste Materials by Karl Fischer Titration, and *Water Content Determination by Coulometric Karl Fischer Titration*, NEICPROC/00-073	Tanner Cheney	S01A 1-L S01A 2-L S01B 1-L S01B 2-L S01C 1-L S01C 2-L S02 1-L S02 2-L S03 1-L S03 2-L S04 1-L S04 2-L S05 S06 S07A S07B S07C S08 S09	December 13, 2023

ANALYTICAL RESULTS

Tables 7 and **8** summarizes the analytical results.

Table 7. SUMMARY OF ANALYTICAL RESULTS				
Station No.	**Station Location/ Description of Sample Location**	**Appendix G Photo Nos.**	**pH (Standard Units)[1]**	**Volatile Organics Concentrations (milligrams per liter [mg/L])[2,3,4]**
S01A	Incinerator feed line sample port	IMG_1265.JPG	2.0	Methyl Ethyl Ketone 14 Ethylbenzene 12,000 Xylenes 60,000
S01B		IMG_1266.JPG	2.0	Methyl Ethyl Ketone 14 Ethylbenzene 12,000 Xylenes 61,000
S01C		IMG_1267.JPG	2.0	Methyl Ethyl Ketone 6.5 Ethylbenzene 23,000 Xylenes 110,000
S02	Waste Tank 2, lower sight glass (pH) sample port	IMG_1268.JPG	2.0	Methyl Ethyl Ketone 11 Ethylbenzene 16,000 Xylenes 75,000
S03	Waste Tank 2, sample port, third port above lower sight glass (pH) sample port	IMG_1269.JPG	2.0	Methyl Ethyl Ketone 11 Ethylbenzene 17,000 Xylenes 86,000
S04	Waste Tank 2, upper liquid layer through roof hatch	IMG_1270.JPG	2.0	Methyl Ethyl Ketone 9.7 Ethylbenzene 20,000 Xylenes 96,000
S05	Waste Tank 4, sample port directly above lower sight glass sample port	IMG_1271.JPG	N/A[5]	Ethylbenzene 37,000 Xylenes 180,000
S06	Waste Tank 4, lower sight glass sample port	IMG_1272.JPG	N/A[5]	Ethylbenzene 38,000 Xylenes 180,000
S07A		IMG_1273.JPG	1.9	Methyl Ethyl Ketone 22

Table 7. SUMMARY OF ANALYTICAL RESULTS				
Station No.	Station Location/ Description of Sample Location	Appendix G Photo Nos.	pH (Standard Units)[1]	Volatile Organics Concentrations (milligrams per liter [mg/L])[2,3,4]
	Waste Tank 2, lower sight glass (pH) sample port			Ethylbenzene 9.8 Xylenes 50
S07B		IMG_1274.JPG	2.0	Methyl Ethyl Ketone 18 Ethylbenzene 8.7 Xylenes 46
S07C		IMG_1275.JPG	2.0	Methyl Ethyl Ketone 17 Ethylbenzene 6.8 Xylenes 34
S08	Waste Tank 2, sample port, third port above lower sight glass (pH) sample port	IMG_1276.JPG	2.0	Methyl Ethyl Ketone 20 Ethylbenzene 8.0 Xylenes 41
S09	Waste Tank 3, third sample port above lower sight glass sample port	IMG_1277.JPG	1.6	Methyl Ethyl Ketone 11 Ethylbenzene 6.3 Xylenes 33

[1]The estimated measurement uncertainty is 0.1 with a 95% confidence interval and a coverage factor of 2.
[2]Only results greater than their individual reporting limit are reported in this column.
[3]The reporting limit for each volatile TCLP contaminant is 1.0 mg/L.
[4]Methyl Ethyl Ketone is a TCLP value.
[5]Not analyzed due to low water content.

Table 8. SUMMARY OF ALCOHOL EXCLUSION ANALYTICAL RESULTS					
Station No.[1]	Laboratory Sample Physical Description	Flash Point Results (degrees Celsius [°C])	Water Content (%)	Alcohol (%v/v)	
S01A 1-L	Clear orange viscous liquid	30.0	<2[2]	Glycerin	<0.80[3]
				Pentaerythritol	<0.74[3]
				Ethylene Glycol	<0.050[3]
				Propylene Glycol	<0.10[3]
				Diethylene Glycol	<0.096[3]
				Isobutyl Alcohol	0.24[4]
				1-Butanol	0.12[4]
				1-Methoxy-2-Propanol	<0.012[4]
				2,2-Dimethyl-1,3-Propanediol	0.15[3]
				DEGMME[5]	<0.11[3]
				2-Ethyl-1-Hexanol	0.035[4]
				Dipropylene Glycol	0.43[3]
				4,7-Methano-1H-Indenol	7.7[3]
S01A 2-L	Clear colorless non-viscous liquid	>60	92	Glycerin	0.48
				Pentaerythritol	<0.034
				Ethylene Glycol	0.85
				Propylene Glycol	2.2
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.17
				1-Butanol	0.071
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.067

Table 8. SUMMARY OF ALCOHOL EXCLUSION ANALYTICAL RESULTS					
Station No.[1]	**Laboratory Sample Physical Description**	**Flash Point Results (degrees Celsius [°C])**	**Water Content (%)**	**Alcohol (%v/v)**	
S01B1 -L	Clear orange viscous liquid	30.0	<2[2]	Glycerin	<0.80
				Pentaerythritol	<0.74
				Ethylene Glycol	<0.050
				Propylene Glycol	<0.10
				Diethylene Glycol	<0.096
				Isobutyl Alcohol	0.22
				1-Butanol	0.11
				1-Methoxy-2-Propanol	<0.012
				2,2-Dimethyl-1,3-Propanediol	0.14
				DEGMME[5]	<0.11
				2-Ethyl-1-Hexanol	0.028
				Dipropylene Glycol	0.41
				4,7-Methano-1H-Indenol	6.5
S01B 2-L	Clear colorless non-viscous liquid	>60	95	Glycerin	0.52±
				Pentaerythritol	<0.034
				Ethylene Glycol	0.77
				Propylene Glycol	1.9
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.14
				1-Butanol	0.056
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.062
S01C 1-L	Clear orange viscous liquid	30.0	<2[2]	Glycerin	<0.80
				Pentaerythritol	<0.74
				Ethylene Glycol	<0.050
				Propylene Glycol	<0.10
				Diethylene Glycol	<0.096
				Isobutyl Alcohol	0.25
				1-Butanol	0.120
				1-Methoxy-2-Propanol	<0.012
				2,2-Dimethyl-1,3-Propanediol	0.16
				DEGMME[5]	<0.11
				2-Ethyl-1-Hexanol	0.035
				Dipropylene Glycol	0.46
				4,7-Methano-1H-Indenol	7.0
S01C 2-L	Clear colorless non-viscous liquid	>60	94	Glycerin	0.55
				Pentaerythritol	<0.034
				Ethylene Glycol	0.75
				Propylene Glycol	2.0
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.18
				1-Butanol	0.070
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.073

Table 8. SUMMARY OF ALCOHOL EXCLUSION ANALYTICAL RESULTS

Station No.[1]	Laboratory Sample Physical Description	Flash Point Results (degrees Celsius [°C])	Water Content (%)	Alcohol (%v/v)	
S02 1-L	Clear orange viscous liquid	29.5	<2[2]	Glycerin	<0.80
				Pentaerythritol	<0.74
				Ethylene Glycol	<0.050
				Propylene Glycol	<0.10
				Diethylene Glycol	<0.096
				Isobutyl Alcohol	0.23
				1-Butanol	0.11
				1-Methoxy-2-Propanol	<0.012
				2,2-Dimethyl-1,3-Propanediol	0.15
				DEGMME[5]	<0.11
				2-Ethyl-1-Hexanol	0.033
				Dipropylene Glycol	0.44
				4,7-Methano-1H-Indenol	7.0
S02 2-L	Clear colorless non-viscous liquid	>60	92	Glycerin	0.45[3]
				Pentaerythritol	<0.034[3]
				Ethylene Glycol	0.81[3]
				Propylene Glycol	1.9[3]
				Diethylene Glycol	<0.43[3]
				Isobutyl Alcohol	0.16[3]
				1-Butanol	0.065[3]
				1-Methoxy-2-Propanol	<0.0058[3]
				2,2-Dimethyl-1,3-Propanediol	<0.025[3]
				DEGMME[5]	<0.011[3]
				2-Ethyl-1-Hexanol	<0.014[3]
				Dipropylene Glycol	<0.010[3]
				4,7-Methano-1H-Indenol	0.063[3]
S03 1-L	Clear orange viscous liquid	29.0	<2[2]	Glycerin	<0.80
				Pentaerythritol	<0.74
				Ethylene Glycol	<0.050
				Propylene Glycol	<0.10
				Diethylene Glycol	<0.096
				Isobutyl Alcohol	0.23
				1-Butanol	0.11
				1-Methoxy-2-Propanol	<0.012
				2,2-Dimethyl-1,3-Propanediol	0.14
				DEGMME[5]	<0.11
				2-Ethyl-1-Hexanol	0.041
				Dipropylene Glycol	0.41
				4,7-Methano-1H-Indenol	7.7
S03 2-L	Clear colorless non-viscous liquid	>60	93	Glycerin	0.51
				Pentaerythritol	<0.034
				Ethylene Glycol	0.87
				Propylene Glycol	2.3
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.14
				1-Butanol	0.057
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.056

Table 8. SUMMARY OF ALCOHOL EXCLUSION ANALYTICAL RESULTS					
Station No.[1]	**Laboratory Sample Physical Description**	**Flash Point Results (degrees Celsius [°C])**	**Water Content (%)**	**Alcohol (%v/v)**	
S04 1-L	Clear orange viscous liquid	29.5	<2[2]	Glycerin Pentaerythritol Ethylene Glycol Propylene Glycol Diethylene Glycol Isobutyl Alcohol 1-Butanol 1-Methoxy-2-Propanol 2,2-Dimethyl-1,3-Propanediol DEGMME[5] 2-Ethyl-1-Hexanol Dipropylene Glycol 4,7-Methano-1H-Indenol	<0.80 <0.74 <0.050 <0.10 <0.096 0.24 0.12 <0.012 0.15 <0.11 0.039 0.41 7.7
S04 2-L	Clear colorless non-viscous liquid	>60	92	Glycerin Pentaerythritol Ethylene Glycol Propylene Glycol Diethylene Glycol Isobutyl Alcohol 1-Butanol 1-Methoxy-2-Propanol 2,2-Dimethyl-1,3-Propanediol DEGMME[5] 2-Ethyl-1-Hexanol Dipropylene Glycol 4,7-Methano-1H-Indenol	0.59 <0.034 0.76 1.7 <0.43 0.16 0.064 <0.0058 <0.025 <0.011 <0.014 <0.010 0.065
S05	Cloudy green non-viscous liquid	27.5	<2[2]	Not analyzed	
S06	Cloudy green non-viscous liquid	27.0	<2[2]	Not analyzed	
S07A	Cloudy colorless non-viscous liquid	>60	95	Glycerin Pentaerythritol Ethylene Glycol Propylene Glycol Diethylene Glycol Isobutyl Alcohol 1-Butanol 1-Methoxy-2-Propanol 2,2-Dimethyl-1,3-Propanediol DEGMME[5] 2-Ethyl-1-Hexanol Dipropylene Glycol 4,7-Methano-1H-Indenol	0.45 <0.034 0.59 1.5 <0.43 0.12 0.053 <0.0058 <0.025 <0.011 <0.014 <0.010 0.073
S07B	Cloudy colorless non-viscous liquid	>60	95	Glycerin Pentaerythritol Ethylene Glycol Propylene Glycol Diethylene Glycol Isobutyl Alcohol 1-Butanol	0.43 <0.034 0.59 1.6 <0.43 0.14 0.062

Table 8. SUMMARY OF ALCOHOL EXCLUSION ANALYTICAL RESULTS					
Station No.[1]	Laboratory Sample Physical Description	Flash Point Results (degrees Celsius [°C])	Water Content (%)	Alcohol (%v/v)	
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.083
S07C	Cloudy colorless non-viscous liquid	>60	94	Glycerin	0.42
				Pentaerythritol	<0.034
				Ethylene Glycol	0.61
				Propylene Glycol	1.4
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.14
				1-Butanol	0.063
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.083
S08	Cloudy colorless non-viscous liquid	>60	94	Glycerin	0.36[3]
				Pentaerythritol	<0.050[3]
				Ethylene Glycol	0.67[3]
				Propylene Glycol	1.6[3]
				Diethylene Glycol	<0.43[3]
				Isobutyl Alcohol	0.12[3]
				1-Butanol	0.055[3]
				1-Methoxy-2-Propanol	<0.0058[3]
				2,2-Dimethyl-1,3-Propanediol	<0.025[3]
				DEGMME[5]	<0.011[3]
				2-Ethyl-1-Hexanol	<0.014[3]
				Dipropylene Glycol	<0.010[3]
				4,7-Methano-1H-Indenol	0.074[3]
S09	Cloudy brown non-viscous liquid	>60	94	Glycerin	0.64
				Pentaerythritol	<0.034
				Ethylene Glycol	0.77
				Propylene Glycol	2.1
				Diethylene Glycol	<0.43
				Isobutyl Alcohol	0.060
				1-Butanol	0.059
				1-Methoxy-2-Propanol	<0.0058
				2,2-Dimethyl-1,3-Propanediol	<0.025
				DEGMME[5]	<0.011
				2-Ethyl-1-Hexanol	<0.014
				Dipropylene Glycol	<0.010
				4,7-Methano-1H-Indenol	0.088

[1]1-L indicates top liquid layer and 2-L indicates bottom liquid layer.
[2]Value is based on an instrument reporting limit (IRL) of 100 µg obtained from a certified reference material.
[3]n=3, result is the average of 3 laboratory replicates.
[4]n=6, result is the average of 6 laboratory replicates.
[5]DEGMME: diethylene glycol monomethyl ether.

Laboratory sample descriptions, observations, method modifications, and notes are documented in the project file. A copy of the chain of custody record is provided in **Appendix E**. Pertinent photographs from the laboratory activities are provided in **Appendix G**.

INVESTIGATION OBSERVATIONS

NEIC made the following observations during the RCRA compliance inspection. NEIC field team members discussed some observations with Facility representatives during the closeout meeting and indicated that additional findings may be added pending the NEIC sample analytical results.

These observations are not final compliance determinations. Region 4 will make the final compliance determinations based on its review of this report and other technical, regulatory, and Facility information. Rule 391-3-11-.01 General Provisions under the Rules and Regulations of the State of Georgia fully adopts by reference Title 40 of the Code of Federal Regulations (40 CFR) Parts 124, 260-266, 268, 270, 273 and 279 as amended through October 1, 2021, unless otherwise stated.

Observation: 1

Observation Summary: Polynt burned hazardous waste in the on-site Incinerator. Samples of water of reaction (WOR) waste fed to the Incinerator and analyzed by the NEIC laboratory exhibited the hazardous waste characteristic of ignitability (EPA hazardous waste number D001) and met the definition of F003 hazardous waste (discussion of the F003 listing is in Observation 2). Additionally, Polynt's system to manage and burn waste WOR is not adequate to prevent the burning of hazardous waste during process operations. Specifically:

- Polynt representatives have acknowledged that the interface probes and sight glasses on Waste Tanks 2, 3, and 4 that are used to manage and separate layers of waste WOR are inaccurate.
- Polynt representatives stated that solvents in the waste WOR may inadvertently be burned in the Incinerator and lead to "hot layer" events.
- After waste WOR is neutralized and agitated in Waste Tank 2, Polynt does not allow adequate time for solvents in the WOR organic layer to separate from the aqueous layer before resuming the feed to the Incinerator.

Polynt's Incinerator is not permitted to treat hazardous waste and lacks appropriate air emissions controls to prevent the release of hazardous emissions and hazardous constituents to the environment and the surrounding community.

Citation:

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

Purpose and scope of the regulations in this part, 40 CFR § 270.1

(c) Scope of the RCRA permit requirement. RCRA requires a permit for the "treatment," "storage," and "disposal" of any "hazardous waste" as identified or listed in 40 CFR part 261. The terms "treatment," "storage," "disposal," and "hazardous waste" are defined in § 270.2. Owners and operators of hazardous waste management units must have permits during the active life (including the closure period) of the unit.

Definitions, 40 CFR § 270.2

Observation: 1

Treatment means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such wastes, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Characteristic of ignitability, 40 CFR § 261.21

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

> *(1) It is a liquid, other than a solution containing less than 24 percent alcohol by volume and at least 50 percent water by weight, that has a flash point less than 60 °C (140 °F), as determined by using one of the following ASTM standards: ASTM D93–79, D93–80, D3278–78, D8174–18, or D8175–18 as specified in SW–846 Test Methods 1010B or 1020C (all incorporated by reference, see § 260.11 of this subchapter).*

Hazardous waste from non-specific sources, 40 CFR § 261.31

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in appendix IX.

EPA hazardous waste No.	***Hazardous waste***	***Hazard Code***
F003	*The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures*	*(I)**
**(I,T) should be used to specify mixtures that are ignitable and contain toxic constituents.*		

Evidence:

Appendix D – Field Photographs
Appendix G – Laboratory Photographs
Laboratory Activities Summary, Tables 7 and 8
Observation 2
Appendix H – January 2023 through November 2023 Incinerator Temperature and Feed Rates
Appendix I – November 14, 2023, Waste System Control Screens
Appendix J – Instances of Incinerator Temperature Above 1900 degrees Fahrenheit
Interviews with Facility personnel

Description of Observation:

Polynt feeds waste generated from manufacturing processes to an on-site Incinerator. The Incinerator was historically permitted to process hazardous waste but was clean-closed in December 2002 before resuming operations to incinerate non-hazardous waste. The clean-closure was approved by GAEPD in 2014. The Incinerator is not currently permitted to burn

Observation: 1

hazardous waste. The only waste materials fed to the Incinerator are reportedly the WOR aqueous layer and vapors from the vapor collection system. Polynt has determined that the WOR aqueous layer is not a hazardous waste. The vapors from the vapor collection system are uncontained gases and not subject to regulation under RCRA.

NEIC inspectors collected samples of waste WOR during the inspection to evaluate if the waste meets the definition of a hazardous waste and to determine whether Polynt is burning hazardous waste in the Incinerator.

Samples of the WOR aqueous layer were collected on November 14, 2023. Sample S01 was collected from the liquid feed line that leads directly into the Incinerator. Samples S02, S03, and S04 were collected at different heights from Waste Tank 2, which stores WOR waste that is fed to the Incinerator. Upon collection, samples S01-S04 appeared as a milky white liquid (**Appendix D**, photos 66, 68, 70, 72). After settling, the liquid separated into two distinct layers (**Appendix G**, photos IMG_1265 through IMG_1270). Facility personnel explained that the white liquid was a result of the emulsification of the two layers as well as some resin, and that this batch of WOR was generated during a process upset that occurred earlier that morning around 3 a.m. Polynt representatives stated to NEIC inspectors that the entire batch of milky white emulsified liquid was incinerated the same day on November 14, 2023.

Additional samples of the WOR aqueous layer were collected by NEIC on November 15, 2023. Samples S07 and S08 were collected from different heights of Waste Tank 2. Facility personnel stated that the waste in Waste Tank 2 on that day was generated during typical manufacturing processes following the process upset from the previous day. Samples S07 and S08 had a different appearance than samples S01-S04, exhibiting a colorless, clouded appearance. These samples did not separate into layers (**Appendix D**, photos 95 and 96) (**Appendix G**, photos IMG_1273 through IMG_1276). Polynt representatives reported that the appearance of samples S07 and S08 was more typical of the WOR aqueous layer.

Samples collected during the NEIC inspection were analyzed by the NEIC laboratory. Each layer of samples S01-S04 was analyzed individually for the hazardous waste characteristics of ignitability, corrosivity, and toxicity for TCLP organics. As shown in the **Laboratory Activities Summary, Tables 7 and 8** above, the upper layer of samples S01-S04 exhibited the characteristic of ignitability and contained less than 50% water, indicating that the waste is hazardous for the characteristic of ignitability, EPA hazardous waste number D001. Furthermore, **Observation 2** below describes how reflux solvents are used in Polynt's manufacturing process. NEIC's laboratory analysis also detected concentrations of ethylbenzene and xylene in the upper layer of samples S01-S04. Polynt's use of xylene and ethylbenzene reflux solvents in the resin manufacturing process and NEIC's detection of these solvents in samples that exhibited the hazardous waste ignitability characteristic (D001) indicate that the hazardous waste also carries the F-listed hazardous waste number F003.

NEIC analysis of samples S01-S04, S07 and S08 may also indicate that the WOR waste is hazardous for the characteristic of corrosivity, EPA hazardous waste number D002, but cannot be reported as such due to the uncertainty range of the NEIC laboratory analysis.

Observation: 1

However, Polynt labels Waste Tank 2 as D002 corrosive hazardous waste (**Appendix D**, photo 41).

Samples S01-S04 were collected between 9:01 a.m. and 9:45 a.m. on November 14, 2023. During this time, waste from Waste Tank 2 was actively being fed to the Incinerator, indicating that the emulsified hazardous waste organic layer identified in samples S01-S04 was being fed to the Incinerator. Recorded flow rate data provided by Polynt confirms that waste from Waste Tank 2 was being fed to the Incinerator during the period when samples S01-S04 were collected (**Appendix H**, tab November). (*Note that the spreadsheet in **Appendix H** erroneously labels the mass flow rate of WOR waste to the Incinerator in units of pounds per hour [lb/hr]. The correct units are pounds per minute [lb/min], as seen on Polynt's Incinerator feed control screen [**Appendix D**, photos 61, 92, 125; **Appendix I**]. The correct unit of lb/min was further corroborated by interviews with Facility personnel*).

Polynt representatives stated the process upset occurred around 3:00 a.m. on November 14, 2023. **Appendix H** indicates that WOR waste was fed to the Incinerator on November 14, 2023, from 4:00 a.m. until 12:15 p.m., at an average rate of 13.9 lb/min. Polynt representatives stated that flow to the Incinerator was shut off around 12:15 p.m. because the liquid level in Waste Tank 2 had lowered to approximately 20 inches from the bottom of the tank and triggered an automatic shutoff. However, temperature data presented in **Appendix H** indicate that the feed to the Incinerator may have been stopped at that time due to the temperature triggering the high temperature shutoff (see "Hot Layer Event" section below). Polynt representatives also indicated that the majority of the process upset waste was sent through the Incinerator. However, although the density of the waste is unknown, NEIC inspectors noted that the flow to the Incinerator of 13.9 lb/min would not account for this volume of waste being burned, as Waste Tank 2 has a capacity of 9,500 gallons (gal) and was at least half full at the time of the sampling event that morning. (As an estimate, a flowrate of 13.9 lb/min using the density of water at 8.34 lb/gal would equate to approximately 100 gal/hr). The amount of waste that was observed by NEIC inspectors could not have emptied from Waste Tank 2 at this flowrate by 12:15 p.m. An explanation for this discrepancy is unclear. Data recorded in **Appendix H** shows that the flow to the Incinerator was not restarted until 8:00 p.m. the following day on November 15, 2023.

The incineration of ignitable (D001) and F-listed (F003) hazardous waste WOR during the process upset demonstrates that Polynt does not always verify that the waste entering the Incinerator is non-hazardous.

In addition to the instance described above when Polynt incinerated the hazardous waste generated during the process upset, NEIC inspectors determined that Polynt may be burning hazardous waste at other times due to a lack of controls to prevent hazardous waste from being fed to the Incinerator. The following three examples describe how Polynt's system to manage and burn waste WOR is not adequate to prevent the burning of hazardous waste:

<u>Inaccuracy of level detection probes and sight glasses to identify WOR layers</u>

Each of the three waste tanks, Waste Tanks 2, 3, and 4, are equipped with a level sensor which transmits data about the height of the WOR organic layer inside the tank to a control screen. Polynt representatives explained that these level sensors are

Observation: 1

often inaccurate due to the differing conductivity and density of the materials in the tanks. Polynt representatives further explained that this is primarily because the mixture of solvents is unique to the batch which generates it, which causes the calibration of the level detectors not to match the variation of solvent properties between batches. Each waste tank is additionally equipped with an interface cable probe as the level detection instrument to determine the height of the WOR aqueous layer. Polynt representatives stated that the calibration of the cable probes has the same issue as the level sensors and is often inaccurate.

To address the unreliability of the electronic instruments, Polynt installed sight glasses on each of the waste tanks, in an attempt to better determine the location of the aqueous and solvent layer interface inside the waste tanks.

Polynt's senior management explained that Facility employees rely on the sight glasses affixed to each of the three waste tanks to determine the interface of the WOR organic and the WOR aqueous layers. Another Polynt manager later briefed that operators rely on the instrument readings, and not the sight glasses. The sight glasses on each waste tank have two ports (upper and lower) situated along the height of the tank. Neither upper nor lower ports of the sight glasses are affixed at the true top or bottom of the tanks, as they are offset a foot or more from the limits of the tanks (**Appendix D**, photos 36, 37, 45, 46, 63). During the inspection, NEIC inspectors observed that obtaining an accurate estimate of the interface level between WOR layers with different densities would not be possible using the tank sight glasses except when the upper solvent levels were maintained high enough to submerge the upper sight glass port. For instance, if the upper solvent level were below the upper sight glass port, only the aqueous layer would be visible in the sight glass, and its height would not be equivalent to the aqueous layer height in the tank due to the different density of the solvent layer above it. Likewise, if the solvent layer were to temporarily enter the sight glass by rising above or dropping into the upper or lower sight glass ports, respectively, the sight glass could continue to show an upper layer of solvent that did not correspond to the true interface after the solvent layer returned to a different level. At the time of the NEIC inspection, WOR layers within the tanks did not appear to be maintained at a height above the upper sight glass port. As a result, the pressure head (height) of the two WOR layers inside the tank could not properly equalize within the sight glass and provide an accurate visual reading of the true interface level. Therefore, there did not appear to be an accurate way to prevent the incidental transfer of the hazardous waste WOR organic layer into the Incinerator when intending to transfer only the lower WOR aqueous layer using the sight glass method.

Further illustrating the inaccuracy of the sight glasses, the appearance of the samples S02-S04 collected from Waste Tank 2 did not match what was visible in the tank's sight glass. The liquid in the sight glass of Waste Tank 2 at the time of the sampling event on November 14, 2023, was a two layered liquid (**Appendix D**, photo 69). This did not match the milky opaque white color of the samples collected from various heights within that tank (**Appendix D**, photos 68, 70, and 72). Following the sampling event, Polynt representatives informed the inspection team that it was an open action item to determine why the sight glass did not accurately show what was in the tank. The inability of the sight glass to show that the waste WOR had an atypical appearance during NEIC's inspection demonstrates the unreliability of this system to accurately determine what is being fed to the Incinerator.

<u>"Hot layer" events in the Incinerator from the inadvertent incineration of solvents</u>
NEIC inspectors determined that Polynt's current practice of moving waste between tanks does not ensure that the hazardous waste WOR organic layer is not burned in the Incinerator. Although the primary purpose of Waste Tank 2 is storage of the WOR aqueous layer prior to incineration, Polynt representatives described that the Facility moves both layers of WOR between all three waste tanks, as needed, due to operational and space constraints.

If Waste Tank 2 contains an upper layer of WOR organics, Polynt will still burn the lower WOR aqueous layer in the Incinerator. Polynt representatives described two methods to prevent the entry of the WOR organic layer into the Incinerator. The first method used by the Facility to stop the upper WOR organic layer from entering the Incinerator is to observe the visual appearance of liquid in the sight glass on Waste Tank 2 and determine when the interface of the aqueous and organic layer is approaching the level of the feed line to the Incinerator. The second method is an automatic shutoff for the feed from Waste Tank 2 into the Incinerator. The automatic shutoff is based on the weight of the WOR aqueous layer and calculated by the interface cable probe. The automatic shutoff is triggered by the measurement of a specified weight of aqueous WOR, which is intended to correspond to a certain minimum height of the layer in the tank.

However, Polynt representatives stated that both methods are not entirely effective and "hot layer" events occur in which the higher British thermal unit (Btu) content of the WOR organic layer causes an abnormal rise in temperature when fed to the Incinerator. To identify when these events occur, an alarm is triggered if the temperature inside the Incinerator combustion chamber exceeds 1,900 degrees Fahrenheit (°F) (1,038 °C). The Incinerator and the waste feed to the Incinerator both automatically shut off if the temperature reaches 1,950 °F (1,066 °C). Polynt representatives stated that these high temperature events can also be caused from a vapor-related process upset, causing the Incinerator temperature to increase to the high limit and shut off the Incinerator. However, Polynt representatives also stated that vapor-induced temperature variations typically occur more slowly than liquid temperature variations. This allows the natural gas feed rate to the Incinerator to be adjusted in time to prevent shutdowns more readily than during temperature fluctuations caused by the liquid waste stream.

NEIC inspectors reviewed Incinerator temperature data recorded from January 1, 2023, through November 30, 2023 (**Appendix H**). According to the "Control and System Notes" tab of **Appendix H**, logged temperature data is 20 °F lower than alarm and shutoff temperatures due to the different placement of these probes in the combustion chamber. Therefore, the alarm and automatic shutoff temperatures represented by the logged data are 1,880 °F and 1,930 °F, respectively.

Observation: 1

The logged data shows several instances where the alarm temperature was exceeded while liquid waste was being actively fed to the Incinerator. These instances are displayed in **Appendix J** and occurred on the following dates in 2023: January 16, February 6, March 7, October 13, October 14, October 16, October 18, November 1, November 2, November 3, November 10, November 12, November 13, November 14, November 20, November 22, November 26, November 27, November 28, November 29, and November 30. The logged data shows that liquid waste flow to the Incinerator was stopped in several of these instances after the alarm temperature was exceeded.

The high temperature alarm events noted above likely indicate that material entered the Incinerator which caused the temperature to rise beyond typical operating parameters. Given that liquid waste from Waste Tank 2 was actively flowing to the Incinerator at these times, it could potentially have been WOR organic hazardous waste which was not accurately identified using the sight glass or automatic shutoff level probe methods.

Notably, the Incinerator temperature and flow data in **Appendix H** suggest that a “hot layer” Incinerator shutdown event may have occurred during the NEIC inspection soon after sample collection on the morning of November 14, 2023. On that morning, 15-minute interval data for the Incinerator shows the temperature climbing above the alarm threshold of 1,900 °F (logged as 1,880 °F in the spreadsheet due to the 20 °F offset noted above) several times beginning at 8:45 am before reaching 1,947 °F (logged as 1,927 °F in the spreadsheet) at 12:15 pm (i.e., three degrees lower than the automatic shutoff temperature). Liquid waste flow to the Incinerator was then cut off by 12:30 pm. The occurrence of a “hot layer” event immediately following the collection of samples from Waste Tank 2 that were determined to contain organic solvents suggests that high temperatures within the Incinerator may in some cases be associated with burning the WOR organic layer.

<u>Inadequate separation time after neutralization</u>

When the pH of the waste in Waste Tank 2 is less than 3, Polynt performs neutralization in the tank by adding ammonium hydroxide and agitating by bubbling with nitrogen to mix the contents. According to a Polynt employee, operators wait approximately five minutes after performing the neutralization to remeasure the pH, ensuring it is greater than 3, before resuming the feed from Waste Tank 2 to the Incinerator. If any WOR organic layer is present in the tank during neutralization, it will be mixed with the WOR aqueous layer. A five-minute waiting period is likely not enough time for the WOR organic layer to fully separate from the aqueous layer before the waste feed is resumed to the Incinerator. This may lead to incidents where the WOR organic hazardous waste is burned in the Incinerator.

Treatment includes any process designed to change the composition of hazardous waste to render the waste non-hazardous or to dispose of the waste. Thermal treatment means the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes include incineration. Polynt’s use

Observation: 1

of the Incinerator to manage the aqueous WOR qualifies as treatment because it alters the composition of the waste and disposes of the waste.

The RCRA regulations require a permit for the treatment of hazardous waste. 40 CFR Part 264, Subpart O, Incinerators, further describes requirements to burn hazardous waste in an Incinerator including waste analysis and closure requirements. Based on statements from Polynt representatives, NEIC collected samples of the WOR waste at two instances during Polynt's operations: once during a process upset and once during more typical operations. The analytical data for the process upset samples demonstrate that Polynt burned hazardous waste in the Incinerator without a permit. Information reviewed by NEIC during the on-site investigation further demonstrated that there is a lack of controls to prevent the incineration of hazardous waste from occurring, at minimum, during process upsets. The incineration of hazardous waste, even if conducted incidentally during process upsets, is subject to RCRA permitting requirements.

In contrast to the samples that were collected during the process upset, the second set of samples collected by NEIC during what Polynt representatives stated were more typical operations did not exhibit the hazardous waste characteristic of ignitability. However, Polynt operates as a batch manufacturer and the resultant composition and properties of the WOR waste stream varies between different product lines. Additionally, the repeated and documented occurrence of "hot layer" events at the Facility in 2023 suggests that process upsets, batch variability, or other factors that alter the composition of the process waste stream that is introduced to the Incinerator are not an infrequent occurrence at Polynt. As the generator of the waste, Polynt is obligated to make an accurate hazardous waste determination for its WOR waste that accounts for this variability.

Observation: 2

Observation Summary: Polynt failed to apply the F003 listed hazardous waste number to its waste xylene and ethylbenzene reflux solvent, which are components of the waste WOR organic layer. The hazardous waste WOR organic layer accumulated in Waste Tanks 3 and 4 should be characterized as F003 hazardous waste, in addition to other applicable hazardous waste numbers.

Citation:

Hazardous waste determination and recordkeeping, 40 CFR § 262.11

A person who generates a solid waste, as defined in 40 CFR 261.2, must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps:

(a) The hazardous waste determination for each solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.

(b) A person must determine whether the solid waste is excluded from regulation under 40 CFR 261.4.

Observation: 2

(c) *If the waste is not excluded under 40 CFR 261.4, the person must then use knowledge of the waste to determine whether the waste meets any of the listing descriptions under subpart D of 40 CFR part 261. Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information.*

Hazardous waste from non-specific sources, 40 CFR § 261.31

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in appendix IX.

EPA hazardous waste No.	***Hazardous waste***	***Hazard Code***
F003	*The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures*	*(I)**
**(I,T) should be used to specify mixtures that are ignitable and contain toxic constituents.*		

Evidence:

Appendix K – Reflux Solvent Safety Data Sheets
Appendix L – Geocycle WOR Organic Layer Waste Profile and Recertifications
Appendix M – RO14005 and RO11384
Laboratory Activities Summary, Table 7
Appendix N – 2023 Manifests for WOR Organic Layer
Appendix O – 50 Federal Register 53316
Appendix P – RO11447
Interviews with Facility personnel

Description of Observation:

During the alkyd resin manufacturing process, Polynt recirculates solvent between the reaction kettles and attached decanter units to remove water that is generated in the kettles by the chemical reactions that produce the resin. The purpose of the solvent, referred to as "reflux" solvent, is to remove water from the kettle into the decanter. After a kettle batch is complete, the decanter generally contains a lower water layer and an upper reflux solvent layer. Polynt will drain the accumulated water (and incidental reflux solvent) from its decanters when the water level becomes too high. The decanters will be fully drained (water and reflux solvent) when a different reflux solvent is required for an upcoming batch and the current solvent within the decanter is inappropriate. Polynt may also charge virgin solvent into the kettle or decanter before a batch begins to ensure enough reflux solvent is present during the reaction. When the decanters are drained, the water and reflux solvent is directed to the Liquid Knockout Tank and later Waste Tank 4. In Waste Tank 4, the water physically

Observation: 2

separates from the organic reflux solvent layer and is later decanted and moved to Waste Tank 2 as the WOR aqueous layer. The organic reflux solvent layer that remains in Waste Tank 4, referred to as the WOR organic layer, is moved to Waste Tank 3 prior to shipment off-site as hazardous waste.

Polynt operates three decanters, associated with Kettles 1, 3, and 4, that use reflux solvent. Three different reflux solvents are used in the decanters, including 1) a 60-100% xylene/10-30% ethylbenzene mixture, 2) a “Sure Sol® 100” petroleum naptha blend (reported to contain 1-3% xylene), and 3) a heavier “142 Solvent 66/3” mineral spirits blend. Safety Data Sheets (SDS) for the three reflux solvents are in **Appendix K**. Polynt representatives stated that the xylene/ethylbenzene mixture is the most commonly used reflux solvent.

In discussions with Toni Shields, Polynt’s Site Manager, and Marty Gudmundson, Polynt’s Regional Operations Manager, NEIC inspectors were told that the purpose of the reflux solvent within the alkyd resin manufacturing process is to “drive off” water generated in the kettle during the resin reaction and accumulate the water within a separate decanter. The reflux solvent is not used as a reactant in the resin manufacturing process.

Polynt currently characterizes its waste reflux solvent (WOR organic layer) as D001 hazardous waste. In previous years, the Facility also characterized the material as F003 hazardous waste but recently determined that the listing was not applicable. NEIC reviewed the waste profile and recertification forms for the WOR organic layer that had been completed with Geocycle, one of Polynt’s contracted hazardous waste disposal facilities (**Appendix L**). The Geocycle waste profile (PQ-080124-013-H for “WOR Organics”) describes the waste stream as “mineral spirits and xylene” and estimates the typical xylene content at 40%. The profile recertifications indicate that Polynt added the F003 hazardous waste number in 2008 and later requested the number be removed in June 2023 (**Appendix L**, pages 2 and 8). In the June 2023 request to remove the F003 waste number, Polynt stated the following:

> *Additionally, F003 was incorrectly added to this waste stream as this waste stream does not meet the classification of spent solvent for the organics in the stream. The solvents used are used for processing not the definition of F003.*

After NEIC’s inspection, Polynt representatives provided two RCRA Online guidance documents they believed indicated that the F003 hazardous waste number did not apply to its waste reflux solvents (**Appendix M**). The first guidance document, RO14005, provides a discussion on the use of solvents to thin commercial chemical products and whether the disposition of such materials would meet the spent solvent F-listings. This scenario is not analogous to the purpose of Polynt’s reflux solvent and its disposal. As stated by Polynt representatives, the xylene/ethylbenzene reflux solvent is intended to “drive off” water from the product (resin) during the manufacturing process and, when a different reflux solvent may be needed for a subsequent batch, the reflux solvent is drained from its decanter for eventual disposal. The xylene/ethylbenzene reflux solvent that is drained from the decanters to the waste system is not incorporated into the product as a thinning agent and is not a reactant or ingredient in the resin product.

Observation: 2

The second guidance document provided by Polynt to NEIC, RO11384 (**Appendix M**), states the following:

> *Also, process wastes that become contaminated with small amounts of solvents during processing are not within the scope of the spent solvent listings. An example of this is an aqueous effluent from a liquid-liquid extraction step, in which a solvent* [h]*as been used to extract a product from the water and the water becomes contaminated with small amounts of solvent. In this example, the solvent is removed with the product and the solvent-contaminated water is not a spent solvent.*

This scenario is also not analogous to the resin manufacturing process. In Polynt's process, the reflux solvent is intended to extract *water* from the *product* and not the other way around. The reflux solvent in Polynt's process is eventually removed from the decanters (along with accumulated water) and directed to the waste system for disposal. Furthermore, the combined WOR waste stream does not contain "small amounts" of solvent, as evidenced by the detection of ethylbenzene and xylene in the NEIC laboratory analysis of the WOR samples (**Laboratory Activities Summary, Table 7**). After the WOR organic layer (reflux solvent) is separated from the WOR aqueous layer in Waste Tank 4, it is placed in Waste Tank 3 where it is later shipped off-site by tank truck for disposal at Geocycle in Holly Hill, South Carolina. A review of EPA's E-Manifest database indicates that from February to September 2023, Polynt shipped off-site approximately 100 tons (200,000 pounds) of the WOR organic layer as hazardous waste (**Appendix N**).

In issuing a final rule to amend the hazardous waste solvent listings, EPA provided the following guidance to determine how the F001-F005 solvent listings are intended to apply (**Appendix O**):

> *First, the spent solvent listings cover only those solvents that are used for their "solvent" properties – that is, to solubilize (dissolve) or mobilize other constituents. For example, solvents used in degreasing, cleaning, fabric scouring, as diluents, extractants, reaction and synthesis media, and similar uses are covered under the listing (when spent). A solvent is considered spent when it has been used and is no longer fit for use without being regenerated, reclaimed, or otherwise reprocessed.*
>
> *On the other hand, process wastes where solvents were used as reactants or ingredients in the formulation of commercial chemical products are not covered by the listing.*

EPA has provided further guidance that states when a listed solvent is used as a "drying agent" (i.e., to extract water from a product), the solvent is being used for its "solvent properties" to remove water and the hazardous waste listing would apply (**Appendix P,** page 3):

> *First, use as a drying agent does meet the definition of solvent use because the material is used to extract water. Second, methanol and acetone are listed ignitable solvents under F003; therefore, the F003 listing applies because the solvent mixture consists solely of F003-listed solvents.*

Observation: 2
Polynt's use of the xylene/ethylbenzene reflux solvent to extract water generated during the alkyd resin reaction in the kettle constitutes the use of the material for its "solvent properties." Xylene and ethylbenzene are listed constituents under the F003 hazardous waste listing. When Polynt removes the xylene/ethylbenzene reflux solvent from the manufacturing process as a waste, the spent solvent meets the F003 hazardous waste listing. As a result, at a minimum, the hazardous waste WOR organic layer accumulated in Waste Tanks 3 and 4 should be characterized as F003 hazardous waste, in addition to other applicable hazardous waste numbers. It should be noted that the F003 hazardous waste listing applies only when a waste meeting the F003 listing description also exhibits the hazardous waste characteristic of ignitability (i.e., EPA hazardous waste number D001). This condition is noted by the "(I)*" marking and footnote in the Hazard Code column in the table at 40 CFR § 261.31. If a waste that would otherwise meet the F003 hazardous waste listing does not exhibit the characteristic of ignitability (D001), the F003 listing would not apply (although other hazardous waste numbers may still be applicable). Any WOR waste generated by Polynt that 1) contains or has been mixed with waste xylene/ethylbenzene reflux solvent, and 2) exhibits the characteristic of ignitability (D001), would also carry the F003 hazardous waste listing. If WOR waste does not exhibit the characteristic of ignitability the WOR waste would not be D001 or F003 hazardous waste. However, in either case, an accurate waste determination and associated recordkeeping is required.

Observation: 3
Observation Summary: Polynt failed to make an accurate hazardous waste determination for the WOR waste that was burned in the Incinerator during NEIC's inspection on November 14, 2023. As described above in Observations 1 and 2, the upper layers of the WOR waste in samples S01-S04 exhibited the hazardous waste characteristic of ignitability (D001) and, because those layers were found to contain waste xylene/ethylbenzene reflux solvent, also met the F003 hazardous waste listing. Although Polynt representatives stated that samples S01-S04 were collected during a process upset and the material sampled by NEIC did not occur during typical operations, Polynt is obligated to make an accurate hazardous waste determination for all solid wastes it generates.
Citation: **Hazardous waste determination and recordkeeping, 40 CFR § 262.11** *A person who generates a solid waste, as defined in 40 CFR 261.2, must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps:* *(a) The hazardous waste determination for each solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.* *(b) A person must determine whether the solid waste is excluded from regulation under 40 CFR 261.4.*

Observation: 3
(c) If the waste is not excluded under 40 CFR 261.4, the person must then use knowledge of the waste to determine whether the waste meets any of the listing descriptions under subpart D of 40 CFR part 261. Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information. If the waste is listed, the person may file a delisting petition under 40 CFR 260.20 and 260.22 to demonstrate to the Administrator that the waste from this particular site or operation is not a hazardous waste. *(d) The person then must also determine whether the waste exhibits one or more hazardous characteristics as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both.* *(1) The person must apply knowledge of the hazard characteristic of the waste in light of the materials or the processes used to generate the waste…* *(2) When available knowledge is inadequate to make an accurate determination, the person must test the waste according to the applicable methods set forth in subpart C of 40 CFR part 261 or according to an equivalent method approved by the Administrator under 40 CFR 260.21 and in accordance with the following:* *(i) Persons testing their waste must obtain a representative sample of the waste for the testing, as defined at 40 CFR 260.10.* *(ii) Where a test method is specified in subpart C of 40 CFR part 261, the results of the regulatory test, when properly performed, are definitive for determining the regulatory status of the waste.*
Evidence: **Appendix D** – Field Photographs **Appendix G** – Laboratory Photographs **Laboratory Activities Summary, Tables 7 and 8** **Observation 2** **Appendix Q** – RO14834 Interviews with Facility personnel
Description of Observation: On November 14, 2023, NEIC collected four liquid waste samples of waste fed to the Incinerator. Sample S01 was collected from a sample port on the feed line that was actively sending waste WOR to the Incinerator. Samples S02, S03, and S04 were collected from sample ports of various heights on Waste Tank 2, which is the reservoir that supplies the Incinerator. At the time of sample collection, the liquid in samples S01-S04 had a milky white appearance (**Appendix D**, photos 66, 68, 70, 72). Polynt representatives stated that a "process upset" had occurred in the resin manufacturing process early on the morning of November 14, 2023, generating an emulsified WOR waste which had traveled through the Liquid Knockout Tank to Waste Tank 4 and to Waste Tank 2. Upon arrival at the NEIC laboratory, the liquid in samples S01-S04 had separated into two distinct phases, an upper organic phase and lower aqueous phase (**Appendix G**, photos IMG_1265 through IMG_1270). Each phase of samples S01-S04 was analyzed individually for the hazardous waste characteristics of ignitability, corrosivity, and toxicity for TCLP organics. As shown in the **Laboratory Activities Summary, Tables 7 and 8** above, the upper phases of samples S01-S04 exhibited the characteristic of ignitability and contained less than 50%

Observation: 3
water, indicating that the waste was hazardous for the characteristic of ignitability (EPA hazardous waste number D001) and does not meet the Alcohol Exclusion at 40 CFR § 261.21(a)(1). Additionally, the upper phases of samples S01-S04 were all found to contain xylene and ethylbenzene, indicating the upper phases contained Polynt's waste xylene/ethylbenzene reflux solvent. As described above in **Observation 2**, because the waste in samples S01-S04 exhibited the hazardous waste characteristic of ignitability (D001) and contained or was mixed with waste xylene/ethylbenzene reflux solvent, the waste also meets the F003 hazardous waste listing. Polynt must make a hazardous waste determination for each solid waste at the point of waste generation and must repeat that determination at any time when the properties of the waste may change such that the RCRA classification of the waste may change. EPA has issued the following guidance in RO14834 related to a generator's ongoing obligation to make an accurate hazardous waste determination (**Appendix Q**, page 4): *[A] generator's responsibility to make a hazardous waste determination may continue beyond the determination made at the initial point of generation. In the case of a nonhazardous waste that may, at some point in the future, exhibit a hazardous waste characteristic or meet a hazardous waste listing description, there is an ongoing responsibility to monitor and reassess if changes occur that may cause the waste to become hazardous. 40 CFR 261.3(b)(3) states that 'a solid waste becomes a hazardous waste ... when the waste exhibits any of the characteristics ... ' (Also see 45 FR 33095, May 19, 1980.) Thus, if there is reason to believe that the waste may physically or chemically change during management in a way that might cause the waste, or a portion of the waste, to become hazardous, the generator must monitor the waste for these changes.* During typical operations, Polynt has characterized the WOR aqueous waste that is fed to the Incinerator from Waste Tank 2 as a non-hazardous waste. However, the samples collected and analyzed by NEIC from the incineration system during an alleged process upset demonstrate that the properties of the waste WOR burned in the Incinerator may change such that the RCRA classification of the waste may change. Polynt did not make an accurate hazardous waste determination for the WOR waste that was burned in the Incinerator on November 14, 2023.

Observation: 4
Observation Summary: Polynt does not maintain records to demonstrate it has made adequate hazardous waste determinations for its waste WOR at its initial point of generation. The first point of generation for Polynt's waste WOR occurs when the waste exits the decanters of the alkyd resin manufacturing process and the receivers of the UPR manufacturing process. Polynt's analytical records for the waste WOR reviewed by NEIC appear to reflect properties of the WOR after it has been physically and chemically altered in Waste Tanks 4 and 2, and not the properties of the waste at its initial point of generation.
Citation: **Definition of hazardous waste, 40 CFR § 261.3**

Observation: 4

(a) *A solid waste which is not excluded from regulation under paragraph (a)(1) of this section becomes a hazardous waste when any of the following events occur:*
   (1) *In the case of a waste listed in subpart D of this part, when the waste first meets the listing description set forth in subpart D of this part.*
   (2) *In the case of a mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in subpart D is first added to the solid waste.*
   (3) *In the case of any other waste (including a waste mixture), when the waste exhibits any of the characteristics identified in subpart C of this part.*

Hazardous waste determination and recordkeeping, 40 CFR § 262.11

A person who generates a solid waste, as defined in 40 CFR 261.2, must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps:

(a) *The hazardous waste determination for each solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.*
(b) *A person must determine whether the solid waste is excluded from regulation under 40 CFR 261.4.*
(c) *If the waste is not excluded under 40 CFR 261.4, the person must then use knowledge of the waste to determine whether the waste meets any of the listing descriptions under subpart D of 40 CFR part 261. Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information. If the waste is listed, the person may file a delisting petition under 40 CFR 260.20 and 260.22 to demonstrate to the Administrator that the waste from this particular site or operation is not a hazardous waste.*
(d) *The person then must also determine whether the waste exhibits one or more hazardous characteristics as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both.*
   (1) *The person must apply knowledge of the hazard characteristic of the waste in light of the materials or the processes used to generate the waste…*
   (2) *When available knowledge is inadequate to make an accurate determination, the person must test the waste according to the applicable methods set forth in subpart C of 40 CFR part 261 or according to an equivalent method approved by the Administrator under 40 CFR 260.21 and in accordance with the following:*
      (i) *Persons testing their waste must obtain a representative sample of the waste for the testing, as defined at 40 CFR 260.10.*
      (ii) *Where a test method is specified in subpart C of 40 CFR part 261, the results of the regulatory test, when properly performed, are definitive for determining the regulatory status of the waste.*

(f) *Recordkeeping for small and large quantity generators. A small or large quantity generator must maintain records supporting its hazardous waste determinations,*

Observation: 4

including records that identify whether a solid waste is a hazardous waste, as defined by 40 CFR 261.3. Records must be maintained for at least three years from the date that the waste was last sent to on-site or off-site treatment, storage, or disposal. These records must comprise the generator's knowledge of the waste and support the generator's determination, as described at paragraphs (c) and (d) of this section. The records must include, but are not limited to, the following types of information: The results of any tests, sampling, waste analyses, or other determinations made in accordance with this section; records documenting the tests, sampling, and analytical methods used to demonstrate the validity and relevance of such tests; records consulted in order to determine the process by which the waste was generated, the composition of the waste, and the properties of the waste; and records which explain the knowledge basis for the generator's determination, as described at paragraph (d)(1) of this section.

Evidence:
Appendix R – RO13790
Observation 5
Appendix S – 1997 Analytical Report Alkyd WOR
Appendix T – 1997 Analytical Report UPR WOR

Description of Observation:
A generator of a solid waste is required to make a hazardous waste determination at the point of generation. The point of generation may be the point in time when, and the location where, a solid waste is first generated. 40 CFR § 261.3 states that a solid waste becomes a hazardous waste when the waste first exhibits a hazardous waste characteristic and/or when a waste first meets a hazardous waste listing description. In guidance RO13790, EPA has stated, "[w]e consider the point of exit from the process tank to be the introductory point for the hazardous waste into a hazardous waste tank system" (**Appendix R**, page 2).

At Polynt, waste WOR is first generated during the alkyd manufacturing process when the operator manually drains the decanters of excess or unnecessary water and reflux solvent, or when a different reflux solvent is required for the next resin batch. The waste WOR drains to the Liquid Knockout Tank before it is transferred and managed in Waste Tank 4. During the UPR manufacturing process, waste WOR is first generated when the operator manually drains the receiver tanks of excess water, sometimes containing residual glycols. This waste WOR also drains to the Liquid Knockout Tank and combines with the waste WOR from the alkyd process. The manual draining occurs either by an operator physically opening a valve on the decanter or receiver to release the liquid, or by an operator remotely opening the valve via a command in the control room. In both cases, a decision is made based on the level of WOR in the decanter or receiver to move the WOR from the process units into the Liquid Knockout Tank.

The point of generation for waste WOR is when the waste liquids are drained from the decanters and receiver tanks of the alkyd resin and UPR manufacturing processes. Polynt representatives stated that the Liquid Knockout Tank is necessary for process operations, thus qualifying it for the manufacturing process unit exemption and, in effect, shifting downstream the point of generation for the waste WOR. However, the regulation at 40 CFR § 261.4(c) where this exemption is codified specifies that the exemption applies to the unit in

Observation: 4

which the waste was generated. The WOR waste is generated in the decanters and receivers during the manufacturing process. Once it leaves these units, the manufacturing process unit exemption no longer applies, and the waste becomes subject to the RCRA regulations. As described in more detail in **Observation 5**, the Liquid Knockout Tank that accumulates waste WOR is not a manufacturing process unit.

After the inspection, Polynt provided NEIC various analytical records for the waste WOR from 1997 to 2023. Two documents from 1997 appear to be analytical reports for the waste WOR generated from the alkyd resin manufacturing process (“Alkyd WOR”) and the waste WOR generated from the UPR manufacturing process (“Unsat. WOR”) (**Appendices S** and **T**). The reports provide analytical results for volatile organic compounds, and the presence of ethylbenzene and xylene in the waste WOR from both processes is noted. The samples that were analyzed in the report are both described as “Liquid, grab.” It is unclear where in Polynt’s process the samples were collected and if they were collected at the point of generation of the waste WOR upstream of the Liquid Knockout Tank.

Additional analytical records for waste WOR were reviewed by NEIC, including reports dated April 2000, February 2001, and February 2023. These records appear to reflect the properties of waste WOR collected from Polynt’s Waste Tank 2. Polynt representatives stated to NEIC inspectors that the samples that were analyzed in the February 2023 report were collected from the Incinerator feed line. By the time waste WOR has reached Waste Tank 2, and before it has been fed to the Incinerator, the waste WOR has been physically separated in Waste Tank 4 to remove the WOR organic layer and neutralized in Waste Tank 2. The analytical records from April 2000, February 2001, and February 2003 do not reflect the properties of the waste WOR at its point of generation.

Polynt must make an accurate hazardous waste determination for the waste WOR at its point of generation and may use generator knowledge, sampling and analytical testing, or a combination of both methods to make such a determination. Polynt must make this determination for each variant of waste WOR that may be generated during different product batches. (Furthermore, as referenced in **Observation 3**, Polynt must repeat the hazardous waste determination for the WOR at any time when the properties of the WOR waste may change such that the RCRA classification of the waste may change. This includes, but is not limited to, when various WOR wastes are combined in Waste Tank 4, when WOR layers are separated in Waste Tank 4 and transferred to Waste Tanks 2 and 3, and after WOR is treated in Waste Tank 2.)

Polynt must maintain records that demonstrate an accurate hazardous waste determination has been made for each type of waste WOR that it generates. The hazardous waste determination records reviewed by NEIC do not appear to reflect the properties of the waste WOR at its initial point of generation at the exit of the decanters and receivers, and do not meet the requirements of 40 CFR § 262.11.

Observation: 5

Observation Summary: Polynt failed to correctly identify the point of generation for the WOR hazardous waste stream and erroneously considers the Liquid Knockout Tank exempt

Observation: 5

under the manufacturing process unit exemption. The Liquid Knockout Tank meets the definition of a hazardous waste tank and is not being operated in accordance with regulatory requirements.

Citation:

Hazardous waste determination and recordkeeping, 40 CFR § 262.11

A person who generates a solid waste, as defined in 40 CFR 261.2, must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps:

> *(a) The hazardous waste determination for each solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.*

Exclusions, 40 CFR § 261.4

(c) Hazardous wastes which are exempted from certain regulations. A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit, is not subject to regulation under parts 262 through 265, 268, 270, 271 and 124 of this chapter or to the notification requirements of section 3010 of RCRA until it exits the unit in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials.

Definitions, 40 CFR § 260.10

Tank means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

Conditions for exemption for a large quantity generator that accumulates hazardous waste, 40 CFR § 262.17

A large quantity generator may accumulate hazardous waste on site without a permit or interim status, and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, or the notification requirements of section 3010 of RCRA for treatment, storage, and disposal facilities, provided that all of the following conditions for exemption are met:

(a) Accumulation. A large quantity generator accumulates hazardous waste on site for no more than 90 days, unless in compliance with the accumulation time limit extension or F006 accumulation conditions for exemption in paragraphs (b) through (e) of this section. The following accumulation conditions also apply:

Observation: 5

(2) Accumulation of hazardous waste in tanks. If the waste is placed in tanks, the large quantity generator must comply with the applicable requirements of subpart J (except §§ 265.197(c) and 265.200 of this subchapter) as well as the applicable requirements of 40 CFR part 265, subparts AA through CC.

(5) Labeling and marking of containers and tanks —
(ii) Tanks. A large quantity generator accumulating hazardous waste in tanks must do the following:

(A) Mark or label its tanks with the words "Hazardous Waste";

(B) Mark or label its tanks with an indication of the hazards of the contents…

(C) Use inventory logs, monitoring equipment or other records to demonstrate that hazardous waste has been emptied within 90 days of first entering the tank if using a batch process, or in the case of a tank with a continuous flow process, demonstrate that estimated volumes of hazardous waste entering the tank daily exit the tank within 90 days of first entering; and

(D) Keep inventory logs or records with the above information on site and readily available for inspection.

Evidence:
Appendix D – Field Photographs
Observation 4
Appendix A – Alkyd Reactor and Composite Reactor Process Flow Diagrams
Appendix R – RO13790
Appendix U – Filter Bags Waste Profile WCE0162
Appendix V – Manifest 024961205JJK
Observation 7
Interviews with Facility personnel

Description of Observation:
All WOR that is generated within the Facility is piped to a tank referred to as the "Liquid Knockout Tank". The Liquid Knockout Tank is an above-ground tank located in the waste tank area, adjacent to Waste Tank 4 (**Appendix D**, photos 34 and 35). All WOR from manufacturing processes is temporarily stored in the Liquid Knockout Tank before being pumped to Waste Tank 4. Polynt representatives stated that the purpose of the Liquid Knockout Tank is to remove solids from the WOR waste stream prior to the liquid entering Waste Tank 4.

As described in **Observation 4** above, WOR generated from the alkyd resin process and the UPR process is collected in decanters and receivers, respectively, and manually drained to the Liquid Knockout Tank. These processes are depicted in **Appendix A**.

Once the WOR exits the decanters and receivers, it is no longer used in any part of the manufacturing process and is a waste. The point of generation for the WOR occurs when the operators manually open the valve on the decanter or receiver, draining the waste into the ancillary equipment leading to the Liquid Knockout Tank. RO13790 (**Appendix R**, page 2) clarifies, "[w]e consider the point of exit from the process tank to be the introductory point

Observation: 5
for the hazardous waste into a hazardous waste tank system. Therefore, any process transfer equipment, even if normally used for production purposes, that is also used to transfer hazardous waste...to a hazardous waste storage/treatment tank, would be considered part of a hazardous waste tank system…" The Liquid Knockout Tank only ever receives material that is a waste, destined for disposal. Some of these wastes exhibit a characteristic of hazardous waste (ignitability, corrosivity) or are a listed F003 hazardous waste. Therefore, the Liquid Knockout Tank is used to store hazardous waste and is a hazardous waste tank. WOR is transferred from the Liquid Knockout Tank to Waste Tank 4 where it is treated by phase separation. It is subsequently either further treated in Waste Tank 2 and burned in the on-site Incinerator, or it is shipped off-site as hazardous waste. Solids removed from the filters in the Liquid Knockout Tank are accumulated in the Filter Room satellite accumulation area and are also sent off-site as hazardous waste. The waste profile for these solids is included as **Appendix U**, and **Appendix V** shows an example manifest where this waste was sent off-site. Polynt representatives stated that the Liquid Knockout Tank is necessary for process operations because it represents a "bottleneck" in the process and that if it becomes full, upstream processes must be paused until the waste can be transferred out of the Liquid Knockout Tank. Facility personnel indicated that this justification qualified the Liquid Knockout Tank for the manufacturing process unit exemption. However, the regulation at 40 CFR § 261.4(c) where this exemption is codified specifies that the exemption applies to the unit in which the waste was generated. The WOR is generated in the decanters and receivers during the manufacturing process. Once it leaves these units, the manufacturing process unit exemption no longer applies, and the waste becomes subject to the RCRA regulations. During Polynt's manufacturing processes, there is no active or continuous flow from any of the decanters or receivers to the Liquid Knockout Tank while batches are in-process. WOR waste is accumulated in the decanters or receivers until the decision is made to empty the units into the Liquid Knockout Tank. While batches are running, the valves that drain the decanters or receivers are kept closed. These valves must be manually opened to drain decanters or receivers. The decanters and receivers do not share a common atmosphere with the Liquid Knockout Tank. Although the Liquid Knockout Tank and downstream hazardous waste tanks are integral to the management of the WOR waste after it is generated during a batch, the Liquid Knockout Tank plays no role in the resin manufacturing process within the kettles. The WOR is generated as a waste once it is discharged in batches from the decanters and receivers and exits the manufacturing process. The current operation of the Liquid Knockout Tank as a hazardous waste management unit is operating without a RCRA permit because current operations do not meet the exemption requirements listed in 40 CFR Part 265 Subpart J as referenced by the requirements of 40 CFR § 262.17. The Liquid Knockout Tank could qualify for the less-than-90-day hazardous waste accumulation exemption from permitting if the tank were being managed according to the exemption requirements listed in 40 CFR § 262.17. Since the tank has not formally been designated as a less-than-90-day hazardous waste storage unit, the Facility does not meet all of the Subpart J tank requirements. Polynt

Observation: 5
representatives did not provide a structural integrity assessment for the tank. Polynt does not include the Liquid Knockout Tank on its daily RCRA Inspection Form and is not completing the required daily inspections. The tank is not labeled with the words "hazardous waste" or marked with an indication of the hazards of the contents. Hazardous waste accumulated in the tank is not being tracked or recorded; therefore, Polynt is not tracking the accumulation time for the waste in the tank (see **Observation 7**, below). Polynt does include valves and pumps associated with the Liquid Knockout Tank in the Facility's LDAR monitoring program, but the Facility also needs to ensure the tank meets all applicable 40 CFR Part 265 Subpart CC requirements.

Observation: 6
Observation Summary: Polynt treated hazardous waste in hazardous Waste Tanks 2 and 4 without a permit. At the time of NEIC's inspection, hazardous Waste Tanks 2 and 4 were not meeting the permit exemption conditions for a large quantity generator of hazardous waste. A permit is required when a facility conducts treatment activities without complying with applicable permit exemption conditions.
Citation: **Definitions, 40 CFR § 260.10** *Treatment means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.* **EPA administered permit programs, general information, 40 CFR § 270.1** *(b) Overview of the RCRA Permit Program. Not later than 90 days after the promulgation or revision of regulations in 40 CFR part 261 (identifying and listing hazardous wastes) generators and transporters of hazardous waste, and owners or operators of hazardous waste treatment, storage, or disposal facilities may be required to file a notification of that activity under section 3010. Six months after the initial promulgation of the part 261 regulations, treatment, storage, or disposal of hazardous waste by any person who has not applied for or received a RCRA permit is prohibited.* **Conditions for exemption for a large quantity generator that accumulates hazardous waste, 40 CFR § 262.17** *A large quantity generator may accumulate hazardous waste on site without a permit or interim status, and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, or the notification requirements of section 3010 of RCRA, provided that all of the following conditions for exemption are met:* *(a) Accumulation. A large quantity generator accumulates hazardous waste on site for no more than 90 days, unless in compliance with the accumulation time limit extension or F006 accumulation conditions for exemption in paragraphs (b) through (e) of this section. The following accumulation conditions also apply:*

Observation: 6

(2) Accumulation of hazardous waste in tanks. If the waste is placed in tanks, the large quantity generator must comply with the applicable requirements of subparts J, except § 265.197(c) of Closure and post-closure care and § 265.200—Waste analysis and trial tests, as well as the applicable requirements of AA, BB, and CC of 40 CFR part 265.

Evidence:
Appendix W – 51 Federal Register 10168
Observations 7, **8**, **9**, and **13**
Appendix Q – RO14834
Laboratory Activities Summary, Tables 7 and 8

Description of Observation:
Generators of hazardous waste may treat hazardous waste in tanks without a permit if the tanks meet the applicable requirements of 40 CFR § 262.17, which references unit-specific hazardous waste tank requirements under Subparts J and CC of 40 CFR Part 265. Although the "generator treatment" practice is not specifically addressed in the regulations, EPA has published guidance stating that such treatment in less-than-90-day hazardous waste accumulation tanks at generator facilities is allowed (**Appendix W**). However, to treat hazardous waste in tanks without a permit, the tanks are required to comply with all applicable regulations to meet the conditions of a permit exemption. As described below in **Observations 7**, **8**, **9**, and **13**, hazardous Waste Tanks 2 and 4 did not meet the applicable tank requirements and Polynt did not meet its permit exemption conditions.

Polynt accumulates WOR hazardous waste in hazardous Waste Tank 4. The WOR naturally separates into an upper WOR organic layer and a lower WOR aqueous layer. Under the system design, Polynt decants the lower WOR aqueous layer and places the material in Waste Tank 2. The upper WOR organic layer in Waste Tank 4 is transferred to Waste Tank 3 where it is later shipped off-site as D001 hazardous waste. Separating or physically removing (decanting) the WOR aqueous layer from the hazardous waste WOR organic layer in Waste Tank 4 is considered treatment under the RCRA hazardous waste regulations (**Appendix Q**, page 5).

In Waste Tank 2, Polynt periodically performs neutralization of the WOR aqueous layer by raising the pH with ammonium hydroxide before the material is fed to the Incinerator. However, during the decanting of the WOR aqueous layer from Waste Tank 4, portions of the WOR organic layer are incidentally transferred to Waste Tank 2. Additionally, Polynt operators described that they may purposefully transfer some or all of the contents of Waste Tank 4 (WOR organic and aqueous layers) to Waste Tank 2 because other tanks have reached capacity. During the NEIC inspection, Polynt was storing WOR organics in Waste Tank 2, as evidenced by samples S01-S04 collected from Waste Tank 2 which displayed an upper WOR organic layer (**Laboratory Activities Summary, Tables 7 and 8**). Polynt representatives stated that, when possible, the WOR organic layer that may be present in Waste Tank 2 is later transferred to Waste Tank 3. However, NEIC did not receive information to demonstrate that Polynt removes the organic layer from Waste Tank 2 prior to every neutralization event. The neutralization of the D001 and F003 hazardous waste WOR organic layer in Waste Tank 2, even if performed incidentally, is considered treatment under the RCRA hazardous waste regulations.

Observation: 6
It should also be noted that when Waste Tank 2 contains the hazardous waste WOR organic layer, the tank may not be considered a RCRA elementary neutralization unit. As defined in 40 CFR § 260.10, an "elementary neutralization unit" is a device that neutralizes wastes that are hazardous only because they are corrosive (EPA hazardous waste number D002).

Observation: 7
Observation Summary: Polynt does not adequately track the 90-day accumulation limit for the WOR organic layer hazardous waste stream. Polynt does not maintain inventory logs or records to demonstrate that the hazardous waste is shipped off-site within 90 days of generation.
Citation: **Conditions for exemption for a large quantity generator that accumulates hazardous waste, 40 CFR § 262.17** *A large quantity generator may accumulate hazardous waste on site without a permit or interim status, and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, or the notification requirements of section 3010 of RCRA for treatment, storage, and disposal facilities, provided that all of the following conditions for exemption are met:* *(a) Accumulation. A large quantity generator accumulates hazardous waste on site for no more than 90 days, unless in compliance with the accumulation time limit extension or F006 accumulation conditions for exemption in paragraphs (b) through (e) of this section. The following accumulation conditions also apply:* *(5) Labeling and marking of containers and tanks —* *(ii) Tanks. A large quantity generator accumulating hazardous waste in tanks must do the following:* *(C) Use inventory logs, monitoring equipment or other records to demonstrate that hazardous waste has been emptied within 90 days of first entering the tank if using a batch process, or in the case of a tank with a continuous flow process, demonstrate that estimated volumes of hazardous waste entering the tank daily exit the tank within 90 days of first entering; and* *(D) Keep inventory logs or records with the above information on site and readily available for inspection.*
Evidence: **Observation 4** **Appendix A** – Alkyd Reactor and Composite Reactor Process Flow Diagrams **Appendix B** – Waste System Process Flow Diagram **Observation 1** Interviews with Facility personnel

Observation: 7

Description of Observation:

Polynt does not have adequate practices in place to ensure that hazardous waste is accumulated on-site for no more than 90 days to qualify for the large quantity generator permit exemption. According to Polynt representatives, the Facility considers the 90-day exemption requirement met by completing an off-site shipment of waste from Waste Tank 3 at a minimum of 90-day intervals. However, Polynt's current practices do not adequately ensure that all hazardous waste leaves the Facility within 90 days from the point of generation.

As described in **Observation 4** above, the initial point of generation for the WOR waste stream is when the liquid exits the decanters and receivers, at which point it is a waste. Operators manually open the valve on the decanter or receiver which drains the waste into the Liquid Knockout Tank. This process is depicted in **Appendix A** and **Appendix B**. No log or record is maintained to note when this process of moving waste occurs.

During interviews throughout the NEIC inspection, Polynt representatives described the use of Waste Tanks 4, 3, and 2. While the primary flow of the WOR organic layer is initially accumulated and decanted in Waste Tank 4, then subsequently transferred to Waste Tank 3 for shipment off-site, the WOR organic layer can also be transferred into Waste Tank 2 if needed due to storage space constraints which fluctuate during process operations. Similarly, the WOR aqueous layer is typically transferred from Waste Tank 4 to Waste Tank 2 then burned in the Incinerator, but capacity limits may cause WOR aqueous waste to be temporarily stored in Waste Tank 3. At the time of the NEIC inspection, Polynt stated they were storing WOR organic hazardous waste in Waste Tank 2 and WOR aqueous waste in Waste Tank 3. This was in part due to a broken pump that prevented waste transfer out of Waste Tank 3 (the pump was scheduled for repairs the following week).

While the inspection team was on-site, EPA Region 4 inspectors witnessed Facility employees emptying totes of liquid into Waste Tank 4. Polynt representatives explained that these totes contained WOR from batch processes over the previous weekend which had generated waste in excess of the tank capacity of the waste system. Operators had removed waste from Waste Tank 4 and stored it in totes until space was available to add back it into the waste tanks days later. Polynt reportedly labeled the totes as hazardous waste, but failed to document the generation date and how the accumulation time limit would be accurately tracked. This scenario exemplifies the lack of tracking of the WOR hazardous waste stream.

Additionally, as described in **Observation 1**, both methods of using the sight glasses as well the electronic instrument levels on control screens for tracking the layers of waste are unreliable. The unreliable methods of tracking the layers of waste impacts the ability of the Facility to accurately track the 90-day clock for whenever the WOR organic waste is generated and subsequently managed throughout the waste system.

To qualify for the large quantity generator exemption for accumulation of hazardous waste, Polynt must ensure that hazardous waste is not stored on-site longer than 90 days. Additionally, Polynt must maintain inventory logs or records to demonstrate that hazardous waste is emptied within 90 days of first entering the waste system, as required by the regulations. Polynt's current practice of relying on shipment intervals of less than 90-days

Observation: 7
from Waste Tank 3 does not account for the movement and storage of hazardous waste in other units after the initial point where it is generated.

Observation: 8

Observation Summary: Polynt does not maintain records that document the applicability of Subpart CC air emission standards for hazardous Waste Tanks 2, 3, and 4. Polynt did not have documentation of the maximum organic vapor pressure of the hazardous waste within Waste Tanks 2, 3, and 4, which is required to determine the appropriate level of air emission controls for each tank (i.e., tank level 1 or 2 controls).

Citation:

40 CFR Part 265, Subpart CC - Air Emission Standards for Tanks

Standards: General, 40 CFR § 265.1083, as referenced by 40 CFR § 262.17(a)(2)

(b) The owner or operator shall control air pollutant emissions from each hazardous waste management unit in accordance with standards specified in §§ 265.1085 through 265.1088 of this subpart, as applicable to the hazardous waste management unit, except as provided for in paragraph (c) of this section.

(c) A tank, surface impoundment, or container is exempt from standards specified in § 265.1085 through § 265.1088 of this subpart, as applicable, provided that the waste management unit is one of the following:

(1) A tank, surface impoundment, or container for which all hazardous waste entering the unit has an average VO concentration at the point of waste origination of less than 500 parts per million by weight (ppmw). The average VO concentration shall be determined using the procedures specified in § 265.1084(a) of this subpart. The owner or operator shall review and update, as necessary, this determination at least once every 12 months following the date of the initial determination for the hazardous waste streams entering the unit.

Waste determination procedures, 40 CFR § 265.1084

(c) Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.

(1) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with the standards specified in § 265.1085(c) of this subpart.

(2) An owner or operator shall use either direct measurement as specified in paragraph (c)(3) of this section or knowledge of the waste as specified by paragraph (c)(4) of this section to determine the maximum organic vapor pressure which is representative of the hazardous waste composition stored or treated in the tank.

(4) Use of knowledge to determine the maximum organic vapor pressure of the hazardous waste. Documentation shall be prepared and recorded that presents the information used as the basis for the owner's or operator's knowledge that the maximum organic vapor pressure of the hazardous waste is less than the maximum vapor pressure limit listed in § 265.1085(b)(1)(i) of this subpart for the applicable tank design capacity category.

Standards: Tanks, 40 CFR § 265.1085

Observation: 8

(b) The owner or operator shall control air pollutant emissions from each tank subject to this section in accordance with the following requirements, as applicable:

(1) For a tank that manages hazardous waste that meets all of the conditions specified in paragraphs (b)(1)(i) through (b)(1)(iii) of this section, the owner or operator shall control air pollutant emissions from the tank in accordance with the Tank Level 1 controls specified in paragraph (c) of this section or the Tank Level 2 controls specified in paragraph (d) of this section.

(i) The hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure limit for the tank's design capacity category as follows:

(C) For a tank design capacity less than 75 m^3, the maximum organic vapor pressure limit for the tank is 76.6 kPa.

Recordkeeping requirements, 40 CFR § 265.1090

(b) The owner or operator of a tank using air emission controls in accordance with the requirements of § 265.1085 of this subpart shall prepare and maintain records for the tank that include the following information:

(2) In addition to the information required by paragraph (b)(1) of this section, the owner or operator shall record the following information, as applicable to the tank:

(i) *The owner or operator using a fixed roof to comply with the Tank Level 1 control requirements specified in § 265.1085(c) of this subpart shall prepare and maintain records for each determination for the maximum organic vapor pressure of the hazardous waste in the tank performed in accordance with the requirements of § 265.1085(c) of this subpart. The records shall include the date and time the samples were collected, the analysis method used, and the analysis results.*

Evidence:

Appendix L – Geocycle WOR Organic Layer Waste Profile and Recertifications

Laboratory Activities Summary, Tables 7 and 8

Appendix X – Waste Tank Capacities

Appendix K – Reflux Solvent Safety Data Sheets

Description of Observation:

A large quantity generator of hazardous waste that accumulates hazardous waste in tanks must comply with the applicable air emission standards under Subpart CC of 40 CFR Part 265. Subpart CC air emission standards for tanks apply when a tank is used to accumulate hazardous waste with an average volatile organic (VO) concentration of greater than 500 parts per million (ppm) at the point of waste origination. An owner or operator of a tank which accumulates hazardous waste with greater than 500 ppm VO must further determine the maximum organic vapor pressure of the hazardous waste stored within the tank. This may be calculated using direct measurement or through generator knowledge of the waste. The maximum organic vapor pressure of the waste inside the tank will determine the appropriate level of air emission controls required for the tank, either tank level 1 or level 2 controls. Records of this determination must be kept in the Facility operating record.

Polynt accumulates hazardous waste WOR in Waste Tanks 2, 3, and 4. In Waste Tank 4, WOR is separated into a WOR organic layer and WOR aqueous layer. The WOR organic layer, which

Observation: 8

consists primarily of spent reflux solvent, has been characterized by Polynt as D001 hazardous waste and is estimated to contain, among other constituents, 40% xylene (**Appendix L**). The WOR organic layer, which has a pale-yellow color, is transferred for storage in Waste Tank 3 prior to shipment off-site for disposal. The WOR aqueous layer from Waste Tank 4 is transferred to Waste Tank 2 prior to being burned in the Incinerator. Polynt has characterized its WOR aqueous layer as non-hazardous waste. However, when WOR aqueous waste is transferred to Waste Tank 2, a portion of the WOR organic layer may incidentally be transferred to Waste Tank 2. Polynt operators may also purposefully transfer some or all contents of Waste Tank 4 into Waste Tank 2 when other tanks have reached capacity. During the NEIC inspection, Polynt was storing WOR organics in Waste Tank 2, as evidenced by samples S01-S04 collected from Waste Tank 2 which displayed an upper WOR organic layer (**Laboratory Activities Summary, Tables 7 and 8**).

Based on the information above, Waste Tanks 2, 3, and 4 likely contain hazardous waste with greater than 500 ppm VO due to the presence of xylene within the WOR organic layer, and the Subpart CC air emission standards would apply to each tank. The storage of the WOR organic layer in Waste Tank 2, even if performed incidentally, would not exempt the tank from the Subpart CC standards.

Polynt representatives provided documentation to NEIC of the capacities of each tank (**Appendix X**). Waste Tanks 2, 3, and 4 have reported capacities of 9,500 gallons, 10,400 gallons, and 12,180 gallons, respectively. The Safety Data Sheet for the xylene reflux solvent indicates a vapor pressure of 0.93 kilopascals at “room temperature” (**Appendix K**, page 7). Conservatively assuming xylene is the sole constituent contributing to the waste vapor pressure, Waste Tanks 2, 3, and 4 would each likely require tank level 1 controls per 40 CFR § 265.1085. However, Polynt must make an accurate determination of the maximum organic vapor pressure of the hazardous waste in Waste Tanks 2, 3, and 4, based on the representative composition of the hazardous waste stored in each tank.

During NEIC’s inspection, Polynt was unable to provide documentation of the maximum organic vapor pressure of the hazardous waste within Waste Tanks 2, 3, and 4. Polynt was also unable to document the appropriate level of air emission controls for each tank. Subpart CC requires that these determinations are kept in the Facility operating record.

Observation: 9

Observation Summary: Polynt did not control air emissions from hazardous Waste Tanks 2, 3, and 4 in accordance with the requirements for Subpart CC tank level 1 controls. NEIC made the following observations:

- The emergency relief vent hatch on the roof of Waste Tank 3 was open to the atmosphere.
- The emergency relief vent hatch on the roof of Waste Tank 2 was monitored with a TVA and was not operating with no detectable emissions. Visible emissions were also observed from the device using a FLIR camera.
- Visible emissions were observed from the flame arrestor on the roof of Waste Tank 2 using a FLIR camera. The visible emissions appeared to originate from two holes on

Observation: 9

the cover plate of the closure device where two bolts were missing. The holes were monitored with a TVA and caused the TVA to flame out.

- The emergency relief vent hatch on the roof of Waste Tank 4 was monitored with a TVA and was not operating with no detectable emissions.
- Visible emissions were observed from the conservation vent on the roof of Waste Tank 4 using a FLIR camera. Polynt provided documentation to demonstrate the device was operating at no detectable organic emissions.

Citation:

40 CFR Part 265, Subpart CC - Air Emission Standards for Tanks

Standards: Tanks, 40 CFR § 265.1085

(c) Owners and operators controlling air pollutant emissions from a tank using Tank Level 1 controls shall meet the requirements specified in paragraphs (c)(1) through (c)(4) of this section:

(3) The tank shall be equipped with a fixed roof designed to meet the following specifications:

(i) The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank. The fixed roof may be a separate cover installed on the tank (e.g., a removable cover mounted on an open-top tank) or may be an integral part of the tank structural design (e.g., a horizontal cylindrical tank equipped with a hatch).

(iii) Each opening in the fixed roof, and any manifold system associated with the fixed roof, shall be either:

(A) Equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device; or

(B) Connected by a closed-vent system that is vented to a control device. The control device shall remove or destroy organics in the vent stream, and shall be operating whenever hazardous waste is managed in the tank, except as provided for in paragraphs (c)(2)(iii)(B)(1) and (2) of this section.

(4) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position except as follows:

(ii) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the tank internal pressure in accordance with the tank design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position.

Definitions, 40 CFR § 265.1081

No detectable organic emissions means no escape of organics to the atmosphere as determined using the procedure specified in § 265.1084(d) of this subpart.

Waste determination procedures, 40 CFR § 265.1081

(d) Procedure for determining no detectable organic emissions for the purpose of complying with this subpart:

Observation: 9

(7) *Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in Method 21 of 40 CFR part 60, appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.*

(8) *The arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 500 ppmv except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (d)(9) of this section. If the difference is less than 500 ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.*

Evidence:
Observation 8
Appendix D – Field Photographs
Appendix F – FLIR Camera Recordings
Appendix Y – ATI Testing Leak Summary Sheet for Waste Tank 4

Description of Observation:
Based on the discussion above in **Observation 8**, Polynt's hazardous Waste Tanks 2, 3, and 4, are required to meet, at minimum, the tank level 1 controls under the Subpart CC air emission standards for hazardous waste tanks.

On November 13, 2023, NEIC inspectors toured Polynt's waste system tank area and accessed the catwalk above the roofs of Waste Tanks 2 and 3. The emergency relief vent hatch on the roof of Waste Tank 3 was not secured in the closed position and was visibly open to the atmosphere (**Appendix D,** photo 49). The emergency relief vent hatch is a closure device and must be operated with no visible cracks, holes, or gaps. On the same day, Polynt representatives stated that the emergency relief vent hatch on Waste Tank 3 had been closed, and NEIC inspectors observed the hatch closed on November 14, 2023.

On November 14, 2023, NEIC inspectors made the following additional observations:

- Visible emissions were observed from the emergency relief vent hatch on the roof of Waste Tank 2 using a FLIR camera (**Appendix F**, video FLIR0007.mp4). The hatch remains closed during normal operations and is designed only to open when pressure inside the tank reaches unsafe levels. The seal of the vent hatch appeared to be closed. Chemical residues were observed around the device which indicate a tank overflow or pressure relief event had occurred in the past (**Appendix D**, photo 85). NEIC inspectors monitored the seal of the vent hatch using a TVA and recorded a reading of 2,600 ppm. The emergency relief vent hatch is a closure device and a pressure relief device and must operate with no detectable organic emissions when in

Observation: 9
the closed position. No detectable emissions is defined as a leak of no greater than 500 ppm as compared to background concentrations. • Visible emissions were observed from the flame arrestor on the roof of Waste Tank 2 using a FLIR camera (**Appendix F**, video FLIR0006.mp4). The flame arrestor is in-line to the Waste Tank 2 conservation vent. The emissions appeared to originate from two visible holes on the face plate of the flame arrestor where two bolts were missing (**Appendix D**, photo 84). NEIC inspectors monitored the face plate holes with a TVA and recorded a reading of 1.2% (or approximately 12,000 ppm) before the instrument flamed out. The flame arrestor is a closure device and must be operated with no visible cracks, holes, or gaps. • The closed emergency relief vent hatch on the roof of Waste Tank 4 was monitored with a TVA and NEIC inspectors recorded a reading of 7,100 ppm (**Appendix D**, photo 75). The emergency relief vent hatch is a closure device and a pressure relief device and must operate with no detectable emissions. • Visible emissions were observed from the conservation vent on the roof of Waste Tank 4 using a FLIR camera (**Appendix F**, video FLIR0001.mp4 and FLIR0002.mp4), which indicated the device may not have been operating with no detectable organic emissions. It was not determined if the tank was actively transferring waste at the time of this observation. Later during NEIC's inspection, Polynt representatives stated that the Waste Tank 4 conservation vent had been repaired and their third-party contractor, ATI Testing, had monitored the device for leaks. A leak detection summary sheet provided by Polynt indicates the device was operating at no detectable organic emissions (**Appendix Y**).

Observation: 10
Observation Summary: Eight open-ended lines associated with equipment subject to 40 CFR Part 265 Subpart BB RCRA air regulations were not equipped with a cap, blind flange, plug, or second valve.
Citation: **40 CFR Part 265, Subpart BB - Air Emission Standards for Equipment Leaks** **Standards: Open-ended valves or lines, 40 CFR § 265.1056** *(a)* *(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.* *(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.*
Evidence: **Appendix L** – Geocycle WOR Organic Layer Waste Profile and Recertifications **Appendix Z** – ATI Testing Annual VOC Leak Test Report September 2023 **Appendix D** – Field Photographs **Appendix AA** – Polynt Documentation of Corrections

Observation: 10

Description of Observation:

Polynt operates hazardous waste tanks with equipment that contains or contacts hazardous wastes with organic concentrations of at least 10% by weight. Polynt uses a xylene reflux solvent in the alkyd resin manufacturing process which is discharged as WOR organic waste from the decanters into the waste system. The Liquid Knockout Tank and hazardous Waste Tanks 2, 3, and 4 manage the WOR organic waste which is estimated by Polynt to contain up to 40% xylene, among other constituents (**Appendix L**). The equipment associated with these tanks is subject to air emission regulatory requirements as specified in 40 CFR Part 265 Subpart BB. At the time of the NEIC inspection, the most recent leak detection testing event for the tank system was conducted on September 21, 2023, and the corresponding report is included as **Appendix Z**.

On November 13 and 14, 2023, the NEIC inspection team noted several instances of open-ended lines on various equipment throughout the plant. These instances were identified on equipment in the following locations:

- Two valves on piping attached to the Kettle 4 decanter did not have secondary closure devices (**Appendix D,** photo 24, 25). One of these open-ended lines had an active leak as evidenced by a drip emanating from the line.
- Two valves on piping attached to the Kettle 3 decanter (**Appendix D,** photo 26 and 88) did not have secondary closure devices. The open-ended line in photo 26 had an active leak as evidence by a drip emanating from the line and a puddle of liquid accumulating underneath.
- A valve on piping attached to the Kettle 1 decanter did not have a secondary closure device (**Appendix D,** photo 30).
- A valve on piping between the Vapor Knockout Tank and Waste Tanks 2 and 3 did not have a secondary closure device (**Appendix D,** photo 79).
- A valve on piping located below Waste Tank 2 did not have a secondary closure device (**Appendix D,** photo 82).
- A valve on the lower portion of Waste Tank 2 did not have a secondary closure device (**Appendix D,** photo 83).

The regulations require that all open-ended valves or lines subject to the 40 CFR Part 265 Subpart BB requirements must be equipped with a secondary closure device such as a cap, blind flange, plug, or second valve.

Polynt representatives corrected the open-ended line on the Kettle 4 decanter during the inspection; NEIC inspectors observed the newly installed cap on the open-ended line during LDAR monitoring activities on November 14, 2023 (**Appendix D,** photo 87). Following the inspection, Polynt submitted documentation of corrections that had been made as a result of the NEIC inspection (**Appendix AA**). **Appendix** AA, page 2 shows caps that were installed on the two open-ended lines on the Kettle 4 decanter. **Appendix** AA, page 3 shows a cap that was installed on the open-ended line on the Kettle 1 decanter.

Observation: 11
Observation Summary: Pieces of equipment subject to 40 CFR Part 265 Subpart BB air emission standards were missing identification tags.
Citation: **40 CFR Part 265, Subpart BB - Air Emission Standards for Equipment Leaks** **Applicability, 40 CFR § 265.1050** *(c) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.*
Evidence: **Appendix D** – Field Photographs
Description of Observation: Polynt operates hazardous waste tanks with equipment that contains or contacts hazardous wastes with organic concentrations of at least 10% by weight. This equipment is subject to air emission regulatory requirements as specified in 40 CFR Part 265 Subpart BB. On November 14, 2023, NEIC inspectors conducted LDAR monitoring of this equipment and noted that tags were missing from some of the regulated pieces of equipment. In particular, a valve on the Waste Tank 4 manifold (**Appendix D**, photo 76) and a valve below Waste Tank 4 (**Appendix D**, photo 77) were missing identification tags. The tags are the method the Facility uses to identify equipment in hazardous waste service. The regulations require that each piece of equipment be marked in a way to identify it from other pieces of equipment.

Observation: 12
Observation Summary: Polynt was unable to provide records to demonstrate that valves in light liquid service qualify for a reduction in monitoring frequency.
Citation: **40 CFR Part 265, Subpart BB - Air Emission Standards for Equipment Leaks** **Standards: Valves in gas/vapor service or in light liquid service, 40 CFR § 265.1057** *(a) Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in § 265.1063(b) and shall comply with paragraphs (b) through (e) of this section, except as provided in paragraphs (f), (g), and (h) of this section, and §§ 265.1061 and 265.1062.* **Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair, 40 CFR § 265.1062** *(a) An owner or operator subject to the requirements of § 265.1057 may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of this section.* *(b)* *(3) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip*

Observation: 12

three of the quarterly leak detection periods (i.e., monitor for leaks once every year) for the valves subject to the requirements in § 265.1057 of this subpart.

Recordkeeping requirements, 40 CFR § 265.1064

(i) The following information shall be recorded in the facility operating record for valves complying with § 265.1062:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

Evidence:

Appendix Z – ATI Testing Annual VOC Leak Test Report September 2023

Interviews with Facility personnel

Description of Observation:

Polynt operates hazardous waste tanks with equipment that contains or contacts hazardous wastes with organic concentrations of at least 10% by weight. This equipment is subject to air emission regulatory requirements as specified in 40 CFR Part 265 Subpart BB.

NEIC inspectors interviewed Facility personnel and Polynt's contracted LDAR technician regarding the Facility's monitoring program and associated recordkeeping. Polynt monitors valves on an annual basis. At the time of the NEIC inspection, the most recent annual leak detection testing event was conducted on September 21, 2023, and the corresponding report is included as **Appendix Z**.

The regulations require that valves in light liquid service be monitored on a monthly basis. If no leaks are found for two consecutive months, the monitoring frequency may be reduced to quarterly, as per 40 CFR § 265.1057(c). Further reductions in monitoring frequency are outlined in 40 CFR § 265.1062 which allow for annual monitoring after five consecutive quarterly leak detection periods where the percentage of valves leaking is less than or equal to 2%. Recordkeeping requirements outlined in 40 CFR § 265.1064(i) require that a schedule of monitoring for valves complying with reduced monitoring frequency be maintained in the Facility operating record. Polynt was unable to provide a schedule of monitoring or records of monitoring reports with leak rates which provided the basis for a reduced (annual) monitoring schedule for valves in light liquid service.

Observation: 13

Observation Summary: At the time of the inspection, Polynt was not completing required inspections of hazardous waste tanks and associated equipment for each operating day that the tanks contained waste.

Citation:

40 CFR Part 265, Subpart J - Tank Systems

Inspections, 40 CFR § 265.195, as referenced by 40 CFR § 262.17(a)(2)

(b) Except as noted under the paragraph (c) of this section, the owner or operator must inspect at least once each operating day:

(1) Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) to ensure that it is in good working order;

Observation: 13

(2) Above ground portions of the tank system, if any, to detect corrosion or releases of waste; and

(3) The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

(e) Ancillary equipment that is not provided with secondary containment, as described in § 265.193(f)(1) through (4), must be inspected at least once each operating day.

(g) The owner or operator must document in the operating record of the facility an inspection of those items in paragraphs (a) and (b) of this section.

Evidence:
Appendix BB – Polynt RCRA Inspection Forms, November 2022 to November 2023

Description of Observation:
NEIC inspectors reviewed tank inspection logs for approximately one year, from November 1, 2022, through November 13, 2023 (**Appendix BB**). Records included inspections of Waste Tanks 2, 3, and 4. Polynt did not have a record that daily tank inspections were performed for these tanks on 98 days during this time period.

Documentation that Polynt performed inspections was missing from the operating record for the following dates:

11/12/2022	1/2/2023	2/15/2023	4/5/2023	6/28/2023	8/31/2023	10/10/2023
11/18/2022	1/9/2023	2/17/2023	4/19/2023	7/1/2023	9/2/2023	10/11/2023
12/1/2022	1/17/2023	2/21/2023	4/28/2023	7/2/2023	9/3/2023	10/16/2023
12/2/2022	1/18/2023	2/22/2023	5/27/2023	7/5/2023	9/5/2023	10/20/2021
12/3/2022	1/19/2023	3/1/2023	5/31/2023	7/14/2023	9/7/2023	10/24/2023
12/4/2022	1/23/2023	3/3/2023	6/1/2023	7/18/2023	9/8/2023	10/25/2023
12/6/2022	1/31/2023	3/6/2023	6/2/2023	7/19/2023	9/17/2023	10/27/2023
12/7/2022	2/1/2023	3/14/2023	6/3/2023	7/24/2023	9/18/2023	11/1/2023
12/8/2022	2/4/2023	3/15/2023	6/7/2023	7/26/2023	9/20/2023	11/3/2023
12/9/2022	2/5/2023	3/23/2023	6/13/2023	7/31/2023	9/28/2023	11/4/2023
12/16/2022	2/6/2023	3/24/2023	6/16/2023	8/4/2023	9/29/2023	11/7/2023
12/22/2022	2/8/2023	3/25/2023	6/18/2023	8/10/2023	10/3/2023	11/9/2023
12/27/2022	2/9/2023	3/26/2023	6/19/2023	8/11/2023	10/4/2023	11/10/2023
12/28/2022	2/10/2023	3/27/2023	6/22/2023	8/14/2023	10/9/2023	11/13/2023

Polynt operates 24 hours a day, seven days a week. Facility personnel described the waste system as an integral part of manufacturing processes, as the WOR waste stream is continuously produced during operations. Regulations require tank inspections to be completed for every day that hazardous waste tanks are in operation, containing waste. As a continuously operating facility that generates a continuous hazardous waste stream, Polynt

Observation: 13
must inspect the waste tank systems and ancillary equipment at least once each operating day. These inspections must be documented in the Facility operating record.

Observation: 14
Observation Summary: Polynt accumulated hazardous waste removed from filters and strainers in the waste system tank area in a satellite accumulation area that was not at or near the point of generation.
Citation: **Satellite accumulation area regulations for small and large quantity generators, 40 CFR § 262.15** *(a) A generator may accumulate as much as 55 gallons of non-acute hazardous waste and/or either one quart of liquid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter or 1 kg (2.2 lbs) of solid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter 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 interim status and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, provided that all of the conditions for exemption in this section are met.*
Evidence: **Appendix U** – Filter Bags Waste Profile WCE0162 **Appendix V** – Manifest 024961205JJK **Appendix D** – Field Photographs Interviews with Facility personnel
Description of Observation: The waste system has several locations where strainers and filters remove solids from the liquid WOR waste stream. The purpose of the strainers is to remove solid materials and protect the downstream pumps from damage. The pumps then move the waste through filter bags to remove additional finer solid materials. These solids are collected and shipped off-site as hazardous waste. The profile for this waste stream is included as **Appendix U**, and an example manifest of the waste going off-site is included as **Appendix V.** Refer to **Appendix V** manifest line 2 for an example of the shipping name and waste codes used to ship the hazardous waste solids collected from the filters. Filter solids are removed from the following locations throughout the waste system: • Strainer on piping between the Liquid Knockout Tank and the pump to Waste Tank 4 (**Appendix D**, photo 121) • Filter located downstream of the strainer and after the pump between the Liquid Knockout Tank and Waste Tank 4 (**Appendix D**, photo 121) • Strainer on piping between Waste Tank 4 and the pump to the manifold which can direct waste to Waste Tank 2, 3, or back into 4 (**Appendix D**, photo 122) • Filter located downstream of the strainer and after the pump between Waste Tank 4 and the manifold which can direct waste to Waste Tank 2, 3, or back into 4 (**Appendix D**, photo 122) • Strainer on piping between Waste Tank 2 and the pump to the Incinerator (**Appendix D**, photo 123)

Observation: 14

- Filter located downstream of the strainer and after the pump between Waste Tank 2 and the Incinerator (**Appendix D**, photo 123)

Polynt representatives described that the filter bags from each of the three filters are replaced daily. Each of the three strainers collect solids in an internal basket which are also emptied daily. Operators walk the filter bags and strainer baskets over for disposal in the satellite accumulation drum located in the Filter Room on the bottom floor of the Main Process Building (**Appendix D**, photos 110 and 111). This satellite accumulation container is not at or near the point of generation for the waste filter solids. Polynt must establish a separate satellite accumulation container for this waste stream that is located near the point of generation in the actual waste tank area, or alternately manage the waste under the more stringent standards outlined in 40 CFR § 262.17.

Observation: 15

Observation Summary: Polynt failed to meet the exemption requirements for managing discarded samples in a hazardous waste satellite accumulation area. Containers of hazardous waste were not labeled or closed, and the contents of the containers were transferred from one satellite accumulation area to another.

Citation:

Satellite accumulation area regulations for small and large quantity generators, 40 CFR § 262.15

(a) A generator may accumulate as much as 55 gallons of non-acute hazardous waste and/or either one quart of liquid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter or 1 kg (2.2 lbs) of solid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter 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 interim status and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, provided that all of the conditions for exemption in this section are met.

> *(4) A container holding hazardous waste must be closed at all times during accumulation…*
>
> *(5) A generator must mark or label its container with the following:*
>
> > *(i) The words "Hazardous Waste" and*
> > *(ii) An indication of the hazards of the contents*

Evidence:

Appendix D – Field Photographs
Appendix CC – RO14337
Appendix AA – Polynt Documentation of Corrections
Interviews with Facility personnel

Description of Observation:

Polynt disposes of samples collected during the manufacturing process in two red cans after analysis is completed. Sample analysis is conducted in the control room, and the cans are located next to the door, just outside of the control room on the third floor of the Main

Observation: 15

Process Building (**Appendix D**, photo 29). These cans effectively function as a satellite accumulation area. However, neither can was labeled with the words “hazardous waste” or an indication of the hazards of the contents. The cans were also open during NEIC’s inspection.

Polynt representatives described that these cans are periodically brought down to the first floor of the Main Process Building and the contents are emptied into a satellite accumulation drum for resin waste located in the Filter Room (**Appendix D**, photo 110). This occurs approximately once per month because the volume of sample waste generated is small, and it takes this amount of time to fill the can.

The regulations do not permit the transfer of hazardous wastes between satellite accumulation containers. EPA guidance in RO14337 (**Appendix CC**, page 2) states the following:

> *An LQG or SQG cannot move wastes between satellite accumulation areas. Once a waste leaves a satellite accumulation area, the waste should be destined for an accumulation area which is fully regulated under Sections 262.34(a) or (d), or Parts 264 or 265. The regulatory requirements for satellite accumulation areas are designed to provide the generator with a safe and efficient manner to accumulate limited amounts of hazardous waste at or near the point of generation, prior to moving the waste to a fully regulated storage area. This eliminates the need to frequently move smaller quantities of hazardous waste within the generator's facility (49 FR 49569; December 20, 1984). It was not EPA's intent to allow hazardous wastes to be moved from one satellite accumulation area to another.*
>
> *Furthermore, if waste is moved between satellite accumulation areas, this calls into question whether the waste is being stored in a satellite accumulation area "at or near the point of generation where wastes initially accumulate."*

The sample cans are located at or near the point of generation, making them an appropriate satellite accumulation area to manage this waste stream. However, the resin waste drum located on the first floor is not near the point of sample waste generation and is a separate satellite accumulation container. In order to qualify for the conditions of exemption in 40 CFR § 262.15, Polynt must designate the sample cans next to the control room as a satellite accumulation area and discontinue the practice of transferring wastes between satellite accumulation area containers.

Polynt submitted follow-up documentation after the inspection on December 8, 2023, showing corrective actions that had been taken as a result of the inspection (**Appendix AA**). Page 4 of this appendix shows a photograph of the sample cans outside the control room that had been replaced with cans that are closed and labeled with the words “keep lid shut”. However, the cans appear to remain unlabeled with the words “hazardous waste” or an indication of the hazards of the contents. It is also unclear whether Polynt has changed their practice to identify and utilize these cans as the sole satellite accumulation area for this waste stream.

Observation: 16
Observation Summary: Polynt stored hazardous waste in an unmarked container in the overhang storage area.
Citation: **Satellite accumulation area regulations for small and large quantity generators, 40 CFR § 262.15** *(a) A generator may accumulate as much as 55 gallons of non-acute hazardous waste and/or either one quart of liquid acute hazardous waste…or 1 kg (2.2 lbs) of solid acute hazardous waste…provided that all of the conditions for exemption in this section are met.* *(5) A generator must mark or label its container with the following:* *(i) The words "Hazardous Waste" and* *(ii) An indication of the hazards of the contents*
Evidence: **Appendix D** – Field Photographs Interviews with Facility personnel
Description of Observation: On November 16, 2023, NEIC inspectors observed two drum storage containers located in the overhang storage area outside of the Lower Warehouse (**Appendix D**, photo 104) and requested Facility personnel provide follow-up information to NEIC as to the contents in the drums. Polynt representatives later informed NEIC inspectors during the inspection that one of the drums had been determined to contain hazardous waste and was functioning as a satellite accumulation area. In order to manage hazardous waste in a satellite accumulation area, the container must meet the regulatory requirements including being marked with the words "hazardous waste" and an indication of the hazards of the contents.

Observation: 17
Observation Summary: A drum containing hazardous waste in the Maintenance Shop satellite accumulation area was not labeled with the hazards of its contents.
Citation: **Satellite accumulation area regulations for small and large quantity generators, 40 CFR § 262.15** *(a) A generator may accumulate as much as 55 gallons of non-acute hazardous waste and/or either one quart of liquid acute hazardous waste…or 1 kg (2.2 lbs) of solid acute hazardous waste…provided that all of the conditions for exemption in this section are met.* *(5) A generator must mark or label its container with the following:* *(i) The words "Hazardous Waste" and* *(ii) An indication of the hazards of the contents*
Evidence: **Appendix D** – Field Photographs

Observation: 17
Description of Observation: NEIC inspectors observed a drum in the Maintenance Shop satellite accumulation area with a label containing the words "Hazardous Waste" (**Appendix D**, photo 114). The label also indicated that the drum contained waste solvent and oil, but there was no indication of the hazards of the contents. In order to manage hazardous waste in a satellite accumulation area, Polynt must label containers with an indication of the hazardous of the container contents.

Observation: 18
Observation Summary: A drum containing universal waste aerosol cans located in the Maintenance Shop was labeled with an incorrect accumulation start date.
Citation: **40 CFR Part 273, Subpart B - Standards for Small Quantity Handlers of Universal Waste Standards: Accumulation time limits, 40 CFR § 273.15** *(c) A small quantity handler of universal waste who accumulates universal waste must be able to demonstrate the length of time that the universal waste has been accumulated from the date it becomes a waste or is received*.
Evidence: **Appendix D** – Field Photographs Interviews with Facility personnel
Description of Observation: NEIC inspectors observed a drum in the Maintenance Shop with a label containing the words "Universal Waste" (**Appendix D**, photo 115). The label also indicated that the drum contained waste aerosol cans and listed an accumulation start date of November 30, 2023, which was a later date than the date of the inspection (November 16, 2023). According to Polynt representatives, the accumulation start date was an error, and the correct accumulation start date was October 30, 2023. The label was corrected at the time of the NEIC inspection, and the corrected label is shown in **Appendix D**, photo 115.

Observation: 19
Observation Summary: A spill control kit was not present in the less than 90-day central accumulation area.
Citation: **40 CFR Part 262, Subpart M – Preparedness, Prevention, and Emergency Procedures for Large Quantity Generators** **Required equipment, 40 CFR § 262.252** *All areas deemed applicable by § 262.250 must be equipped with the items in paragraphs (a) through (d) of this section (unless none of the hazardous posed by waste handled at the facility could require a particular kind of equipment specified below or the actual hazardous waste generation or accumulation area does not lend itself for safety reasons to have a particular kind of equipment specified below). A large quantity generator may determine the most appropriate locations within its facility to locate equipment necessary to prepare for and respond to emergencies:*

Observation: 19
(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment
Evidence: **Appendix D** – Field Photographs **Appendix AA** – Polynt Documentation of Corrections Interviews with Facility personnel
Description of Observation: Polynt accumulates drums containing hazardous waste in a less than 90-day central accumulation area (CAA) located in the Upper Warehouse. At the time of the NEIC inspection, inspectors did not observe a spill control kit in the CAA (**Appendix D**, photo 102). Polynt representatives confirmed to NEIC inspectors that a spill control kit was not present in the CAA at the time of the inspection. Following the inspection, Polynt submitted documentation of corrective actions that had been taken as a result of the NEIC inspection (**Appendix AA**). **Appendix** AA, page 5 shows that a spill control kit was placed in the CAA to meet the regulatory requirement for emergency response equipment.

Observation: 20
Observation Summary: Polynt washes process area floors with water and accumulates the waste floor wash water in the Floor Wash Tank, a steel tank that is damaged and visibly corroded. Polynt representatives stated the method by which they determine waste floor wash water needs to be shipped off-site is when the tank visibly overflows into a secondary containment system. Overfilling a steel tank that is in poor condition poses a risk to the integrity of the tank structure.
Evidence: **Appendix DD** – Floor Wash Water Waste Profile **Appendix D** – Field Photographs Interviews with Facility personnel
Description of Observation: Polynt washes process floors in the K5 Process Building, Main Process Building, and PEBB with water. The floor wash water accumulates in blind trench and sump systems within each building and is pumped through piping to a steel floor wash water accumulation tank located west of the PEBB. Polynt's December 16, 2016, GAEPD Air Quality Permit Amendment No. 2821-063-0041-S-06-2 indicates the Floor Wash Tank has a capacity of 10,000 gallons. The Floor Wash Tank is equipped with a concrete secondary containment system. Polynt has characterized its floor wash water as non-hazardous waste and ships the material off-site for disposal approximately once per month. The waste profile for the floor wash water reports the presence of RCRA constituents within the water including lead and chromium, although both constituents are reported at concentrations less than RCRA toxicity characteristic limits (**Appendix DD**, page 2). During the inspection, NEIC inspectors observed liquid on the floors underneath process equipment including Mix Tank 8 in the K5 Process Building and the Kettle 3 decanter in the Main Process Building (**Appendix D**, photos 7 and

Observation: 20
26). Liquid from these units may contain thinning or reflux solvents including xylene, ethylbenzene, or toluene, and it is unclear if such leaks are cleaned with absorbents or washed into the floor trenches. NEIC inspectors observed that the Floor Wash Tank was in poor condition during the inspection. The tank had visible corrosion (rusting), damage, and staining on its exterior walls, vegetation growing on its roof, and there was a noticeable tilt to the tank structure which indicates the tank base has shifted and is no longer level (**Appendix D**, photos 90 and 101). Heavy staining and corrosion visible on the north side of the tank exterior appears to originate from an opening in the seal between the tank wall and tank roof (**Appendix D**, photo 101). The Floor Wash Tank does not have a functioning level gauge or sight glass to indicate the level of liquid inside. When asked how the Facility knows when the tank is approaching capacity, Polynt representatives stated to NEIC inspectors they know the tank is full when liquid is visibly overflowing into the secondary containment system from the open seal in the tank wall and roof. The overfilling of a steel tank with existing corrosion and visible openings in the seal between the tank wall and roof may cause further corrosion and pose a risk to the integrity of the tank structure.