Corrective Action Completion Summary Report

Systech Environmental Corporation

OHD 005 048 947

11397 County Road 176
Paulding, Ohio
Paulding County, Ohio

prepared by

The Ohio Environmental Protection Agency

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1.0 Executive Summary

The Ohio Environmental Protection Agency (Ohio EPA) prepared this Corrective Action Completion Summary Report to document the Resource Conservation and Recovery Act (RCRA) activities completed at the Systech Environmental Corporation (Systech) facility located at 11397 County Road 176, Paulding, Ohio 45879, Paulding County, Ohio.

Systech is a wholly-owned subsidiary of the Lafarge Corporation. The Lafarge Corporation Paulding county Co-Processing facility consists of two properties which cover an area of approximately 1,292 acres: a 12-acre hazardous waste recycling facility jointly operated by Lafarge and Systech, as well as a contiguous property measuring 1,280 acres that is owned and operated by the Lafarge Corporation. Hazardous wastes received at the Systech facility are treated, then used as fuel in a cement kiln manufacturing process located on the Lafarge property.

Systech operates the waste management activities at the Co-Processing facility. The primary components of the waste management operation are the analytical laboratory, storage and processing tank systems, container storage and processing areas. Waste materials are received, analyzed, temporarily stored, and then prepared for use in the manufacture of Portland cement. Lafarge operates the cement manufacturing operation and quarry operation at the facility.

Systech began operation in 1979 as the New Systech Corporation and began supplying the facility with waste liquids to be used as fuels in the cement manufacturing process. In December 1986 New Systech Corporation was acquired by and became a wholly-owned subsidiary of the Lafarge Corporation. Lafarge and its subsidiary Systech have been using combustible liquid and solid waste materials to supply a portion of the energy required to manufacture Portland cement.

On August 11, 1980, General Portland Incorporated (GRI), a prior owner of the facility notified the United States Environmental Protection Agency (U.S. EPA) of hazardous waste activity at the Paulding facility. On November 12, 1980, GPI submitted a RCRA Part A application to U.S. EPA. On December 29, 1981, U.S. EPA approved the Part A and the Ohio Hazardous Waste Facility Approval Board issued a Hazardous Waste Facility Installation and Operation Permit #03-63-0595 for the operation of four 25,000-gallon storage tanks. On May 28, 1982, U.S. EPA requested the submission of a Part B Permit Application. The facility submitted a Part B Permit Application on November 29, 1982 and subsequent revisions on March 31, 1983, and July 5, 1983. On February 1, 1984, a Public Notice of Intent to Issue a RCRA permit to the facility was issued by U.S.

EPA. On August 17, 1984, the facility was issued a RCRA Part B permit (number OHD005048947) by U.S. EPA with an expiration date of 1994. In August of 1992, Systech received its renewal of the RCRA Part B Permit from Ohio EPA, with a five-year term.

Systech is a Part B permitted hazardous waste treatment, storage, and disposal facility (TSDF). Systech is permitted to store and treat hazardous waste in eleven (11) above ground storage tanks and a container storage building. Currently, Systech stores and treats hazardous waste in nine hazardous waste tanks and the container building because two of the eleven hazardous waste treatment and storage tanks have not been constructed. Systech receives pre-qualified liquid and solid waste materials from regulated hazardous waste generators or marketers. These materials are delivered to the facility in bulk railcars, bulk tanker trucks, and container trucks.

Upon delivery, all waste fuels are sampled in either the truck off-loading area or the rail off-loading area, to determine if they meet the regulatory requirements and company specifications for burning. After sampling, incoming bulk wastes are off-loaded into the organic liquid storage tanks where they are treated (blended) to make fuel of a consistent quality. Containerized waste is accepted in drums and totes. Hazardous waste containers are unloaded adjacent to the permitted container storage and treatment building. Containerized waste is then transferred to the container building and sampled. Once the waste is determined to be acceptable, the waste in the containers is removed with a pump into one of two unloading bays and transferred via above ground and/or vaulted piping to one of the six blend tanks. After treatment in one of the blend tanks, the waste is transferred via above ground or vaulted piping to one of three 150,000-gallon storage and treatment tanks (aka burn tanks). In the burn tanks, the hazardous waste is again treated (blended) to make fuel of a consistent quality. Prior to transferring the blended hazardous waste to the Lafarge kilns, Systech obtains a sample of the waste in each 150,000-gallon hazardous waste tank to make sure the waste meets the appropriate standards. The waste is then transferred to Lafarge in batches from one of the three burn tanks via above ground piping.

Systech also accepts used oil as a fuel source for the adjacent cement kilns. Accepted used oil is stored in five above ground storage tanks and transferred to the Lafarge kilns via above ground piping.

A RCRA Facility Assessment (RFA) of the Paulding Co-Processing Facility was conducted by a contractor for U.S. EPA on August 26 and 27, 1992. The intent of the RFA was to address previous potential releases to the soil, ground water, surface water,

and air. The RFA report identified thirty-seven (37) Solid Waste Management Units (SWMUs or WMUs), twenty (20) of which are on Systech property. Based on the information in the RFA report, U.S. EPA determined that nine of the SWMUs required further investigation under a RCRA Facility Investigation (RFI). The nine SWMUs were grouped together into four locations at the facility. The nine SWMUs and four locations were later grouped into two investigatory groups as follows:

Group A:
Organic Liquid Storage Tank Nos. 1-6 (WMU Nos. 5-10)
Oil/Water Separator (WMU No. 18)
Rail Off-Loading Area (WMU No. 21)

Group B:
Organic Liquid Burn Tank No. 7 (WMU No. 11) - The containment area includes three tanks identified as OL-1, Ol-2, and OL-3. These three tanks are also referred to as WMU-11, WMU-11A, and WMU-11B.

As required in Systech's federal RCRA permit, Systech prepared and submitted a RFI work plan to USEPA in 1995. USEPA did not take action on the RFI work plan prior to delegating authority for the Corrective Action Program to Ohio EPA. In 2003, Ohio EPA issued a renewal RCRA permit to Systech. One of the conditions of the permit required Systech to submit a revised RFI work plan. On June 23, 2005, Ohio EPA approved Systech's RFI Workplan and authorized Systech to initiate work.

Based upon the findings of the RFI Phase I, the recommendation was made to conduct a Phase II RFI to define the nature and extent of the suspected releases to site soils, shallow ground water, and sediments. Following the two phases of RFI data collection, Systech conducted a human health risk-based data evaluation by comparing levels of constituents above method detection limits (MDLs) to human health-based screening levels.

The RFI Phase II objectives were met and sampling within Group B showed no further action was needed, due to ground water samples and soil samples meeting screening criteria.

Two areas within Group A were identified for further action:

1. WMU-18 (Oil/Water Separator), a small contained plume of perched water around the Oil/Water Separator area was identified for corrective action.

2. WMU-21 (SB-17), a shallow area associated with a power pole and/or nearby rail

ties was identified by staining and analytical results for hot spot clean up.

With the exception of WMUs 18 and 21, the remaining complete or potentially complete pathways at the Systech facility met applicable standards.

Upon completion of the RFI, Systech provided Ohio EPA with a Corrective Measures Study (CMS) Report, which outlined its proposed remedies for the site. A revised CMS was submitted to Ohio EPA in February 2014. The approved documents were incorporated by reference into Module E (Corrective Measures) and Module G (Ground Water monitoring) of Systech's RCRA Part B Permit, prepared in accordance with the requirements of Ohio Administrative Code (OAC) 3745-54-90 through 101, and approved on October 10, 2017. Based on the findings of the RFI, including the baseline risk evaluation, the areas of the Systech site proposed for corrective action do not require an interim action to protect human health and the environment. Therefore, Systech proposed to implement the following remedies: Hot spot removal of the area in WMU-21and monitored natural attenuation of the ground water in WMU-18. Ohio EPA selected remedies of monitored natural attenuation of ground water, hot spot removal, and institutional controls via an environmental covenant. The environmental covenant was received on February 2, 2018, restricts the site to industrial use only and prohibits the use of on-site ground water for potable use. It was recorded with the Paulding County Recorder's office on June 11, 2018.

On May 14, 2018, Ohio EPA received the Soil Removal Action Report submitted by Mannik Smith Group, on behalf of Systech, for the remediation of WMU-21. Ohio EPA issued a Notice of Deficiency due to the reported value for Selenium of 1,300 µg/kg exceeding the background remediation standard of 600 µg/kg. Permit condition E(9)(d)(ii)(d) requires backfill soils to meet background concentrations. Background concentrations referenced in the permit are the site-specific background remediation standards developed as part of the RCRA RFI Phase II Report.

On August 14, 2018, Systech resampled the backfill soils in the WMU-21 remediation area. On August 23, 2018, Ohio EPA received analytical results from the resampling event. All analytical results were below the site-specific background remediation standard. Therefore, the remediation of WMU-21 was considered complete.

2.0 Introduction

Systech Environmental Corporation (Systech) facility is located at 11397 County Road 176, Paulding, Ohio 45879, Paulding County, Ohio. Systech is a wholly-owned subsidiary of the Lafarge Corporation. The Lafarge Corporation Paulding county Co-Processing facility consists of two properties which cover an area of approximately 1,292 acres: a 12-acre hazardous waste recycling facility jointly operated by Lafarge and Systech, as well as a contiguous property measuring 1,280 acres that is owned and operated by the Lafarge Corporation. Hazardous wastes received at the Systech facility are treated, then used as fuel in a cement kiln manufacturing process located on the Lafarge property.

Systech operates the waste management activities at the Co-Processing facility. The primary components of the waste management operation are the analytical laboratory, storage and processing tank systems, container storage and processing areas. Waste materials are received, analyzed, temporarily stored, and then prepared for use in the manufacture of Portland Cement.

Systech is a Part B permitted hazardous waste treatment, storage, and disposal facility (TSDF) and is permitted to store and treat hazardous waste in eleven (11) above ground storage tanks and a container building. Currently, Systech stores and treats hazardous waste in nine hazardous waste tanks and the container building because two of the eleven hazardous waste treatment and storage tanks have not been constructed.

Systech receives pre-qualified liquid and solid waste materials from regulated hazardous waste generators or marketers. These materials are delivered to the facility in bulk railcars, bulk tanker trucks, and container trucks. Upon delivery, all waste fuels are sampled in either the truck off-loading area or the rail off-loading area, to determine if they meet the regulatory requirements and company specifications for burning. Containerized waste is accepted in drums and totes. Hazardous waste containers are unloaded adjacent to the permitted container storage and treatment building. Containerized waste is then transferred to the container building and sampled. Once the waste is determined to be acceptable, the waste in the containers is removed with a pump into one of two unloading bays and transferred via above ground and/or vaulted piping to one of the six blend tanks.

After sampling, incoming bulk wastes are off-loaded into one of six (25,000 – 30,000 gallon) hazardous waste treatment and storage tanks (aka blend tanks) where they are treated (blended) to make fuel of a consistent quality. After treatment in one of the six hazardous waste tanks, the waste is transferred via above ground or vaulted piping to one of three 150,000-gallon storage and treatment tanks (aka burn tanks). In the burn

tanks, the hazardous waste is again treated (blended) to make fuel of a consistent quality. Prior to transferring the blended hazardous waste to the Lafarge kilns, Systech obtains a sample of the waste in each 150,000-gallon hazardous waste tank to make sure the waste meets the appropriate standards. The waste is then transferred to Lafarge in batches from one of the three burn tanks via above ground piping.

Used oil is also accepted by Systech as a fuel source for the adjacent kilns. The accepted used oil is stored in five above ground storage tanks then marketed to Lafarge and eventually transferred to the kilns via above ground piping.

3.0 Facility Operational History

Prior to Facility construction, the site property was used for agriculture activities. The Lafarge facility was originally developed in 1951 when Cowham Engineering began quarrying operations near the southeastern corner of the property. Limestone was quarried from the area and shipped to a cement manufacturing facility in Cement City, Michigan. In 1954, Cowham Engineering began construction of a cement plant in the vicinity of the reclaimed on-site quarry. Cement production began at the facility in 1956 and a second kiln was added in 1958 to boost production. In 1959, Cowham changed their name to General Portland, Inc. The name of the facility was officially changed to Lafarge Corporation in January of 1988. Since 1979, the cement operation at the Paulding, Ohio plant has been using combustible liquid waste materials to supply a portion of the energy needed to manufacture Portland cement. Systech was contracted to locate fuel-quality wastes, assure their suitability through extensive chemical analysis, and provide for their safe use and proper management.

In 1981, the facility received a permit from the State of Ohio Hazardous Waste Facility Approval Board and in 1984 received a hazardous waste storage permit under the Resource Conservation and Recovery Act (RCRA), which authorized and placed controls on the storage of these waste materials. In December of 1986, Systech was acquired by and became a wholly owned subsidiary of Lafarge North America (LNA). In November 1992, all LNA properties associated with hazardous waste storage activities and its assets were transferred to Systech Environmental Corporation. Systech is now named as the owner and operator of the hazardous waste storage facility.

Systech stores and treats hazardous waste in nine tanks and markets hazardous waste fuel to Lafarge. Systech is permitted for eleven hazardous waste storage tanks; however, two of the eleven storage tanks have never been constructed.

The primary components of the facility are the storage and processing tank systems, container storage area, and laboratory. Hazardous waste is shipped to the facility via railcar, tanker truck, and in containers. Once accepted by the facility, bulk waste is sampled and placed into blend tanks. From the blend tanks, waste is blended/treated to meet optimal fuel requirements prior to being pumped to one of two burn tanks where it is utilized as the main fuel source for the adjacent cement kilns. Containerized waste is unloaded in the container storage area and hard piped to the blend tanks. Used oil is also accepted by Systech as a fuel source for the adjacent kilns. The accepted used oil is stored in five above ground storage tanks then marketed to Lafarge.

4.0 Physical Setting

Systech sits on a 12 acre parcel located at 11397 County Road 176 approximately 3 miles north of the city of Paulding, in Crane Township, Paulding County, Ohio (see Figure 1). The Systech Paulding Co-Processing Facility is a hazardous waste management facility surrounded on all sides by property owned by Lafarge North America (Lafarge). The historical and current uses of the adjoining properties are as follows:

North: The historic and current use of the northerly adjoining area is agricultural use.

East: The historic and current use of the northerly adjoining area is agricultural use.

South: The historic and current use of the northerly adjoining area is agricultural use.

West: The historic and current use of the westerly adjoining area is agricultural use.

4.1 Soils/Geology

The site is underlain by a total thickness of approximately 40 to 45 feet of lacustrine sediments and glacial tills, which are predominately low permeability silt and clay rich deposits. The unconsolidated material overlies a carbonate bedrock system of shaley to dolomitic limestone, the top of which is located beneath the facility at approximately 690 feet MSL. The Ten Mile Creek formation comprises the uppermost bed rock unit beneath the facility and has thickness ranging from 15 to 20 feet. The Silica formation

is a calcareous shale approximately one to three feet thick and overlies the Dundee formation. The Dundee formation ranges from 40 to 60 feet thick in total thickness and is a lightly fossiliferous limestone which grades brown with depth. Below the Dundee formation is another limestone and dolomite sequence known as the Detroit River Group. The Detroit River Group can range up to 140 feet in thickness and reportedly grades into sandstone.

4.2 Hydrology

The topography at the Facility is generally flat. Surface elevation at the site is about 725 feet above mean sea level (MSL). Bull Creek is the closest surface water body and flows in a general west to east direction and is located north of the Systech facility. The 100-year flood level for Bull Creek has been determined to be 719 feet MSL.

The Ten Mile Creek formation is considered to be a cap rock or aquitard to the uppermost aquifer encountered beneath the Systech facility. The uppermost aquifer encountered beneath the Systech facility is in the Dundee limestone formation, at an elevation of approximately 670 feet MSL. Ground water within this unit is generally under some hydraulic head as area well logs show that potentiometric water levels typically rise to elevations between 690 and 710 feet MSL. The Dundee Limestone is mined to an approximate depth of 635 feet MSL for use in Lafarge's cement manufacturing process. The regional ground water flow direction has been shown to be to the northeast. Locally, mining operations have resulted in an induced potentiometric low and a radial direction of movement toward the Lafarge quarry dewatering sumps.

5.0 Corrective Action Activities

In August of 1992, A.T. Kearney, Incorporated, a contractor to USEPA, conducted a RCRA Facility Assessment (RFA) at both the Lafarge and Systech facilities. From the RFA, the contractor identified 37 solid waste management units (SWMUs) on both properties. Of these, 20 SWMUs were located on Systech property. Of these 20 SWMUs, USEPA determined that nine needed further investigation under a RCRA Facility Investigation (RFI). The nine were grouped into four locations at the site: Organic Liquid Storage Tanks No. 1-6 (SWMUs #s 5-10), Organic liquid burn tank No. 7 (SWMU #11), Oil/Water Separator (SWMU #18) and Rail Off-Loading area (SWMU #21).

As required in Systech's Federal RCRA permit, Systech prepared and submitted an RFI work plan to USEPA in 1995. USEPA did not act on the RFI work plan prior to delegating authority for the Corrective Action Program to Ohio EPA.

In 2003, Ohio EPA issued a renewal RCRA permit to Systech. One of the conditions of the permit required Systech to submit a revised RFI work plan. As a response to Ohio EPA comments on the work plan, Systech grouped together proximate SWMUs that had similar constituents of concern. Systech grouped the four sets of SWMUs into two groups: Group A consisting of: organic liquid burn tanks No. 1-6 (SWMUs # 5-10), Oil/Water Separator (SWMU #18) and Rail off-loading Area (SWMU #21). Group B consisted of the Organic Liquid Burn Tank No. 7 (SWMU #11). On June 23, 2005, Ohio EPA approved Systech's RFI Workplan and authorized Systech to initiate work.

Data collected during the RFI Phase I were compared to site specific background levels developed from samples collected at 14 off-site locations to determine if a release of hazardous constituents may have occurred. Sampling activities resulted in the collection of fifty-seven soil samples, three ground water samples, five surface water samples, and five sediment samples. In addition, twenty quality assurance/quality control (QA/QC) samples including duplicate samples and trip blanks were collected. Three of the soil borings installed on Systech's property were converted to monitoring wells. Based upon the findings of the RFI Phase I, the recommendation was made to conduct a Phase II RFI to define the nature and extent of the suspected releases to site soils, shallow ground water, and sediments.

Systech's RFI Phase II objectives were to:) 1) Fill in any data gaps identified after the Phase I RFI work and verify the Phase I findings; and 2) Quantify the full nature and extent of potentially hazardous constituents identified during the Phase I RFI.

Following the two phases of RFI data collection, Systech conducted a human health risk-based data evaluation by comparing levels of constituents above method detection limits (MDLs) to human health-based screening levels. The evaluation was used to determine the human health or environmental problems that could result if the contamination remained in its current state. An initial step in the assessment is to make assumptions about future land use. In this case, the facility is zoned for industrial use, has a long history of being used as an industrial facility and its reasonably anticipated future land use is industrial. Based on this land use scenario, potential receptors were further evaluated based on common exposure pathways

The following table summarizes contaminants of concern (COC) in soil and ground water that exceeded screening levels.

TABLE 1

SUMMARY OF CONTAMINATED MEDIA WHICH EXCEEDED SCREENING CRITERIA IN THE RFI

Media Exceeding Risk Based Standards	**Contaminants of Concern (COC)**
Soil	Benzo(a)pyrene
Soil	Benzo(b)fluoranthene
Ground Water	VOC, SVOC, and metals

An evaluation of the receptor populations and exposure pathways was performed at each WMU and Area of Concern where hazardous constituents were detected above risk-based screening levels or, in the case of inorganic constituents, to site-specific background concentrations.

The RFI Phase II objectives were met and sampling within Group B resulted in no further action needed, due to ground water samples and soil samples meeting screening criteria. Two areas within Group A were identified for corrective action:

1. WMU-18 (Oil/Water Separator), a small contained plume of perched water around the Oil/Water Separator area was identified for corrective action.

2. WMU-21 (SB-17), a shallow area associated with a power pole and/or nearby rail ties was identified by staining and analytical results for hot spot clean up.

With the exception of WMUs 18 and 21, all of the remaining complete or potentially complete pathways at the Systech facility meet applicable standards.

Systech achieved a CA 750 (migration of contaminated ground water under control) status on October 26, 2012. A CA 725 (human exposures under control) was achieved on November 14, 2012.

Upon completion of the RFI, Systech provided Ohio EPA with the Corrective Measures Study (CMS) Report, which outlined its proposed remedies for the site. A revised CMS was submitted to Ohio EPA in February 2014. The approved documents were incorporated by reference into Module E (Corrective Measures) and Module G (Ground Water monitoring) of Systech's RCRA Part B Permit, prepared in accordance with the requirements of Ohio Administrative Code (OAC) 3745-54-90 through 101, and

approved on October 10, 2017. Based on the findings of the RFI, including the baseline risk evaluation, the areas of the Systech site proposed for corrective action did not require an interim action to protect human health and the environment. Therefore, Systech proposed to implement the following remedies: Hot spot removal of the area in WMU-21and monitored natural attenuation of the ground water in WMU-18. Ohio EPA selected remedies of monitored natural attenuation of ground water, hot spot removal of soil at WMU-21, and institutional controls via an environmental covenant. The Environmental Covenant was received on February 2, 2018, restricts the site to industrial use only and prohibits the use of on-site ground water for potable use. It was recorded with the Paulding County Recorder's office on June 11, 2018.

On May 14, 2018, Ohio EPA received the Soil Removal Action Report submitted by Mannik Smith Group, on behalf of Systech, for the remediation of WMU-21. Ohio EPA issued a Notice of Deficiency due to the reported value for selenium of 1,300 µg/kg exceeding the background remediation standard of 600 µg/kg. Permit condition E(9)(d)(ii)(d) requires backfill soils to meet background concentration. Background concentrations referenced in the permit are the site-specific background remediation standards developed as part of the RCRA RFI Phase II Report.

On August 14, 2018, Systech resampled the backfill soils in the WMU-21 remediation area. On August 23, 2018, Ohio EPA received analytical results from the resampling event. All analytical results were below the site-specific background remediation standard, therefore the remediation of WMU-21 was considered complete.

6.0 Other Facility Waste Management Units/Areas

There were no other known releases of hazardous waste or constituents from this facility.

7.0 Conclusion

The Systech Environmental Corporation facility located at 11397 County Road 176, Paulding, Ohio 45879, Paulding County, Ohio, has worked with Ohio EPA to successfully complete their corrective action obligations. Systech completed corrective actions at the site by conducting the following activities:

- Completion of a RCRA Facility Assessment in 1992

- Completion of a RCRA Facility Investigation in 2012
- Completion of a Corrective Measures Study in 2014
- Completion of CA 750 form in 2012
- Completion of CA 725 form in 2012
- Submittal and recording of an environmental covenant
- Completion of soil remediation on August 14, 2018
- Ongoing ground water monitoring

References

1. Ohio EPA Division of Environmental Response and Revitalization (DERR) files
2. Ohio EPA Division of Drinking and Ground Waters (DDAGW) files
3. RFI Report, Lafarge Corporation Paulding Plant, December 2001
4. Systech Environmental Corporation Paulding Co-Processing Facility RCRA Facility Investigation Phase I Report, November 2005
5. Systech Environmental Corporation Paulding Co-Processing Facility Soil Removal Action Report, May 2018
6. United States Environmental Protection Agency Region V, Preliminary Review / Visual Site Inspection of LaFarge Corporation, Paulding County, November 1992.

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