U.S. EPA STATEMENT OF BASIS

for

Proposed Institutional Controls Remedy

at

Formica Corporation

10155 Reading Road
Evendale, Ohio

OHD 092 821 883

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Statement of Basis

Formica Corporation
10155 Reading Road
Evendale, Ohio
EPA I.D. Number OHD 092 821 883

INTRODUCTION

This Statement of Basis (SB) for the Formica Corporation facility (Formica facility, or the Facility) explains the Environmental Protection Agency's (EPA's) proposal that institutional controls are sufficient to protect human health and the environment from exposure to contaminants, and that the land is suitable for continued commercial/industrial use. EPA will make a final decision on the Formica facility only after the public comment period has ended and the information submitted during this time has been reviewed and considered. As such, EPA is issuing this SB as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA).

This document summarizes information that can be found in greater detail in the following documents: *Preliminary Assessment/Visual Site Inspection Report*, dated November 9, 1990; *Subsurface Investigation Report*, dated August 7, 2013; *Phase 2 Subsurface Investigation Report*, dated February 17, 2015; *EPA Site Visit Report*, dated August 18, 2015; *Phase 3 Subsurface Investigation Report*, dated December 28, 2015, *Groundwater Monitoring Summary* Report, dated September 27, 2016, and other documents contained in the administrative record for the Formica facility.

EPA may modify this proposed decision or make another decision based on new information or public comments. Therefore, the public is encouraged to review and comment on this decision. The public can be involved in this process by reviewing the documents contained in the administrative record file and by submitting comments to EPA during the public comment period set for . After the close of the public comment period, EPA will evaluate all written comments received from the public and will issue a Notification of Final Decision and Response to Comments (FD/RC).

PROPOSED REMEDY

Industrial process wastes from manufacturing operations at the facility have been released into on-site soil at concentrations which have the potential to leach to groundwater. However, analysis of groundwater samples taken upgradient and downgradient of the Facility indicate that the contamination in the soil has not adversely impacted groundwater quality. This is explained in more detail later in the SB.

EPA is proposing that restrictive covenants enforceable under the Ohio Uniform Environmental Covenants Act (UECA) be placed in the property deed as institutional controls to ensure continued protection of human health and the environment. Specifically:

- Restrict the property to commercial/industrial use in perpetuity;
- Clearly delineate areas of soil contamination above protective screening levels on a property plat drawn by a registered surveyor;
- Prepare a soil management plan which will be available to workers performing future excavations; and
- Prohibit the use of on-site groundwater for potable purposes.

FACILITY BACKGROUND

Location and History

The Formica facility is a 128 acre property, of which approximately 904,000 square feet are covered by manufacturing, storage and administrative buildings. The Facility address is 10155 Reading Road, Evendale, Ohio, a suburb of Cincinnati (Figure 1). The land is zoned as General Industry. The property is bounded on the west by the Pennsylvania and New York Central railroad tracks, opposite of which is the General Electric Aircraft Engine facility. To the north is a large commercial retail complex with parking lots, and to the east is the multi-lane Reading Road. Opposite of Reading Road are commercial/light industrial properties. A golf course and undeveloped land are situated south of the Formica property.

The Facility was built in 1951, on what was originally agricultural land. Throughout its industrial history the Facility has manufactured decorative laminate. This involves saturation of decorative and craft paper sheets with phenolic/formaldehyde resins and hardening the assemblies with heat and high pressure. Formica cuts the sheets to required dimensions and sells the laminate to distributors.

Materials Used and Wastes Generated

The predominant industrial chemicals used by Formica are formaldehyde and phenol, which are soluble hydrocarbons that are listed as hazardous constituents under RCRA. These compounds, along with another hydrocarbon, melamine, form a thermosetting resin which provides durability to the laminates.

Sodium alginate, a compound derived from seaweed, is extensively used as a separating agent for the resin-infused bundles of decorative paper (called "books") that undergo heat treatment. This chemical is also used as a food additive and in dentistry as a molding compound. It is highly soluble and imparts a distinct red color to waste waters at the Facility.

Isopropanol is the primary solvent used by Formica to clean manufacturing equipment. Isopropanol (also known as isopropyl alcohol or "rubbing alcohol") is used extensively as a disinfectant in the medical field. Occasionally, Formica uses small amounts of 1,1,1 – trichloroethane (1,1,1-TCA) for degreasing and servicing machine parts. 1,1,1-TCA is also listed as a RCRA hazardous constituent. After their use, these solvents are stored in containers and removed off-site to a RCRA permitted treatment facility within 90 days of generation.

Site Geology and Hydrogeology

The soils beneath the Facility are glacial deposits, of which the upper 20 feet are silty clay, underlain by approximately 80 feet of discontinuous beds of silt, gravel and clay. Overall thickness of the soil varies from less than 100 feet to 200 feet. Bedrock consists of limestone and shale.

Three groundwater bearing zones (aquifers) have been identified at the site. Groundwater is first encountered at depths ranging from approximately 10 to 20 feet below ground surface (bgs), at the base of the uppermost silty clay horizon. This groundwater is referred to as the perched (water table) aquifer. A clay layer underlies the perched aquifer and separates it from a continuous aquifer below, which is called the upper aquifer. The base of the upper aquifer is a silty clay, below which groundwater is present in a zone of coarse sand and gravel (about 70 to 170 feet bgs) which is termed the lower aquifer. Bedrock forms the base of this geologic sequence.

The water table and the upper aquifer are not used as sources of drinking water. The major use of water at the Facility is for manufacturing purposes, and this water is supplied by Southwestern Ohio Water. Formica obtains water for potable and sanitary use from the Greater Cincinnati Water Works, which extracts 88% of its water from the Ohio River.

Surface Water

The nearest surface water features are Mill Creek and a small on-site storm water retention basin which discharges to Mill Creek (Figure 1). Mill Creek is located approximately 300 feet from the Facility and flows southwestward to the Ohio River, which is 8.5 miles from the site.

Regulatory History and Corrective Action Background

On November 1, 1985, EPA issued a Federal RCRA hazardous waste management permit to Formica for three regulated units located in the northwestern portion of the Facility, a concrete pad for storage of process wastes in 55 gallon containers, and two 6,000 gallon above-ground tanks which contained off-spec printing inks, located adjacent to the pad.

As expiration of the Federal RCRA permit neared, Formica opted not to seek renewal, but to clean-close the units and attain "generator-only" status for the Facility. On September 26, 1991,

the Ohio Environmental Protection Agency (OEPA) granted Formica permission to begin the closure process.

For closure of the storage pad, Formica removed the containers, power-washed the concrete and tested the rinseate to confirm removal of hazardous constituents, sampled soil beneath and around the pad, and removed all contaminated soil.

To close the storage tanks, Formica emptied the units, flushed them multiple times with tap water, sampled the rinseate to confirm removal of hazardous constituents, power-washed and inspected the underlying secondary containment pad to confirm its integrity and decontamination.

OEPA approved Formica's certification of clean-closure of the container storage pad and above-ground storage tanks on June 12, 1998. On May 3, 2012, OEPA certified the Facility as a Conditionally Exempt Small Quantity Generator. Achieving generator status allows Formica to accumulate its process wastes (which are defined as hazardous under RCRA) without requiring a RCRA permit, provided that it complied with the generator regulatory requirements.

Under the RCRA statute, the Formica Facility remains subject to corrective action requirements for releases of hazardous wastes or constituents from any location where process wastes are stored, treated, disposed or routinely and systematically accumulated. Although such wastes may not meet the regulatory definition of RCRA hazardous wastes, they fall under the broader definition of RCRA solid wastes. Locations where these wastes are managed or accumulated are defined as Solid Waste Management Units, or SWMUs.

In 1990, EPA and its contractors performed a file review (Preliminary Assessment) and site visit (Visual Site Inspection), or PA/VSI to identify SWMUs at the Facility and evaluate each for evidence of releases or potential to release hazardous constituents. The PA/VSI identified the following forty SWMUs (Figure 2):

1. Phenolic Treater Trough
2. Melamine Treater Trough
3. Melamine Filter Cleaner Sink/Hood
4. North Dust Collectors
5. Plate Department Dust Collectors
6. Plate Department Solvent Storage Area
7. Maintenance Department Sump
8. Maintenance Department Slop Oil Drum
9. Maintenance Department Safety Kleen Stations
10. Plate Department Slop Oil Drum
11. Grinding Machine Sump System
12. Indoor Waste Ink Storage Area
13. Printing Line Sump

14. Corex^{R} Laminate Line Dust Collector
15. Hazardous Waste Container Storage Area
16. Steam Boiler Blowout Point
17A. Phenolic Sump and Trough
17B. Phenolic Tank
18A. Melamine Sump and Trough
18B. Melamine Tank
19A. Goop Tank No. 1
19B. Goop Tank No. 2
20. Ash Silo
21. Baghouse No. 3 / No. 4
22. Baghouse No. 5
23. Resin Plant Waste Solvent Drum
24. Resin Plant Phenolic Trough/Sump
25. Resin Plant Melamine Trough/Sump
26. Resin Plant Melamine Settling Pits
27. Spill Control System
28. Wastewater Treatment System
29A. Storm Water Collection System
29B. Cooling Pond
30. Plate Cleaning Dust Collector
31. South Dust Collectors
32. Sander Dust Silo
33A. Ink Storage Tank No. 1
33B. Ink Storage Tank No. 2
34. Melamine Waste Dumpster
35. Boiler No. 5
36. Sanitary Sewer System
37. Tote Tanks
38. Boiler No. 4
39. Waste Battery Storage Area
40. Fabric Filter for Synthetic Granite/Marble R&D Machine

The PA/VSI recommended further investigation of the following SWMUs: 1, 2, 7, 11, 13, 15, 16, 17A, 17B, 18A, 18B, 19A, 19B, 20, 24, 25, 26, 29A, 29B, 32, 33A, 33B, and 37.

As previously described in the SB, SWMUs 15, 33A and 33B were investigated and addressed by the clean-closure under the authority of the OEPA.

In a letter dated April 5, 2007, EPA notified Formica that the Facility has been included in the Government Performance and Results Act list of RCRA facilities which must complete corrective action obligations by the year 2020. For this purpose, EPA would work with Formica to determine if any of the previously identified SWMUs have released hazardous constituents,

delineate the nature and extent of contamination, evaluate potential risk to human health and the environment presented by the contamination, and determine if corrective measures are necessary.

On June 25, 2011, an EPA representative visited the Facility for an initial meeting and preliminary information gathering. Formica responded with a July 25, 2011, submission which included the updated status of the SWMUs, chemical fate and transport information regarding the primary resin components phenol and formaldehyde, and phenol and metals monitoring data for the Cooling Pond (SWMU 29B).

After evaluation of the information obtained in 2011, EPA determined that further investigation is not warranted at the following SWMUs, because (1) there is no evidence of historical releases; (2) the units were engineered and located such that likelihood of releases was negligible; and/or (3) the units have been completely removed from the Facility:

3, 4, 5, 6, 7, 8 9, 10, 11, 12, 13, 14, 16, 23, 30, 31, 32, 35, 36, 38, 39, 40.

INVESTIGATIONS AND RISK ASSESSMENT

In order to form a Conceptual Site Model (CSM) of potential exposure of human and ecological receptors to contamination from the SWMUs, EPA and Formica evaluated the following scenarios listed in Table 1, below:

Table 1 Potential Human Receptors and Exposure Pathways

Receptor	Pathways for Exposure
On-Site Routine Workers	Indoor air vapor intrusion - inhalation
On-Site Maintenance Workers	Indoor air vapor intrusion - inhalation
On-Site Construction Workers	Direct contact with soil and groundwater, inhalation of vapors or fugitive dust
Trespassers	Direct contact with soil or surface water, inhalation of fugitive dust
Off-Site Residents	Direct contact or consumption of contaminated groundwater, inhalation of fugitive dust

EPA notes that all risk assumptions are based upon the Facility's status as an active manufacturer with engineered and institutional controls in place, and which is expected to continue operating for the foreseeable future. Should the Facility cease operations and possibly demolish the buildings and pavement, and/or if use of the property for other than commercial/industrial purposes is contemplated, EPA will revisit all exposure scenarios and potential need for corrective measures.

During its evaluation of potential of exposure to on-site workers via inhalation of vapor-phase contaminants that have migrated to indoor air from beneath the buildings, EPA notes that indoor air quality at operating manufacturing facilities is regulated by the Occupational Safety and Health Administration (OSHA), which establishes protective standards for industrial chemicals used at the facilities. In addition, the manufacturing and storage areas are well ventilated by a continuously operating circulation system.

No potentially endangered ecosystems have been identified within the Facility. All of the ground surface is covered by structures, concrete, asphalt, or grass.

Screening Levels

EPA and Formica's consultants developed Site-Specific Screening Levels (SSLs) for the chemical compounds used in manufacturing, and their byproducts (constituents of concern, or COCs), for evaluation of soil and groundwater contamination at the Facility. This process focused on the location of the Facility, area land use, most likely pathways of human exposure to contaminants, toxicity values of the contaminants, and calculations of potential cancer and non-cancer risk according to EPA guidance. The allowable risk threshold for each SSL was a non-cancer Hazard Index (HI) of 1 or less, and a Cumulative Site-Related Cancer Risk (CSCR) of 1 x 10^{-5} (i.e., one in 100,000).

Published standards that were used to establish SSLs included EPA Regional Screening Levels (RSLs) for groundwater and both residential and industrial/construction worker soil scenarios, risk-based site-specific screening levels which were approved by EPA, EPA Maximum Contaminant Levels (Federal regulatory standards for drinking water), EPA's June 2015 Office of Solid Waste and Emergency Response guidance for calculating potential Vapor Intrusion (VI) risk for indoor air posed by groundwater contamination, and the Michigan Department of Environmental Quality's non-residential volatiles in soil inhalation risk criteria to assess potential VI risk posed by soil contamination.

The screening criteria that were used for investigation of the Formica facility are listed in Table 2, below:

Table 2 Screening Criteria for Formica Risk Assessment

Contaminant	Industrial Soil SSL	Groundwater Protection Soil SSL	VI Criteria Soil SSL	EPA RSL or MCL Water	EPA VI Criteria Water
Anthracene	$1.7x10^{8}$	42,000	$1x10^{9}$	1,800	
Barium	$2.2x10^{7}$	120,000	NLV	2,000	
Benzene	5,400	0.2	8,400	5	
Benzo(a)anthracene	2,100	10	NLV	0.034	
Benzo(a)pyrene	210	3.5	NLV	0.0034	
Benzo(b)fluoranthene	2,100	35	NLV	0.034	
Benzo(k)fluoranthene	21,000	350	NLV	0.34	
2-butanone	$2.0x10^{8}$	1,000	$9.9x10^{7}$	5,600	
Napthalene	$3.5x10^{7}$	0.47	NLV	150	
Caprolactum	$4.0x10^{8}$	2,500	NLV	9,900	
Carbon disulfide	$3.7x10^{6}$	$2.4x10^{-4}$	$1.4x10^{5}$	810	
Chloroform	1,500	0.05	38,000	80	
Chrysene	$2.1x10^{5}$	1,100	NLV	3.4	
Copper	$4.7x10^{7}$	10,100	NLV	930	
Dibenzo(a,h)anthracene	210	11	NLV	0.0034	
1,2-dichloroethane	2,000	$4.8x10^{-8}$	$4.6x10^{-4}$	2.7	94
Di-n-butyl phthalate	NLV	NLV	NLV	900	
Diethylene glycol	$1.6x10^{9}$	$8.1x10^{3}$	NLV	40,000	
Ethylbenzene	27,000	1.5	$4.6x10^{5}$	700	
Ethylene glycol monobutyl ether	$8.2x10^{7}$	410	$1.4x10^{6}$	2,000	
Bis(2-ethylhexyl)phthalate	$1.2x10^{5}$	1,100	NLV	6	
Formaldehyde	$1.6x10^{8}$	169	65,000	0.43	180,000
Isopropanol	$1.6x10^{9}$	502,000	$4.3x10^{8}$	410	
Melamine	$8.0x10^{7}$	ND	ND	NLV	
Methanol	$1.6x10^{9}$	504,000	$6.7x10^{7}$	20,000	
Phenol	$2.5x10^{8}$	452,000	NLV	5,800	
Zinc	$3.5x10^{8}$	75,600	NLV	9,900	

Criteria for soil expressed in micrograms per kilogram (ug/kg), i.e., Parts per Billion

Criteria for water expressed in micrograms per liter (ug/L), i.e., Parts per Billion

NLV = No Listed Value

ND=Not Developed

Investigations Conducted

EPA conducted a Preliminary Review/Visual Site Inspection (PA/VSI) at the Facility in 1990, during which 40 SWMUs were identified. On August 8, 2011, EPA provided Formica with a list of *Recommendations for Corrective Action Work at the Formica Corporation Facility Located in Evendale, Ohio*, which provided recommendations for the 40 previously identified SWMUs. In 2011, Formica evaluated the integrity of three SWMUs (11, 24, and 27), and the investigation results were summarized in the October 25, 2012, *Memorandum, Cleaning Activities and Integrity Checks at Solid Waste Management Units, Formica Evendale Facility*. No evidence of leakage was detected at SWMU 11, but further investigation was required for SWMUs 24 and 27.

Following this investigation, Formica sampled and analyzed the soil beneath and surrounding the remaining SWMUs for evidence of releases of COCs, and for delineating (laterally and vertically) the extent of the contamination at or exceeding the applicable SSLs for protection of human health and potential for release to groundwater. The results and conclusions of the soil investigation are presented in the August 7, 2013, *Subsurface Investigation Report* and the February 17, 2015, *Phase 2 Subsurface Investigation Report*.

In order to determine if releases of COCs have impacted groundwater beneath and downgradient of the Facility, Formica installed a network of thirteen monitoring wells throughout the areas where process wastes have been managed (Figure 3). Formica sampled these wells annually and analyzed groundwater for COCs for three consecutive years (2014 – 2016). The results of this investigation are presented in the February 17, 2015, *Phase 2 Subsurface Investigation Report*, the August 18, 2015, *Phase 3 Subsurface Investigation Report*, and the September 27, 2016, *Groundwater Monitoring Summary Report*.

The results and conclusions of the soil and sediment investigation at SWMUs 1, 2, 17A/B, 18A/B, 19A/B, 20/21/22, 24, 25, 26, 27, 28, 29A/B, 34, and 37 are summarized in Table 3, below:

Table 3 Constituents of Concern Detected in Soil and Sediment, with Evaluation

SWMU	Contaminant	Maximum Detected in Soil (ug/kg)	Exceeds Criteria Listed in Table 2?	Comments
1	Formaldehyde Phenol Methanol	6,200 110,000 2,200	Yes(gw protection) Yes(gw protection) No	Contamination is beneath plant building and not exposed to precipitation. COCs delineated to below screening levels. Groundwater not impacted.
2	Formaldehyde Melamine Diethylene glycol Methanol Ethylene glycol monobutyl ether	160,000 13,000 45,000 41,000 27,000	Yes(gw protection, VI) No Yes(gw protection) No Yes(gw protection)	Contamination is beneath concrete pavement and not exposed to precipitation. COCs delineated to below screening levels. Groundwater is not impacted.
17A/B	Formaldehyde Phenol	1,400 34,000	Yes(gw protection) No	Contamination is beneath concrete/asphalt pavement and not exposed to precipitation. COCs delineated to below screening levels. Groundwater is not impacted.
18A/B	Formaldehyde Melamine	4,800 210	Yes(gw protection) No	Contamination is beneath plant building and asphalt pavement. COCs delineated to below screening levels. Groundwater is not impacted.
19A/B	Formaldehyde Phenol	29,000 1,900	Yes(gw protection) No	Most of contamination is beneath plant building. COCs delineated to below screening levels or non-detect. COCs not detected in groundwater.
20/21/22	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene	500 570 680	Yes(gw protection) Yes(gw protection) Yes(gw protection)	Contaminants confined to upper two feet of soil. COCs have very low solubility. COCs not detected in groundwater.
24	Formaldehyde Phenol	2,600 6,000	Yes(gw protection) No	Contamination is beneath plant building. COCs delineated to below screening levels or non-detect. COCs not detected in groundwater.
25	Formaldehyde Melamine Methanol	1,600 580 1,300	Yes(gw protection) No No	Contaminants confined to upper 1 foot of soil beneath plant building floor. COCs not detected in groundwater.
26	Formaldehyde	33,000	Yes(gw protection)	Contamination delineated to below screening level. Contamination is not detected in groundwater.
27	Formaldehyde Phenol Diethylene glycol	10,000 190,000 49,000	Yes(gw protection) Yes(gw protection) Yes(gw(protection)	Contamination exceeding screening levels confined to small soil lens above water table. COCs not detected in groundwater.
28	Phenol	21	No	Contamination well below screening levels.
29A/B	Benzene Carbon disulfide Chloroform Ethylbenzene 2-butanone Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Napthalene Bis(2-ethylhexyl)phthalate Barium Copper Zinc	7.2 290 6.2 5.9 420 73,000 190,000 140,000 200,000 110,000 180,000 31,000 16,000 9,600 160,000 450,000 520,000	Yes(gw protection) Yes(gw protection) Yes(gw protection) Yes(gw protection) No Yes(gw protection) Yes(indstrl,gw protection) Yes(indstrl,gw protection) Yes(indstrl,gw protection) Yes(indstrl,gw protection) Yes(gw protection) Yes(gw protection) Yes(gw protection) Yes(gw protection)	Organic contaminants detected in sediment have very low solubility in water and affinity for soil. Access to unit is restricted by chain-link/barbed wire fence. No organic contaminants detected in groundwater, except one estimated detect of bis(2-ethylhexyl) phthalate at concentration well below groundwater screening levels. Copper and zinc detected in groundwater at concentrations well below screening levels.
34	Melamine	28,000	No	Contamination well below screening levels.
37	Formaldehyde Phenol	1,400 34,000	Yes(gw protection) No	Contamination delineated to below screening levels. Groundwater not impacted.

Formica's consultants sampled and analyzed groundwater at the Facility three times: November 2014, September 2015, and August 2016. In addition to the predominant COCs Formaldehyde and Phenol, the samples were analyzed for metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and the compounds caprolactum and melamine which are associated with industrial acrylic resins.

A summary and evaluation of the COCs detected in groundwater at the facility is presented in Table 4, below:

Table 4 Constituents of Concern Detected in Groundwater, with Evaluation

Monitoring Well	COCs Detected	Concentration ug/L	When Detected	Exceeds Criteria Listed in Table 2?	Comments
MW-01	Bis(2-ethylhexyl)phthalate Barium Copper Zinc	0.51J 200 1.3J 5.1J	11/14 11/14 11/14 11/14	No No No No	All COC concentrations well below screening levels. Barium is a common naturally occurring metal in groundwater.
MW-02	Barium Copper Zinc	200 0.86J 4.7J	11/14 11/14 11/14	No No No	All COC concentrations well below screening levels.
MW-03	Barium	190	11/14	No	Concentration well below SL *
MW-04	Caprolactum	24, 1.7J	9/15, 8/16	No	Concentration well below SL
MW-05	Caprolactum Di-n-butylphthalate	1.2J, 2.6J 0.26J	9/15, 8/16 8/16	No No	Concentration well below SL Concentration well below SL
MW-06	None				
MW-07	None				
MW-08	1,2-dichloroethane Caprolactum Formaldehyde	1.2 45 44J	9/15 9/15 11/14	No No Yes (RSL)	Concentration below SL Concentration well below SL Detected once at center of property. Not detected downgradient.
MW-09	None				
MW-10	None				
MW-11	Caprolactum	2.2J	9/15	No	Concentration well below SL
MW-12	None				
MW-13	None				

Concentrations listed with a "J" qualifier signify that the compound was observed at an estimated amount slightly below the detection limit of the analytical instrument.

SL = Screening Level

Investigation Results

Formica's consultants have obtained and analyzed numerous samples of soil beneath and surrounding each SWMU that required investigation, in order to delineate the lateral and vertical extent of contaminants to either non-detect or site screening levels. In most locations, contaminated soil is covered by the plant buildings or pavement consisting of asphalt or concrete.

As previously stated, Formica has been the sole industrial owner of the property, and the chemical compounds used in manufacturing have changed little over the history of production. The primary COCs, formaldehyde and phenol, are non-chlorinated hydrocarbons which readily degrade into non-hazardous compounds in water. Formaldehyde was detected once in groundwater at the Facility during the November 2014 sampling of Monitoring Well MW-08, which is located near the center of the Facility property. The estimated concentration was 44 ug/L, which exceeds the Regional Screening Level 0.43 ug/L for this compound. However, formaldehyde was not detected during subsequent sampling of this monitoring well, nor was it detected downgradient during the three year monitoring period. At the location of SWMUs 20/21/22, the contaminants are semivolatile organic compounds that are by-products of the combustion of coal. Although the contaminated soil in this location is not covered by pavement, the COCs tend to bind with soil, are not detected below two feet under the surface, and have very low solubility in water.

The tendency of formaldehyde and phenol to degrade in solution is verified by the groundwater investigation results.

SUMMARY OF FACILITY RISKS

Potential Risks to Human Health

The potential for exposure of on-site workers to inhalation of COCs is minimal. Indoor air quality is regulated by the Occupational Safety and Health Administration (OSHA), and the plant ventilation system provides strong circulation of air. The extent of contamination in soil has been delineated, and the contaminated soil is covered by the plant buildings, concrete or asphalt pavement, gravel, or grass which is maintained. For this reason, the potential for on-site or off-site inhalation of contaminated fugitive dust is negligible.

Although concentrations of COCs in soil in most locations exceed screening levels for migration to groundwater, these areas are generally covered by plant buildings and/or low-permeability pavement which prevents infiltration of precipitation and mobilization of contaminants into groundwater. The buildings and pavement will be maintained for the foreseeable future. If any of these engineered structures are to be demolished, and/or the Facility owner/operator

contemplates use of the contaminated property for purposes other than commercial/industrial, EPA will revisit this No Further Remediation decision under the terms of the UECA instrument and may require other corrective measures. As previously explained in this Statement of Basis, the predominant contaminants, phenol and formaldehyde, are hydrocarbons that readily degrade in water into non-hazardous end products.

The water table aquifer and the upper aquifer are not used as drinking water sources. Water at the Facility is used for industrial, potable, and sanitary purposes. The major use of water at the site is for industrial purposes, such as non-contact cooling for the high temperature manufacturing processes. Industrial process water is supplied by the Southwestern Ohio Water Company. Formica obtains potable and sanitary water from the Greater Cincinnati Water Works, which extracts 88% of its water from the Ohio River and the remaining 12% from the deep bedrock aquifer. For these reasons, on-site human exposure to contaminated groundwater by ingestion or direct contact is an incomplete pathway.

Three years of monitoring have confirmed that groundwater impact on-site is minimal or has not been detected. Also, only two COCs (caprolactum and bis(2-ethylhexyl) phthalate) at concentrations 0.2% and 8% of their respective human health screening levels, have been detected in groundwater at the downgradient property line. No other COCs have been detected in groundwater migrating off-site. There are no human receptors downgradient (south) of the Facility. Properties located in this area include an electrical transformer station, railroad right-of-way, undeveloped land, and a golf course.

Water from the Storm Water/Cooling Water Pond (SWMU 29A/B) is discharged to Mill Creek under an EPA National Pollutant Discharge Elimination System (NPDES) permit, which requires monitoring for temperature, pH, and phenol concentration. As previously described, contamination has not been detected at unacceptable levels in groundwater which migrates beyond the southern boundary of the Formica property. For these reasons, EPA has determined that operations at the Formica Facility have not adversely impacted the ecology of Mill Creek.

SCOPE OF CORRECTIVE ACTION

EPA's short-term goals for the Formica Facility are:

1. All current human exposures to contamination at or from the Facility must be under control. That is, significant or unacceptable exposures do not exist for all media known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents above risk-based levels, for which there are complete pathways between contamination and human receptors.

2. Migration of contaminated groundwater at or from the Facility must be stabilized. That is, the migration of all groundwater known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents above acceptable levels is stabilized to remain within any existing areas of contamination as defined by monitoring locations designated at the time of demonstration. In addition, any discharge of groundwater to surface water is either insignificant or currently acceptable according to an appropriate interim assessment.

EPA's short-term goals have already been achieved. On January 27, 2016, EPA determined that both RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) Current Human Exposures Under Control and RCRIS code (CA750) Migration of Contaminated Groundwater Under Control had been achieved.

EPA's long-term goals for the remedy being proposed are:

1. Protecting human health and the environment and
2. Establishing and maintaining institutional controls

Final corrective measures for the Formica Facility must ensure:

1. Soil and groundwater contamination on-site will not endanger human health.

2. Contamination will not migrate off-site, such as by transport in groundwater or airborne fugitive dust in such a way to endanger human health.

3. Institutional and engineered controls to protect human health and the environment will be recorded as restrictive covenants in the property deed, and will be binding on all future owners of the Formica property.

4. Construction and maintenance workers who may perform excavations in the restricted area are protected from unacceptable exposure to contamination via a Soil Management Plan which will be attached to the property deed.

5. On-site workers and visitors are protected from unacceptable exposure to vapor-phase COCs in indoor air.

SUMMARY OF PROPOSED REMEDY COMPONENTS

Based on current the conditions at the Formica Corporation Facility and the assumption that these conditions will remain unchanged for the foreseeable future, EPA has selected the following remedy components for the Facility.

Soil and Groundwater

Soil is contaminated at concentrations which often exceed migration to groundwater screening levels at several locations within the Formica Facility. However, impacts to groundwater are minimal or non-existent because of engineered controls and the chemistry of the contaminants.

Engineered controls, i.e., building foundations and pavement, prevent on-site and off-site human exposure to COCs as airborne fugitive dust.

Potential for human exposure to vapor-phase COCs in indoor air at the Facility is controlled by workplace regulation under OSHA, plant ventilation systems, and low-volatility of the predominant contaminants.

On-site risk of human exposure to COCs via ingestion of contaminated groundwater is prevented by the use of municipal drinking water and restrictive covenants to be recorded in the property deed which will prohibit potable use of on-site groundwater. Water that is used in manufacturing is obtained from an off-site commercial supplier. No off-site human receptors to contaminants in groundwater have been identified, and monitoring has demonstrated that COCs are either not migrating off-site or have been detected at concentrations far below risk screening levels.

EPA proposes that the present controls be maintained through restrictive covenants which will be recorded on the property deed, including a site plat prepared by a registered surveyor, that delineates the restricted area of contaminated soil; a Soil Management Plan which will protect workers who may have to excavate contaminated soil, and a prohibition on potable use of on-site groundwater.

EPA will re-evaluate its final remedy decision if the Agency learns that conditions, such as land use, have changed or will change in ways which may increase risk of human and/or environmental exposure to contamination.

CRITERIA FOR EVALUATION OF THE PROPOSED REMEDY

EPA evaluates proposed corrective measures by using the following criteria:

1. Overall protection of human health and the environment
2. Attainment of media cleanup standards
3. Controlling the sources of releases
4. Compliance with waste management standards
5. Long-term reliability and effectiveness
6. Reduction of toxicity, mobility or volume of wastes
7. Short-term effectiveness
8. Implementability
9. Cost

EVALUATION OF THE SELECTED REMEDY

Criteria 1, 3, 5, 7, and 8 have been achieved for soil and groundwater.

Criterion 4 has been achieved by the clean-closure of the container storage pad and above-ground storage tanks, and will be achieved by compliance with the Soil Management Plan if excavation within the restricted area of contaminated soil becomes necessary.

Regarding Criteria 2 and 6, there have been detections of some COCs above groundwater protection screening levels at the Facility. However, the investigations and evaluation described in this Statement of Basis demonstrate that the engineered and institutional controls prescribed by the remedy, along with the tendency of the contaminants to degrade in water, are effective in preventing off-site releases above MCLs or other allowable exposure limits.

Criterion 9 is achieved because no further action is necessary other than the UECA, unless EPA becomes aware of new information that necessitates re-evaluation of the remedy.

Compliance with all criteria will be ensured by adherence to restrictive covenants that will be recorded on the property deed. These covenants will be enforceable by OEPA through environmental covenants recorded under the Ohio Uniform Environmental Covenants Act.

PUBLIC PARTICIPATION

EPA is soliciting input from the community on its proposal that no further remediation of the Formica Corporation Facility in Evendale, Ohio, is necessary, and that the property is suitable for continued commercial/industrial use. EPA has scheduled a public comment period of 45 days from , to , to encourage public participation in the decision process. The public may submit written comments, questions and requests for a public meeting to the following address:

United States Environmental Protection Agency, Region 5
Remediation and Reuse Branch (LU-9J)
77 West Jackson Boulevard
Chicago, IL 60604
Attention: Don Heller
heller.donald@epa.gov
(312) 353-1248

The administrative record is available for public review at the following two locations:

Sharonville Public Library of Hamilton County
10980 Thornview Drive
Sharonville, OH
(513) 369-6049
www.cincinnatilibrary.org
Monday – Thursday 10:00 am – 9:00 pm
Friday, Saturday 10:00 am – 6:00 pm
Sunday 1:00 pm – 5:00 pm

and

U.S. EPA, Region 5 Records Center
77 West Jackson Boulevard
Chicago, IL
Monday – Friday 8:00 am – 4:00 pm (Central Time)

After EPA's consideration of the public comments that are received, EPA will summarize the comments and provide a Response to Comments document. EPA will prepare the Final Decision and Response to Comments after the conclusion of the public comment period which will be included in the administrative record. Based on comments received, EPA may make changes to the proposed corrective measures which will be documented in the Final Decision and Response to Comments.