Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name:	**Congoleum Corporation**
Facility Address:	**4401 West Ridge Road, Marcus Hook, PA 19061**
Facility EPA ID #:	**PAD 002 343 200**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ If data are not available, skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			Heavy metal detections (As, Cr, Pb, V)
Air (indoors)[2]		X		OSHA compliance
Surface Soil (e.g., <2 ft)	X			Isolated areas with detections of SVOCs
Surface Water		X		Levels detected are similar to background levels
Sediment		X		Levels detected are similar to background levels
Subsurf. Soil (e.g., >2 ft)	X			Waste left in place and capped
Air (outdoors)		X		Emission controls are in place

☐ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

☒ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

☐ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale:

Groundwater:

Congoleum operated a former unlined landfill that disposed a variety of non-hazardous wastes that included solidified plastisol wastes and paint pigments. Confirmatory sample collected from the former landfill verified that the waste materials were non-hazardous. Between 1971 and 1990, Congoleum constructed several buildings and paved asphalt above and in the vicinity of the former landfill. These structures serve as a cap that minimizes rainfall infiltration and eliminates direct human exposures to the non-hazardous wastes. Presently, generated wastes at the facility are disposed offsite.

Congoleum also operated a lagoon for storage of plant wastes, primarily plastisol gel-coat. The lagoon was unlined and unpermitted. In 1981, the lagoon was closed and the plastisol gel-coat polyvinyl chloride waste was removed and disposed offsite.

Historically, Congoleum managed a number of aboveground storage tanks (ASTs) and two underground storage tanks (USTs). The majority of these tanks were closed.

To assess the potential impacts to groundwater from past operations of the aforementioned units, EPA installed and sampled several groundwater monitoring wells located downgradient of the former USTs and solid waste management units. The groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and heavy metals. VOCs and SVOCs levels detected in groundwater were below EPA

regulatory standards. However, several monitoring wells detected heavy metal levels that exceeded EPA maximum contaminant level (MCLs), levels that EPA declared to be protective of human health and the environment. Heavy metals of concern detected in groundwater and their respective range of concentrations and regulatory standards are:

Heavy Metals	Concentrations (ug/L)	MCLs (ug/L)
Arsenic	11- 38	10
Chromium	40 - 393	100
Lead	13 - 106	15
Vanadium	43 - 437	100

Despite the detections of heavy metals, Congoleum declared that there have been no releases or any operations at the facility that would have contributed to the elevated levels of heavy metals in groundwater. EPA completed a comprehensive file review of the facility that included previous and subsequent investigations, inspections, interim measure activities and any relevant data to investigate the potential source(s) for the groundwater contamination. EPA determined that there are no indications from past and current operations at the facility that may have contributed to the elevated levels of arsenic, chromium, lead and vanadium in groundwater. EPA concluded that elevated heavy metal groundwater concentrations onsite are not related to the operations at the facility.

There are no direct human exposures to the heavy metals in groundwater. Residences in the area are connected to public water. Potable water is provided by the Chester Water Authority.

To complete the assessment of the groundwater contamination, EPA investigated several facilities in the vicinity of Congoleum to determine the source(s) of the heavy metals. The investigation was inconclusive. EPA was unable to identify the source that contributed to the levels of heavy metals in groundwater. The groundwater flow direction is to the south-southeast and discharges into the Delaware River. The levels of heavy metals detected in groundwater discharging to the Delaware River are less than 10 times the MCLs. EPA determined that based on the magnitude and flow of the Delaware River, elevated heavy metals detected in groundwater at the facility will not significantly impact the river. Notwithstanding the presence of elevated heavy metals in groundwater, EPA concludes that there are no direct human exposure risks and any potential impact to the environment is negligible.

Subsurface Soil (> 2ft.)
Congoleum operated a former unlined landfill that was used to dispose a variety of non-hazardous plant wastes that included solidified plastisol wastes and paint pigments. Wastes were left in place and the landfill was capped. Subsequent confirmatory samples verified that the wastes in the former landfill are non-hazardous. Between 1971 and 1990, Congoleum constructed several buildings and paved asphalt above and near the areas of the former landfill. These structures serve as a permanent cap that minimizes rainfall infiltration and eliminates direct human exposures to the non-hazardous wastes. Presently, generated wastes at the facility are disposed offsite.

Surface Soil (< 2 ft.)
The majority of the facility are either covered by asphalt or existing buildings. EPA conducted soil sampling in the vicinity of the former landfill and solid waste management units (SWMUs) for targeted VOCs, SVOCs, and heavy metals. No VOCs and heavy metals were detected above the industrial risk-based concentrations in soils. Only seven SVOCs were detected above industrial standards in some of the soil samples. The constituents and the respective regulatory standards and range of detected levels are listed below.

Constituents	Industrial Standards (mg/kg)	Range of Detected Concs. (mg/kg)
Benzo(a)anthracene	4.5	0.14 - 22
Benzo(a)pyrene	0.45	0.09 -17
Benzo(b)fluoranthene	4.5	0.40 - 20
Bis (2-chloroethyl) ether	3.0	0.38 - 4.2
3,3-Dichlorobenzidine	7.3	0.76 - 8.3
Dibenz (a,h) anthracene	0.45	0.05 - 4.2
N-Nitroso-di-n-propylamine	0.47	0.38 - 4.2

The areas where SVOCs levels are above industrial risk-based concentrations are located in sections of the facility that are closed and no longer operational. Foot traffic through these sections is limited and exposure risks to the soil contamination are minimal and negligible.

Air (Outdoor)
In 1998, Congoleum experienced air contamination problems during back-out of the thermal oxidizer. Since then, modifications were made to the thermal oxidizer to achieve a smokeless bake-out. Recent bake-outs have not contributed to air contamination. Congoleum is in compliance with the state Title V Air Qualtiy Operating Permit.

Air (Indoor)
The facility continuously monitors indoor air quality onsite. Indoor air quality meets Occupational Safety and Health Administration (OSHA) requirements. Congoluem is not expected to contribute to indoor air contamination onsite.

Surface Water and Sediment
In 1990 PADEP collected samples from the National Pollution Discharge Elimination System (NPDES) discharge line. The following constituents were detected:

Constituent	January 23, 1990	May 31, 1990
Chloroform	10.5 ppb	15.6 ppb
1,1,1-Trichloroethane	21.7 ppb	29.8 ppb (est.)
Bromodichloromethane	1.6 ppb	0.91 ppb
Acenaphthalate	1.4 ppb	Not Reported
Acenaphthene	1.3 ppb	Not Reported
Butyl benzyl phthalate	2.2 ppb	4,500 ppb
Bis (2-ethylhexyl) phthalate	14.3 ppb	Not Reported
Di-n-octyl phthalate	11.2 ppb	Not Reported
Benzoic Acid	12.1 ppb	Not Reported
Naphthalene	Not Reported	700 ppb, 6.3 ppb
Phenol	Not Reported	26.9 ppb
Benzyl Alcohol	Not Reported	23.6 ppb
1,1-Dichloroethane	Not Reported	2.8 ppb
N-Butylbenzene	Not Reported	0.69 ppb

Congoleum stated that the NPDES discharges from the facility consisted of stormwater and untreated non-contact cooling water. PADEP concluded that the detected compounds were the result of background levels in the municipal water runoff from the surrounding areas.

Reference:

(EI Inspection Report 2003, EPA Groundwater Investigation Report 3/05, Phase II Soil and Groundwater Investigation Report, 8/05, Phase I Environmental Site Assessment 5/09, Limited Site Investigation Report 7/09)

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	No			No
~~Air (indoors)~~							
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	No	No	No
~~Surface Water~~							
~~Sediment~~							
Soil (subsurface e.g., >2 ft)		No		No			No
~~Air (outdoors)~~							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

☐ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

☒ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

☐ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale:

"No" Complete Exposure Pathway

Groundwater:
There are no direct human exposures to groundwater. Residences in the area are connected to public water. Potable water is provided by the Chester Water Authority.

Subsurface Soil (> 2ft.)
The majority of the facility are either covered by asphalt or existing buildings. Any remaining wastes are capped by asphalt or existing buildings, which eliminate direct human exposures to the contaminated subsurface soil.

"Yes" Complete Exposure Pathway

Surface Soil (< 2 ft.)
The majority of the facility are either covered by asphalt or existing buildings. Areas where SVOCs levels are above industrial risk-based concentrations are located in sections of the facility that are closed and no longer operational. Foot traffic through these areas is limited and exposure risks to the soil contamination are minimal and negligible.

Reference:
(EI Inspection Report 2003, EPA Groundwater Investigation Report 3/05, Phase II Soil and Groundwater Investigation Report, 8/05, Phase I Environmental Site Assessment 5/09, Limited Site Investigation Report 7/09)

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

☒ If no (exposures cannot be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale:

Surface Soil (< 2 ft.)
Areas where SVOCs levels are above industrial risk-based concentrations are located in sections of the facility that are closed and no longer operational. Foot traffic through these areas is limited and exposure risks to the soil contamination are minimal and negligible.

Reference:
(EI Inspection Report 2003, EPA Groundwater Investigation Report 3/05, Phase II Soil and Groundwater Investigation Report, 8/05, Phase I Environmental Site Assessment 5/09, Limited Site Investigation Report 7/09)

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

☐ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

☐ If no - (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

☐ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code.

Rationale and Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI (event code CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Congoleum Corporation** and **EPA ID # PAD002343200**, located at **4401 West Ridge Road, Marcus Hook, PA 19061** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

☐ NO - "Current Human Exposures" are NOT "Under Control."

☐ IN - More information is needed to make a determination.

Completed by (signature) _____ Date 7/23/14
(print) Khai M. Dao
(title) EPA Project Manager

Supervisor (signature) _____ Date 7-28-15
(print) Paul Gotthold
(title) Assoc. Director Office of PA Remediation
(EPA Region or State) EPA Region III

Locations where References may be found:

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