

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: US Steel MVW Clairton
Facility Address: 400 State Street, Clairton, PA 15025
Facility EPA ID #: EPA ID PAD004498010

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

The U.S. Environmental Protection Agency (EPA) Hazardous Waste Cleanup Program is aware of, and considered the, recent explosion at the US Steel Clairton Plant on August 11, 2025 and its possible effects on this EI Determination. EPA's On-scene Coordinator was consulted and confirmed the explosion did not impact any hazardous waste handling areas and no releases occurred. US Steel was consulted and confirmed no impacts to active remediation systems nearest the area of the explosion.

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).

**Current Human Exposures Under Control
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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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			benzene, toluene, xylene, phenol, cyanide, naphthalene, and LNAPL
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)	X			benzene, phenol
Surface Water	X			benzene in Peters Creek
Sediment			X	
Subsurface Soil (e.g., >2 ft)	X			benzene, toluene
Air (outdoors)		X		

- 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:

The December 2024 RCRA Facility Investigation Phase I Soil Investigation samples were analyzed for the following comprehensive analyte lists: Target Compound List (TCL) Volatile Organic Compounds (VOCs), TCL Semi-VOCs, Target Analyte List Metals, and Ammonia. The sitewide investigation was subdivided into the following Areas of Concern (AOCs) based on historic uses at the Facility: 1-Coal Storage, 2-BTX Plant, 3-Former Tar Plant, 4-Oil Seep Investigation, 5-Keystone, 6-First Unit Coking, 7-Second Unit Coking, 8-Steel Works, 9-Peters Creek Coke Yard, 9a-Peters Creek Lagoon, 10-Motor Repair Shop, 11-Crane Yard, and 12-Undesignated (aka Maple Avenue Gate).

Groundwater: Groundwater at the site is known to have been impacted by various compounds above the EPA Maximum Contaminant Levels (MCLs), Regional Screening Levels (RSLs), and/or PADEP Act 2 Medium Specific Concentrations (MSCs) since approximately 1979. The primary contaminants identified in groundwater are benzene, toluene, xylene, phenol, cyanide, naphthalene, and light non-aqueous phase liquid (LNAPL). Groundwater impacts are limited to AOCs 2-BTX Plant, 3-Former Tar Plant, 4-Oil Seep Investigation, 5-Keystone, and 9/9a-Peters Creek Coke Yard and Lagoon Groundwater will be further evaluated in the RFI Phase II activities per approved conclusions and recommendations in the RFI Phase I Soil Investigation.

Indoor Air: EPA requested USS perform a focused indoor air evaluation for potential off-site impacts in the Peters Creek Lagoon Area due to noted groundwater concentration increases in near-property boundary wells. USS performed this evaluation and provided results in an Evaluation of Potential Vapor Intrusion Pathway-Southeast of the Peters Creek Coke Yard Area Report. Evaluation results showed there was no off-site indoor air concerns in this specific area of the facility.

Phase I RFI Appendix D soil results at the following four boreholes positioned adjacent to office buildings (SB-34_2024 adjacent to the Clairton Lab in the First Unit Coking Area, SB-37_2024 adjacent to the Coke/Chemicals Office in the Second Unit Coking Area, SB-49_2024 adjacent to the War Room Offices and the Gas Rescue Building in Crane Yard Area, and SB-53_2024 adjacent to the Maple Gate Bath House in the Undesignated Area) showed no exceedances of PADEP statewide health standard vapor intrusion screening levels. Further assessment of vapor intrusion will be evaluated by groundwater data collected in the RFI Phase II activities per approved conclusions and recommendations in the RFI Phase I Soil Investigation.

Surface Soil: Surface soils have been historically shown to be contaminated with benzene and phenol within the Motor Repair Shop Area. Facility-wide surface soil results presented in the Phase I Soil Investigation RFI indicate surface soil exceedances of EPA's Industrial Soil (direct contact) or Protection of Groundwater RSLs for multiple VOCs, SVOCs, and Metals in all AOCs. The EPA soil RSLs were developed as screening values to be used during the early stages of a site evaluation to help identify areas, contaminants, and conditions where further evaluation may be warranted.

Facility-wide surface soil results presented in the Phase I Soil Investigation RFI were further assessed against PADEP direct contact (DC) and soil-to-groundwater (S-GW) MSCs. AOC specific exceedances identified are as follows:

- AOC 1: Benzo(a)fluoranthene [DC], Benzo(a)pyrene [DC, S-GW], Manganese [S-GW]
- AOC 2: Lead and Manganese [S-GW]
- AOC 3: Manganese [S-GW]
- AOC 4: Lead and Manganese [S-GW]
- AOC 5: Manganese [S-GW]
- AOC 6: Manganese [S-GW]
- AOC 7: Manganese [S-GW]
- AOC 8: Benzo(a)pyrene, 1,1-Biphenyl, Napthalene, Manganese, Arsenic, Mercury [S-GW]
Benzo(b)fluoranthene [DC]
- AOC 9: Manganese [S-GW]
- AOC 9a: Benzene, Phenol [known historically DC, S-GW]
- AOC 11: Arsenic, Lead, Manganese, Nickel [S-GW]

Further assessment will be evaluated by additional wells being installed as well as sitewide groundwater sampling for the S-GW exceedances and a Human Health Risk Assessment for the DC exceedances as proposed in the EPA-approved Phase I Soil Investigation RFI.

Surface Water: USS collects seep samples from the area of Peters Creek Lagoon and surface water samples from Peters Creek. USS performed a fate and transport evaluation, PADEP's SWLOAD, and ultimately PADEP's PENTOXSD modeling which is a mass-balance water quality analysis model used to calculate waste load allocations (WLAs) to the surface water body which can be compared to published water quality-based effluent limits (WQBELs). The appropriate WQBEL would then be the most stringent WLA toxicity limits for fish and humans. For the Benzene Toluene Xylene (BTX) Trench Area, PENTOXSD results indicate that the average calculated discharge from this area is less than the most protective WQBEL. For the Peters Creek Coke Yard Area, PENTOXSD results indicate that the average calculated discharge from this area exceeds the most protective WQBEL. The analytical result from surface water samples SG-1 presented in the most recent Third and Fourth Quarters 2024 Semiannual COA Compliance Progress Report indicated benzene in excess of water quality standards.

The March 2022 Groundwater Monitoring Control Plan assessed potential impacts to the Monongahela River by modeling the areas containing the highest benzene concentrations in shallow and deep groundwater located at the main part of the plant (i.e., BTX Plant Area). The results of the SWLOAD and PENTOXSD modeling conducted in the BTX Plant Area indicate that the current operating control measures are sufficient to meet the most stringent WQBEL (Cancer Risk Level).

Sediment: No information exists regarding sediment samples. Based on the fact that groundwater is contaminated and seeps to the Monongahela River and Peters Creek were present in the early 1980s, it is reasonable to suspect sediments could be contaminated. Sediments will be further evaluated in the RFI Phase II or Phase III activities per approved conclusions and recommendations in the RFI Phase I Soil Investigation.

Subsurface soils: The Peters Creek Lagoon is contaminated primarily with benzene. A composite sample from Peters Creek Lagoon taken in 1984 contained 89 mg/kg of benzene and the MSC is 0.5 mg/kg. Subsurface soils collected as part of the Motor Repair Shop Investigation in 1995 were not found to be contaminated.

A conservative estimate is that soil contamination extends from the surface to the water table (maximum possible depth of unsaturated zone). The EPA's 1993 *Urban Soil Lead Abatement Demonstration Project*, referred to in the EPA's July 1996 *Soil Screening Guidance*, defines the top 2 centimeters as the depth of soil where direct contact predominantly occurs (surface soil). The decision to sample soils below 2 centimeters (subsurface soils) depends on the likelihood of deeper soils being disturbed (e.g., from gardening, landscaping or construction activities). Where contamination is thought, or known, to exist below the water table, RSLs do not apply and further investigation is generally necessary. USS collected subsurface samples

in order to evaluate potential deeper contamination. Similarly to surface soils, Facility-wide subsurface soil results presented in the Phase I Soil Investigation RFI indicate subsurface soil exceedances of EPA's Industrial Soil (direct contact) or Protection of Groundwater RSLs for multiple VOCs, SVOCs, and Metals in all AOCs.

Since EPA soil RSLs were developed primarily as screening values, Facility-wide subsurface soil results presented in the Phase I Soil Investigation RFI were further assessed against PADEP direct contact (DC) and soil-to-groundwater (S-GW) MSCs. AOC specific exceedances identified are as follows:

- AOC 2: Benzene [S-GW]
- AOC 3: Benzene, Ethylbenzene, Xylenes, 1,1-Biphenyl, 2-Methylnaphthalene, Naphthalene, and Manganese [S-GW]
1,1-Biphenyl, 2-Methylnaphthalene, Naphthalene [DC]
- AOC 4: Manganese [S-GW]
- AOC 5: Benzo(a)pyrene, 1,1-Biphenyl, 2-Methylnaphthalene, and Manganese [S-GW], Naphthalene [DC]
- AOC 6: Manganese [S-GW]
- AOC 7: Manganese [S-GW]
- AOC 8: Manganese [S-GW], Iron [DC]
- AOC 9: Manganese, Arsenic [S-GW]
- AOC 9a: Benzene, Toluene [known historically DC, S-GW]
- AOC 11: Manganese [S-GW]

Further assessment will be evaluated by additional wells being installed as well as sitewide groundwater sampling for the S-GW exceedances and a Human Health Risk Assessment for the DC exceedances as proposed in the EPA-approved Phase I Soil Investigation RFI.

Outdoor air: USS is an active coke production facility and operational outdoor air levels are governed by the Allegheny County Health Department's Air Quality Program. It is not suspected that outdoor air is contaminated from releases subject to RCRA Corrective Action. Further assessment of outdoor air will be evaluated by groundwater data collected in the RFI Phase II activities per approved conclusions and recommendations in the RFI Phase I Soil Investigation.

Arsenic: Arsenic was identified in nearly every surface and subsurface soil sample result exceeding EPA's Industrial (direct contact) RSL. Given its' ubiquitousness in subsurface soils samples, EPA does not consider Arsenic exceedances of screening levels to reasonably be from suspected releases subject to RCRA Corrective Action. To be conservative, EPA evaluated the Arsenic concentrations and determined that no sample results exceeded PADEP's direct contact Medium-Specific Concentration (MSC) or exceeded EPA's upper bound risk range level of 10^{-4} (only four sample results slightly exceeded 10x the RSL equivalent to a risk of 10^{-5}).

References:

Final Environmental Indicator Inspection Report, December 2002
120-Day Compliance Summary Report, July 2013
Groundwater Site Characterization Report, September 2018
Evaluation of Potential Vapor Intrusion Pathway-Southeast of the Peters Creek Coke Yard Area, May 2020
Groundwater Monitoring Control Plan, March 2022
Corrective Action Framework, August 2023
RCRA Facility Investigation Work Plan, February 2024
Phase I Soil Investigation RFI, December 2024
Semiannual COA Compliance Progress Report (Third and Fourth Quarters 2024), January 2025
U.S. Army Corps of Engineers Monongahela River Navigational Charts

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.

**Current Human Exposures Under Control
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- 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	Yes			No
Air (indoors)	-	-	-	-	-	-	
Soil (surface, <2 ft)	No	Yes	No	Yes	No	No	No
Surface Water	No	Yes			No	No	No
Sediment	No	Yes			No	Yes	No
Soil (subsurface, >2 ft)				Yes			No
Air (outdoors)	-	-	-	-	-	-	-

Instructions for Summary Exposure Pathway Evaluation Table:

- Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated” as identified in #2 above.
- 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) have filled check boxes (“”). 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:

USS is a fenced facility with active 24-hour security in place, virtually eliminating the chance of trespassing thus eliminating a complete exposure pathway. There are no residential homes at the Facility, eliminating a residential exposure pathway.

Groundwater: USS operates groundwater recovery systems in the following areas at the facility: Keystone, BTX Plant, Tar Plant, Oil Seep Investigation, Mendelssohn Street Storm Sewer, and Peters Creek Coke Yard. A river wall helps prevents migration to the Monongahela River and a slurry wall has been installed around the Peters Creek Lagoon. Residents in the area are on public water which uses surface water intakes. USS operates an Early Warning System to alert them to possible

releases from Outfalls as well as addressing the issue prior to potential impacts to surface water intakes. Therefore, the only potentially complete exposure pathway from contaminated groundwater is to construction workers.

Surface soils: Facility workers and construction workers are the only likely current potential receptors that could be exposed to known contaminated surface soils.

Surface waters:

Sediment: Workers could be exposed to potentially contaminated sediments in the area of Peters Creek Lagoon. Since the Monongahela River is a recreational river used, a complete pathway for recreational participants to potentially contaminated sediment could be perceived.

Subsurface soils: It is expected that only construction workers could be exposed to contaminated subsurface soils during intrusive activities.

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 can not 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:

Worker/Construction - It is not expected that exposure to contaminated groundwater, surface soils, subsurface soils, surface water or sediments for on-site and construction workers would be probable or, if so, significant since USS is an active facility and appropriate health and safety and proper personal protective equipment requirements are in place as documented in the Groundwater Monitoring Control Plan, March 2022 and Corrective Action Framework, August 2023.

Recreation - It is not expected that exposure to potentially contaminated sediment in the Monongahela River would be significant due to likely exposure frequency or accessibility. EPA risk assessment guidance provides an example of a typical exposure frequency to calculate risk at 100 days. USS is an active coke production facility with coal being transported via barge and staged at the nearly mile long unloading dock on the Monongahela River. U.S. Army Corps of Engineers Monongahela River Navigation Charts identify several Restricted Areas along the USS facility-river boundary (presumably due to barge traffic) as well as around the Braddock Locks & Dam. These restrictions combined with USS operations would significantly reduce the frequency of any potential exposure and, therefore, EPA has concluded that recreational exposure to potential contamination is not significant.

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):

n/a

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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 US Steel MVW Clairton facility, EPA ID PAD004498010, located at 400 State Street, Clairton, PA 15025 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 at the US Steel MVW Clairton facility, EPA ID PAD004498010, located at 400 State Street, Clairton, PA 15025.

Completed by (signature) _____
(print) Kevin Bilash
(title) RPM

Supervisor (signature) _____
(print) Kristin Koroncai
(title) RCRA Corrective Action South Section Manager
(EPA Region or State) EPA Region III

Locations where References may be found:

US EPA Region III
Land, Chemicals and Redevelopment Division
1600 JFK Boulevard
4 Penn Center
Philadelphia, PA 19103

PADEP
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

Contact telephone number and e-mail

(name) Kevin Bilash
(phone #) 215.814.2796
(e-mail) bilash.kevin@epa.gov