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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action

Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Shenango Incorporated
Facility Address: 200 Neville Rd., Pittsburgh, PA 15225-1690
Facility EPA ID #: PAD004337465

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?

 X 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, GPRRA). 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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	x			Benzene, chloroform, naphthalene, arsenic and manganese found in groundwater at concentrations above the Region 3 Tap Water Risk Based concentrations (July 2002 EPA Environmental Indicator Inspection Report)
Air (indoors) ²		x		Positive pressure, filtered air maintained in work stations as part of Shenango’s “Waste and Emission Minimization Program “. Employees also protected by PPE (July 2002 EPA Environmental Indicator Inspection Report)
Surface Soil (e.g., <2 ft)	x			Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, and 4-Methylphenol found in soil at concentrations above the Region 3 Industrial Risk Based Concentrations (July 2002 EPA Environmental Indicator Inspection Report)
Surface Water		x		Surface water discharge to Ohio river is monitored by NPDES Permit. Installation of diking and containment walls within and around the perimeter of the plant, and installation of trenches around rail car and tank truck loading and unloading areas were in place in 1998 to capture potential surface runoff releases.
Sediment			x	No documentation of releases
Subsurf. Soil (e.g., >2 ft)	x			No information available. However, since groundwater found contaminated with benzene, chloroform, naphthalene, arsenic and manganese, subsurface soil potentially contaminated with these contaminants
Air (outdoors)	x			Air emissions monitored by Air permit. Violations of permit limits documented.

_____ 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.

 X 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 and Reference(s):

Shenango Incorporated (Shenango) produces iron, coke, and coke by-products. It occupies approximately 65 acres of land located on the eastern end of the Neville Island. The island is in the Ohio River, in Neville Township, Allegheny County, PA. The current coke ovens and chemical operations at Shenango were constructed around 1930. Shenango currently operates one 56 oven four meter battery. Shenango consists of three divisions: The Coke Plant Division, The Blast Furnace Division, and the Steam and Power Division. Shenango is located in an industrial area. Site access is restricted by metal fence and gate.

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In June 1989, groundwater samples were collected from an onsite well and 4 offsite wells. Organics were detected in these wells including chloroform, methylene chloride, acetone, 2-butanone, 2-chloroethylvinylether, 4,6-dinitro-2-methylphenol, and bis(2-ethylhexyl)phthalate. Inorganics were detected in these wells including aluminum, arsenic, barium, calcium, cobalt, copper, iron, magnesium, manganese, potassium, selenium, sodium, thallium, zinc, cyanide, lead and nickel. Onsite well was found contaminated with chloroform and manganese at concentrations of 12 ug/l and 6,400 ug/l, above the EPA Region III Tap Water Risk Based Concentrations. Offsite wells were found contaminated with benzene, naphthalene, and arsenic at concentrations of 25 ug/l, 11 ug/l, and 5.5 ug/l, respectively, above the EPA Region III Tap Water Risk Based Concentrations (November 24, 1989 Site Inspection Report for the Superfund Branch, U.S. Environmental Protection Agency prepared by Hazardous Site Cleanup Program, Bureau of Waste Management, Pittsburgh Region and EPA Environmental Indicator Inspection Report for Shenango, Inc. dated July 2002). The EPA Region III Tap water Risk-Based Concentrations for benzene, chloroform, naphthalene, arsenic and manganese are 0.34 ug/l, 0.15 ug/l, 6.5 ug/l, 0.045 ug/l, and 730 ug/l, respectively.

In June 1989, onsite surface soil samples were collected. Organics were detected in these samples including benzene, toluene, ethylbenzene, styrene, xylenes, phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, naphthalene, 2-methylnaphthalene, acenaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, (1,2,3-cd) pyrene, (g,h,i)perylene, methylene chloride, acetone, and di-n-butylphthalate. Inorganics were detected in surface soil samples including aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, sodium, vanadium, zinc, and cyanide. Surface soil was found contaminated with Benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and arsenic at levels of 35 mg/kg, 49 mg/kg, 39 mg/kg, 59 mg/kg, 40 mg/kg, and 13 mg/kg, respectively, above the Region III Industrial Soil Risk Based Concentrations. The Region III Industrial Soil Risk Based Concentrations for arsenic is 1.9 mg/kg, for benzo(a)pyrene is 0.39 mg/kg, for benzo(a)anthracene is 3.9 mg/kg, for chrysene is 390 mg/kg, for benzo(b)fluoranthene is 3.9 mg/kg, and for benzo(k)fluoranthene is 39 mg/kg (November 24, 1989 Site Inspection Report for the Superfund Branch, U.S. Environmental Protection Agency prepared by Hazardous Site Cleanup Program, Bureau of Waste Management, Pittsburgh Region)

Shenango has been implementing a "Waste and Emission Minimization program" including maintaining positive pressure and filtered air in work stations in the Battery and By-products areas to protect employees from hazards associated with coke oven emission. Positive pressure and filtered breathing air were also installed in the lunch room.

There is no data available on sub-surface soil. Since groundwater was found contaminated with benzene, chloroform, naphthalene, arsenic and manganese, subsurface soil is potentially contaminated with these contaminants.

Shenango currently holds NPDES permits for surface water discharge to the Ohio river. Records indicate there were instances Shenango violated its NPDES permit limits of the internal effluent for cyanide, phenols, and naphthalene. This internal effluent discharges to the final outfall which in turn discharges to the Ohio River. Per PADEP, the internal effluent only contributes to approximately 5% of the final outfall, violation of the internal effluent limits should not have much impact on the final effluent quality. In addition, the final outfall discharge is diluted by the river water. The nearest water intake drawn by the Robinson Township Municipal Authority is located approximately 3.5 miles downstream from the final outfall. Shenango is currently in compliance with its NPDES permits. Diking and containment walls within and around the perimeter of the plant, and trenches around rail car and tank truck loading and unloading areas were installed in 1998 as engineering controls to capture potential surface runoff releases.

Shenango currently holds an air permit for outdoor air emissions. Records indicate there were instances

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Shenango violated its opacity and sulfur compound permit limits.

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)

<u>“Contaminated” Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	<u>No</u>	No	No	No			No
Air (indoors)	<u>No</u>	No	No				
Soil (surface, e.g., <2 ft)	<u>No</u>	No	No	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Surface Water	<u>No</u>	No			No	No	No
Sediment	<u>No</u>	No			No	No	No
Soil (subsurface e.g., >2 ft)				No			No
Air (outdoors)	No	No	No	No	No		

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.

X 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 and Reference(s):

Although groundwater was found contaminated with benzene, chloroform, naphthalene, arsenic, and manganese at levels above the EPA Region III Tap Water Risk-Based Concentrations, currently there is no potential human receptor since Neville Island groundwater is not being used for drinking water.

Surface soils were found contaminated with benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and arsenic. Subsurface soil is potentially contaminated with benzene, chloroform, naphthalene, arsenic and manganese. Potential human health exposures to soil contaminants would be limited to employees, contractors, visitors, and trespassers. Visitors and trespassers’ access to the facility is restricted by metal

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fence and gate. Employees and contractors are protected by PPE and OSHA. Human exposure pathway is not complete.

Records indicate there were instances Shenango violated its air permit limits. However, Shenango is located in an industrial area, potential human exposure to outdoor air contaminants would be limited to workers who are protected with PPE and by OSHA. Human exposure pathway is not complete.

Records indicate there were instances that the facility violated its NPDES permit limits. However, the outfall discharge is diluted by river water, the nearest downstream water intake drawn by the Robinson Township Municipal Authority is located approximately 3.5 miles from the final outfall. Human exposure, if exists, would be insignificant.

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

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)?

 X 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 and Reference(s):

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):

