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:	**Worthington Steel**
Facility Address:	**Morehall Road, Route 29, Malvern, PA 19355**
Facility EPA ID #:	**PAD 00 232 4978**

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, 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).

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**			**Cyanide, VOCs.**
Air (indoors) [2]		**x**		**No record of contamination.**
Surface Soil (e.g., <2 ft)		**x**		**Contaminated soil excavated.**
Surface Water		**x**		**VOC contamination from unknown offsite sources.**
Sediment		**x**		**VOC contamination from unknown offsite sources.**
Subsurf. Soil (e.g., >2 ft)		**x**		**VOCs and Semi-Volatiles below regulatory stds.**
Air (outdoors)		**x**		**No record of contamination.**

____ 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):

General: Worthington Steel is in the process of selling the property to O'Neil Properties who plans to convert the facility to commercial office space. To minimize potential environmental liabilities, O'Neil Properties has implemented additional environmental site investigation to assess the property. Provided that the environmental remediation/monitoring meets EPA RCRA Corrective Action requirements, O'Neil properties will complete the environmental investigation/remediation under PADEP Act 2.

Groundwater: In 1979, several isolated cyanide plumes, which were caused by a release in the zinc cyanide plating line, were detected in groundwater. In response to the release, the Facility installed numerous monitoring wells to delineate the extent of the cyanide plume(s). Total cyanide concentrations range from non-detectable levels up to 4,300 ug/L. Free cyanide concentrations have been consistently below the EPA's maximum contaminant level (MCL) of 200 ug/L. From 1979 to 1982, Worthington operated a groundwater extraction and treatment system that substantial reduced the cyanide plume(s). Nonetheless, there still remain isolated pockets of cyanide plumes within facility property line and on the adjacent property at 84 Lumber.

In addition to the cyanide plumes, small pockets of TCE plumes were discovered during the closure of the former surface impoundments. The levels of TCE detected are between 10 -150 ug/L and have not migrated beyond the established boundaries, which entail the facility property lines and 84 Lumber, the adjacent property. As part of the property purchase agreement and required under the PADEP Act 2 Program, O'Neil Properties will continue to monitor the groundwater. ***(Risk Assessment for Cyanide in the Vicinity of the Worthington Steel Facility Report 1999, Phase I/II Environmental Site Assessment Data dated July 26, 2002; the Preliminary Remedial Action WorkPlan dated August 14, 2002).***

Surface and Subsurface Soil: **As part of the O'Neil Properties environmental site investigation, numerous soil borings and samples were conducted to assess surface and subsurface soil. The levels of VOCs and semi-volatiles detected in surface and subsurface soil are below the regulatory standards for residential and nonresidential direct contact. A small area of free-phase petroleum product was discovered in the subsurface. O'Neil Properties has proposed to excavate the area and dispose the soil offsite. Although arsenic levels (< 8 - 21 mg/kg) detected onsite in surface and subsurface soil are above the regulatory standard of 12 mg/kg, these levels are comparable to background levels of < 8 - 39 mg/kg.**
Therefore, the detected levels of arsenic onsite are background levels and are not the result of the Facility's past operations. ***(Risk Assessment for Cyanide in the Vicinity of the Worthington Steel Facility Report 1999, Phase I/II Environmental Site Assessment Data dated July 26, 2002; the Preliminary Remedial Action WorkPlan dated August 14, 2002)*.**

Surface Water and Sediment: **Surface water and sediment samples collected along Little Valley Creek detected similar levels of TCE (9-25 ug/L) upgradient and downgradient from the Facility. The Facility is located in an area where there are several ongoing TCE groundwater investigation and potential sources that may contribute to the detected TCE levels in Little Valley Creek. Because both the upgradient and downgradient results are similar, it is likely that offsite sources contributed to the TCE detections in the Creek.** ***(USACE Worthington Steel Facility Surface Water and Sampling, Sept. 1998, Phase I/II Environmental Site Assessment Data dated July 26, 2002).***

Air (Outdoor): **The manufacturing lines are no longer operational. The facility is currently in the process of closing down all operations prior to the sale of the property. There's no record of outdoor air contamination.** ***(Phase I/II Environmental Site Assessment Data dated July 26, 2002)*.**

Air (Indoor): **There's no record of indoor air contamination. The small isolate VOC plumes are located under open areas and are not positioned beneath any buildings. Therefore, the potential risk for indoor air contamination from groundwater VOC volatilization is unlikely.**
***(Risk Assessment for Cyanide in the Vicinity of the Worthington Steel Facility Report 1999, Phase I/II Environmental Site Assessment Data dated July 26, 2002; the Preliminary Remedial Action WorkPlan dated August 14, 2002)*.**

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.

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)~~	___	___	___	___	___	___	___
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
~~Soil (subsurface e.g., >2 ft)~~				___			___
~~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.

_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): Based on historic groundwater data for the last 15 years, the TCE and cyanide plumes have remained stationary and have not migrated beyond the established boundaries. Eighty-four Lumber, the adjacent property, is connected to public water and do not utilize the groundwater for potable purposes.

[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)?

_____ 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.

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):_____

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

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 (and attach appropriate supporting documentation as well as a map of the facility):

X 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 **Worthington Steel** facility, EPA ID # **PAD 00 232 4978**, located at **Morehall Road, Route 29**, **Malvern, PA 19355** 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 10-03-02

(print) Khai M. Dao

(title) Remedial Project Manager

ORIGINAL SIGNED 05-07-98

Supervisor (signature) _____ Date 10-03-02

(print) Paul Gotthold

(title) PA Operations Branch Chief

(EPA Region or State) EPA, Region 3

Locations where References may be found:

PADEP
Environmental Cleanup Program
Lee Park Suite 6010
555 North Lane
Conshohocken, PA 19428

US EPA
Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103-2029

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.