

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: _____Mittal Steel USA - Weirton Plant_____

Facility Address: _____400 Three Springs Drive, Weirton, WV 26062-4989_____

Facility EPA ID #: _____WVD000068908_____

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, GPRAs). 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	___	___	VOCs, SVOCs, metals
Air (indoors) ²	X	___	___	Benzene, naphthalene, tetrachloroethene, TCE
Surface Soil (e.g., <2 ft)	X	___	___	VOCs, SVOCs, metals, cyanide, PCBs
Surface Water	___	X	___	(cyanide)
Sediment	___	X	___	(PCBs)
Subsurf. Soil (e.g., >2 ft)	X	___	___	VOCs, SVOCs, metals, cyanide, PCBs
Air (outdoors)	___	X	___	No known or reasonably suspected impacts above risk-based levels

___ 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):

- Groundwater has been sampled at the site since 1998 when the RFI project began. The facility was divided into 12 corrective action areas (CAAs) for the implementation of Corrective Action and RFI work has been nearly completed in two specific areas (CAA I - C & E Outfall Area, CAA II - Mainland Coke Plant). Facility-wide groundwater sampling was completed in 2003-2004 as part of the Environmental Indicator exercise. The key contaminants found to be present above MCLs, EPA Region III tapwater RBCs, surface water and sediment criteria for aquatic and human receptors are described on Table 2 of the Groundwater Environmental Indicator Document dated July 2004, and in the RFI Reports for CAAs I and II dated March 2, 2000 and February 2, 2001, respectively.
- VOCs are known to be present in groundwater at several portions of the facility where workers could be exposed via the indoor air pathway (Tin Mill, Laboratory Building, Water Treatment Plant, US Filter/Veolia Water). Soil gas/sub-slab sampling was conducted in 2004 as part of the EI exercise. Although the results were well below OSHA Permissible Exposure Limits (“PELs”), the results exceeded EPA Region III RBCs for ambient air (solely health-based and derived from residential exposure pathways) for the constituents listed above.
- Data collected during the RFI work and Interim Measures activities indicates that soils in specific portions of the site are impacted above levels considered appropriate for industrial workers and soil screening levels (SSLs) for soil transport to groundwater. The key contaminants found to be present above EPA Region III RBCs (industrial exposure) are described in Tables 2 and 3 of the April 2005 Human Health Environmental Indicator Document and in the RFI Reports for CAAs I and II dated March 2, 2000 and February 2, 2001, respectively.
- With the exception of one area of the facility (Avenue F - CAA XII) where cyanide was detected in groundwater (seeps) above continuous chronic criterion for ecological receptors, surface waters are not expected to be impacted. Based on the results of the facility-wide groundwater sampling completed for the EI exercise and the proximity of these monitoring points to surface water bodies including the Ohio River, Harmon Creek and Kings Creek, surface water and sediments are not expected to be impacted above appropriately protective risk-based levels. See GW EI Document dated July 2004.
- With the exception of one area of the facility (BOC property - CAA XI) where PCBs were detected (in 1996) in

one sediment sample from an outfall weir box above sediment screening criteria, sediments are not expected to be impacted above levels of concern. Based on the results of the facility-wide groundwater sampling completed for the EI exercise and the proximity of these monitoring points to surface water bodies including the Ohio River, Harmon Creek and Kings Creek, sediments are not expected to be impacted above appropriately protective risk-based levels. See GW and HH EI Documents dated July 2004 and April 2005.

6. Subsurface soils - see note #3 above - subsurface soil findings included in #3.

7. Outdoor air - Based on known groundwater and soil contaminant concentrations, no outdoor air concentrations are known or reasonably expected to be present above appropriately protective risk-based levels. See GW and HH EI Documents dated July 2004 and April 2005 and RFI Reports for CAAs I and II dated March 2, 2000 and February 2, 2001, respectively.

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	Yes	Yes	No	Yes	Yes		No
Air (indoors)	No	Yes		No			
Soil (surface, e.g., <2 ft)	No	Yes		Yes	Yes	Yes	
Surface Water	—	—					
Sediment	—	—					
Soil (subsurface e.g., >2 ft)		Yes		Yes			

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).
- X 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):

1. Although contaminants are present in groundwater at concentrations above appropriately protective levels at specific portions of the site, the groundwater pathway is not applicable for day care, recreational users, and food due to current and future site use as industrial. The groundwater pathway for residents is complete since a few private wells have been identified in the vicinity of the site and groundwater was found to be impacted above appropriately protective levels in specific areas within the site. The groundwater pathway for workers (environmental study, construction workers) is complete, but workers are expected to control exposure using protective gear and following site-specific health and safety plan and plant safety procedures. See Figure 1, GW EI Document dated July 2004 and HH EI Document dated April 2005.
2. The indoor air pathway is complete in certain areas of the site where routine worker activity occurs in or near locations/buildings where groundwater and subsurface soils have been shown to be impacted above levels of

concern.

3. Contaminants are present in site soils at concentrations exceeding EPA Region III RBCs based on industrial exposure and Soil Screening Levels (“SSLs”) for soil transfer to groundwater. The soil pathway is complete for onsite workers (environmental study and construction/maintenance workers), trespassers and recreational users of the Ohio River.

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”**²⁴ (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):

Exposures are not reasonably expected to be significant for the complete pathways identified in #3 based on the continued industrial operations at the site and the exposure controls that are in effect for this operating facility. Many portions of the facility are inactive, unoccupied, or infrequently visited by workers. In active operation areas and waste management areas (SWMUs), worker exposure to impacted soils (surface, subsurface) and groundwater may occur on an intermittent, infrequent and short-term basis. However, such exposure is mitigated and controlled by adherence to the requirements of the ISG Weirton Corporate Policy (Management procedures for excavation and disturbance of contaminated soil) and Health and Safety Plan. Interim measures were completed to remove contaminants present above levels of concern in several portions of the site that are used on a routine basis by onsite workers, thus providing additional assurance that worker exposures are not reasonably expected to be significant.

Residential exposure to groundwater is not expected to be significant since the groundwater data collected during the RFI and EI exercise shows that all impacted areas have been mapped out and do not extend offsite. See GW EI document dated July 2004.

Worker exposure to contaminated indoor air is not expected to be significant based on the results of the sub-slab vapor samples that were collected at specific portions of the facility where contamination is present in groundwater and/or subsurface soils.

During construction and/or remediation work (i.e., environmental study) at the site, workers are expected to control exposure to contaminated media by using personal protective gear and following site specific health and safety plan procedures, as required by the ISG Weirton Corporate Policy and associated Health and Safety Plan. See HH EI Document dated April 2005.

Although there are portions of the site where trespassers could be exposed to impacted soil and groundwater, such exposure would not be expected to be significant due to the security and access controls that are in place at the facility. Fencing, locking gates, 24-hour security patrols and physical barriers such as the Ohio River, steep terrain and highways situated along the perimeter of the facility property further preclude and minimize the significance of

any trespasser exposure to impacted soils and groundwater. In addition, signs have been posted to warn/advise any trespassers of the presence of impacted materials at certain parts of the site.

Exposure by recreational users of the Ohio River to impacted soils at portions of the site is not expected to be significant due to the security and access controls that are in place at the facility. In addition, signs have been posted to warn/advise any recreational users of the presence of impacted soils at the Browns Island portion of the site.

References - HH EI Notebook dated April 2005.

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 (and 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 Mittal Steel USA - Weirton Plant facility, EPA ID # WVD000068908, located at 400 Three Springs Drive, Weirton, WV 26062-4989 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) _____ /s/ _____ Date 9/12/05
(print) Donna M. McCartney
(title) USEPA Project Manager

Supervisor (signature) _____ /s/ _____ Date 9/12/05
(print) Robert E. Greaves
(title) Chief, General Operations Branch
(EPA Region or State) EPA Region III

Locations where References may be found:

USEPA, Region III _____
1650 Arch Street _____
Philadelphia, PA 19103 _____
ATTN: D. McCartney, 3WC23 _____

Contact telephone and e-mail numbers

(name) Donna McCartney _____
(phone #) (215) 814-3427 _____
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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.