

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

### RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)

#### Current Human Exposures Under Control

**Facility Name:** AK Steel Corporation  
**Facility Address:** One Armco Drive, Butler PA 16003  
**Facility EPA ID #:** PAD 004 325 254

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”**<sup>1</sup> 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_	___	Ongoing groundwater monitoring.
Air (indoors) <sup>2</sup>	___	_x_	___	No record of contamination. No presence of VOCs.
Surface Soil (e.g., <2 ft)	___	_x_	___	Contaminated soil excavated.
Surface Water	_x_	___	___	NPDES nitrate discharge to the Connoquenessing Creek is currently being addressed under the EPA Emergency Order on Consent issued by the Water Division.
Sediment	___	_x_	___	No record of contamination.
Subsurf. Soil (e.g., >2 ft)	_x_	___	___	Soil capped with a synthetic cap.
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):

Groundwater:

As required for the closure of the former Sludge Beds # 4, 5, 6 and the Chromium Reduction Pond (CRP), groundwater monitoring wells were installed to monitor the groundwater for constituents that were deposited in the former sludge beds and pond. The wells were placed up-gradient, down-gradient and adjacent to the units. In the past there have been an occasional detection of nickle in one of the wells. Presently, the wells do not detect levels of concern for the monitored constituents. Groundwater monitoring will continue for the next thirty years at such time the monitoring program will be re-evaluated. There are no residential wells within a two-mile radius of the facility. (EI Inspection Report 1/00, Remediation of Buried Drum Storage Area Report 12/01)

Surface and Subsurface Soil:

The PADEP supervised the closures of the former Sludge Beds, Chromium Reduction Pond (CRP), USTs, and the abandon drum area. As part of the closures, contaminated surface and subsurface soils for these units and area were excavated and disposed off-site. Confirmatory soil samples were conducted to ensure that soil excavation met the clean-up goals. The excavated areas were backfilled with clean soil. In addition to backfilling portions of the former sludge beds and complete backfilling of the CRP, these units were also capped with a synthetic cover and re-vegetated. (EI Inspection Report 1/00, Remediation of Buried Drum Storage Area Report 12/01)

Surface Water:

There have been violations regarding the NPDES discharge of elevated nitrate levels (10-50 mg/L) into the Connoquenessing Creek. The nitrates are a waste byproduct of the pickling process used to scour stainless. The Borough of Zelienople uses the Creek as a backup water supply during periods of low water flow in Scholar’s Run,

the primary source. In 2001, EPA issued an Emergency Order on Consent to AK Steel to address and eliminate the nitrate discharge. Pursuant to the Order, A.K. Steel has temporarily installed a reverse osmosis filter system at the Zelianople Drinking Water Treatment Facility to treat the nitrate until the facility completes the conversion of its pickling lines from the nitrate acid process to a hydrogen peroxide process. The conversion will eliminate the discharge of nitrate from the facility and is scheduled to be completed by October 2002. In addition, AK Steel completed a well survey along the 20 mile stretch of the Connuquenseeing Creek from the facility to the Borough of Zelianople to identify residential wells near the Creek that may be impacted by the nitrate discharge. The identified wells were sampled and none of the wells detected levels of concern for nitrate. EPA Water Division is overseeing the completion of the tasks pursuant to the Order. (EI Inspection Report 1/00, EPA Emergency Order on Consent, Docket No. III-2000-102-DS)

Sediment:

There are no records of suspected releases that are above protective risk-based “levels” by the facility. (EI Inspection Report, 12/00)

Air (indoor):

There are no records of suspected releases that are above protective risk-based “levels” by the facility. The AK Steel facility produces flat-rolled chrome stainless steels, specialty stainless sheet and trip steels, electrical steels and galvanized steels. VOCs are not main component of the manufacturing process and therefore, do not pose an indoor concern from volatile organics.

Air (outdoor):

In the past several residents complained about dust on their property that they believe came from the facility. The PADEP investigated the complaints and concluded that the dust on the residents’ property did not come from the facility. The facility has several emission control devices with baghouse collection systems to control and monitor their emissions.

Footnotes:

<sup>1</sup> “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).

<sup>2</sup> 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)

<b>“Contaminated” Media</b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
<b>Groundwater</b>	___	___	___	___			___
<b>Air (indoors)</b>	___	___	___				
<b>Soil (surface, e.g., &lt;2 ft)</b>	___	___	___	___	___	___	___
<b>Surface Water</b>	<u>_No_</u>	<u>_No_</u>			<u>_No_</u>	<u>_No_</u>	<u>_No_</u>
<b>Sediment</b>							
<b>Soil (subsurface e.g., &gt;2 ft)</b>				<u>_No_</u>			<u>_No_</u>
<b>Air (outdoors)</b>	___	___	___	___	___		

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):

Subsurface Soil (>2 ft.): The remaining contaminated soil in the sludge beds has been capped and therefore, eliminates an exposure pathway to human receptors. (EI Inspection Report 1/00, Remediation of Buried Drum Storage Area Report 12/01)

Surface Water: A.K. Steel has temporarily installed a reverse osmosis filter system at the Zelenople Drinking Water Treatment Facility to treat the nitrate until the facility completes the conversion of its pickling lines from the nitrate acid process to a hydrogen peroxide process. The conversion will eliminate the discharge of nitrate from the facility and is scheduled to be completed by October 2002. In addition, AK Steel completed a well survey along the 20 mile

stretch of the Connuquenseeing Creek from the facility to the Borough of Zelenople to identify residential wells near the Creek that may be impacted by the nitrate discharge. The identified wells were sampled and none of the wells detected levels of concern for nitrate. EPA Water Division is overseeing the completion of the tasks pursuant to the Order. (EI Inspection Report 1/00, EPA Emergency Order on Consent, Docket No. III-2000-102-DS)

<sup>3</sup> 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”**<sup>4</sup> (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):\_

<sup>4</sup> 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):





