

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

**Facility Name:** Industrial Wastes, Inc.  
**Facility Address:** P.O. Box 406, Darlington, PA 16115  
**Facility EPA ID #:** PAD 00 062 1839

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 Controls" 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  
Environmental Indicator (EI) RCRIS code (CA725)**

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	<u>X</u>	___	___	<b>Chloride, sulfate, manganese and iron exceed MCLs at 25 Pa. Code Chapter 250 in groundwater downgradient from the impoundment.</b>
Air (indoors) <sup>2</sup>	___	<u>X</u>	___	No indoors areas of concern at site.
Surface Soil (e.g., <2 ft)	___	<u>X</u>	___	Seep collection remediation by IWI in 2001 remedied this problem.
Surface Water	___	<u>X</u>	___	DEP sampling in 2000 confirmed no surface water contamination from IWI.
Sediment	___	<u>X</u>	___	DEP sampling in 2000 confirmed no sediment contamination from IWI.
Subsurface Soil (e.g., >2 ft)	___	<u>X</u>	___	Seep collection remediation by IWI in 2001 avoided this potential problem.
Air (outdoors)	___	<u>X</u>	___	None – inorganic contaminants not volatile.

\_\_\_ If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient support 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):**

<b>Contaminant</b>	<b>25 Pa Code Ch. 250 MCL</b>	<b>IWI Highest Downgradient Concentration*</b>
Chloride	250mg/l	402mg/l (Butler SS well 4-DG-BS)
Sulfate	500mg/l	1260mg/l (Butler SS well 6-DG-BS)
Manganese	50ug/l	11,200ug/l (Freeport SS well 5-DG-FS)
Iron	300ug/l	6100ug/l (Freeport SS well 5-DG-FS)

\* Data from 2<sup>nd</sup> quarter 1999 IWI report.

**Attached to this report are copies of the 2000 DEP sample test results and 2001 IWI seep remediation report and associated correspondence supporting these determinations.**

<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.

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

Page 3

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><u>"Contaminated Media"</u></b>	<b><u>Residents</u></b>	<b><u>Workers</u></b>	<b><u>Day-Care</u></b>	<b><u>Construction</u></b>	<b><u>Trespassers</u></b>	<b><u>Recreation</u></b>	<b><u>Food<sup>3</sup></u></b>
Groundwater	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>NO</u></b>	<b><u>NO</u></b>	<b><u>NO</u></b>	<b><u>NO</u></b>	<b><u>NO</u></b>
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.

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):**

**Private wells C-12 and C-20, located hydrogeologically downgradient of IWI's facility exhibit chloride, manganese and iron levels above the referenced MCLs. However, the chloride in well C-20 is not related to the calcium chloride of IWI's leachate, based on the hydrochemical analysis and trilinear diagram evaluation prepared by IWI in September 2002. Calcium is a signature indicator of the type of chloride in IWI's leachate so if it is not the major cation type in a water supply, there is an indication that elevated chloride is not related to IWI. IWI's analyses show that sodium is the major cation in this water supply. While C-12 shows more of a calcium cation signature, it is not as great as the IWI leachate and has some chemical signatures different from the IWI leachate (e.g. C-12 has relatively high bicarbonate and non-detectable to trace ammonia levels compared to IWI's leachate). Both wells are believed to be drilled into the same formation (Butler Sandstone). However, C-12 is located approximately 300 feet hydrogeologically downgradient of IWI's leachate facility, whereas C-20 is located over 1000 feet in a down/sidegradient location from the leachate facility. However, these private wells are not being used for drinking water and IWI has been and will continue to supply bottled water to the owners of these wells.**

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

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

Page 4

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant**" (i.e., potentially<sup>4</sup> "unacceptable" levels) 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):**

**Both private wells C-12 and C-20 have not and are not being used as a potable water supply. IWI continues to provide bottle water for consumption. Therefore although there may be completed exposure pathway from the IWI leachate facility area to well C-12, there is no conclusive evidence to demonstrate that IWI has impacted this well and it is not being used for drinking water. These wells only exceed secondary MCLs, not primary drinking water MCLs for metals (like cadmium, chromium and lead – all related to the wastes disposed of by IWI).**

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<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.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 5

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

**NOT APPLICABLE**

\_\_\_\_\_ If yes (all "significant" exposures have been shown to be within acceptable limits) – continue and enter a "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 a "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): \_\_\_\_\_

