

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**  
Interim Final 2/5/99  
**RCRA Corrective Action**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
**Current Human Exposures Under Control**

<b>Facility Name:</b>	Baldwin Hardware Corporation
<b>Facility Address:</b>	841 E. Wyomissing Blvd., Reading, PA 19612
<b>Facility EPA ID #:</b>	PAD002350833

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, 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).

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			GW sampling 1988 - 2006
Air (indoors) <sup>2</sup>		X		GW sampling 1988 - 2006
Surface Soil (e.g., <2 ft)		X		impoundments closure
Surface Water		X		GW sampling 1988 - 2006
Sediment		X		GW sampling 1988 - 2006
Subsurf. Soil (e.g., >2 ft)		X		impoundments closure
Air (outdoors)		X		GW sampling 1988 - 2006

\_\_\_\_\_ 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):**

**Rationale:**

Facility Background:

The Baldwin Hardware Corporation (Baldwin) facility primarily manufactures solid brass mortise locks, forged materials and bathroom and desk accessories. Historically, plant operations included electroplating, polishing and lacquer clear coating.

Two former unlined surface impoundments (drying beds) were used to store sludge from the wastewater treatment system. These impoundments were the source of groundwater contamination on the site. Closure of the impoundments occurred between 1983 and 1984; and included excavation of contaminated soil and installation of a groundwater monitoring system. Clean closure of the impoundments soils was certified by Pennsylvania’s RCRA program July 20, 1984. On April 13, 1987, EPA Region III issued a RCRA 3008(h) Consent Order requiring Baldwin to establish a pump and treat system for contaminated

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.

groundwater. Baldwin has been recovering and treating the groundwater since April 1988.

Groundwater

Groundwater contamination exists on site. The main constituents of the contamination from the former impoundments are halogenated hydrocarbons, primarily trichloroethylene (TCE) and its associated degradation products. Currently, TCE is the only halogenated hydrocarbon found above its health-based standard. In April 2006, the maximum TCE concentration found was 47.6 ppb and the drinking water standard is 5 ppb.

The groundwater pump and treat system currently consists of three pumping wells and two back-up pumping wells, along with four monitoring wells and ten piezometers. There are also three offsite wells which have been used to provide water level measurements. The recovery wells pump continuously at a rate of 300 gallons per minute. The recovered groundwater is treated in an air-stripping tower and then used for plant processes. Any excess treated water is discharged with other plant wastewater through an NPDES permit issued by PADEP.

The water level measurements have consistently shown that the pumping wells are keeping the groundwater contamination on-site. The contaminants are not flowing off-site, nor to the Schuylkill River, which is less than half a mile to the northeast. Baldwin will continue pumping and will continue to keep the contaminant plume on-site.

Groundwater contamination has shown a steady reduction since the recovery system was installed in 1988.

**TCE Concentration in ppb. Drinking water standard is 5 ppb.**

Recovery Well	03/1988	03/1990	04/1998	04/2006
PS-1	4900	900	232	12.4
PS-2	1100	760	93.1	13.9
PS-3	97	4	ND	2.5
PW-4	1600	270	428	47.6
PW-5	4000	600	524	38.6

Benzene

Benzene has been found in the groundwater, in an upgradient monitoring well, OW-3D since 1993. Concentration has varied from non-detection to 79.7 ppb over the years. The monitoring well is the northwestern-most corner of the site and there is no on-site source or industrial activity which would explain the presence of benzene. Therefore, it is believed that the benzene is from an off-site source. As benzene is a commonly found contaminant, more research will be needed to find the source. Historically, benzene has not been found above drinking water standards in any other well, therefore its presence in this isolated location is not considered a concern for human health exposure.

**References:**

1. Quarterly Monitoring Report, Baldwin Hardware Corporation, prepared by Environmental Resources Management, Inc., dated - July 2006
2. Groundwater Investigation, Baldwin Hardware Manufacturing Company, prepared by Keck Consulting Services, Inc., dated November 1984
3. USEPA Region III Administrative Order on Consent, Baldwin Hardware Corporation, dated April 13, 1987
4. Purge and Treatment Certification Report, prepared by Keck Consulting Services, Inc., dated September 2, 1988
5. Comprehensive Groundwater Monitoring Evaluation, Baldwin Hardware Corporation, prepared by PADEP, dated 1993

6. Comprehensive Groundwater Monitoring Evaluation, Baldwin Hardware Corporation, prepared by PADEP, dated 1996
7. Comprehensive Groundwater Monitoring Evaluation, Baldwin Hardware Corporation, prepared by PADEP, dated 1999
8. Comprehensive Groundwater Monitoring Evaluation, Baldwin Hardware Corporation, prepared by PADEP, dated 2002

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>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	___	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):**

**Rationale:**

There are no complete pathways for contact to the groundwater.

1. Groundwater is not used for potable purposes on site.
2. The recovery wells are keeping the contaminant plume from going off-site to neighboring properties and the Schuylkill River. This has been consistently shown by water level measurements both on-site and off-site.

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

**References:**

1. Quarterly Monitoring Report, Baldwin Hardware Corporation, prepared by Environmental Resources Management, Inc., dated - July 2006
2. Groundwater Investigation, Baldwin Hardware Manufacturing Company, prepared by Keck Consulting Services, Inc., dated November 1984
3. USEPA Region III Administrative Order on Consent, Baldwin Hardware Corporation, dated April 13, 1987
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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):**

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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.

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):**



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 Baldwin Hardware Manufacturing Corporation facility, EPA ID # PAD002350833, located at 841 E. Wyomissing Blvd., Reading, Pennsylvania, 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	
	(print)	Linda A. Matyskiela		09/15/2006
	(title)	Project Manager		

Supervisor	(signature)		Date	
	(print)	Paul Gotthold, Chief		09/18/2006
	(title)	PA Operations Branch		
	(EPA Region or State)	EPA Region III		

<b>Locations where References may be found:</b>
All References are located at:
EPA Region III WCMD Records Center 1650 Arch Street Philadelphia, PA 19103
Contact Linda Matyskiela 215-814-3420

**Contact telephone and e-mail numbers:**

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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.**