

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

September 2008

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

Current Human Exposures Under Control

Facility Name: The Babcock & Wilcox Company EAF Dust Landfill
Facility Address: 6th & Mount Streets., Koppel, PA 16136
Facility EPA ID #: PAD987335379

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 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"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	<u> </u>	<u>X</u>	<u> </u>	<u>None detected.</u>
Air (indoors) ²	<u> </u>	<u>X</u>	<u> </u>	<u>N/A</u>
Surface Soil (e.g., <2 ft)	<u> </u>	<u>X</u>	<u> </u>	<u>None detected.</u>
Surface Water	<u> </u>	<u>X</u>	<u> </u>	<u>None detected.</u>
Sediment	<u> </u>	<u>X</u>	<u> </u>	<u>N/A</u>
Subsurface Soil (e.g., >2 ft)	<u> </u>	<u>X</u>	<u> </u>	<u>None detected.</u>
Air (outdoors)	<u> </u>	<u>X</u>	<u> </u>	<u>None detected.</u>

 X 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.

 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):

References:

Babcock & Wilcox Power Generation Group. June 2, 2008. Groundwater Monitoring Results – 1st Semi-annual 2008 Sampling Event (May 6, 2008).

Pennsylvania Department of Environmental Protection. December 20, 2006. Class 1 minor modification to Solid Waste Permit No. PAD987335379 for the post closure care of the Babcock and Wilcox Koppel Landfill.

Correspondence dated from July 17, 1989 through November 8, 1989 between DEP and B&W in regards to closure of the outdoor waste pile.

See following page for response to "Rationale".

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.

Response to Question 2, Current Human Exposures Under Control, “Rationale and References”:

Groundwater: Babcock & Wilcox (B&W) has been monitoring this site via the Homewood sandstone aquifer since the site consisted of a pile of untreated electric arc furnace (EAF) dust in 1982. After the pile was removed and the area decontaminated, the landfill was constructed and the treated EAF dust disposed. Since that time there has been no indication of groundwater impacts from the landfill. Based on the most recent groundwater sampling results, cadmium and lead (the two parameters that are the basis for classifying B&W’s EAF dust as hazardous waste) were not detected at any site well, and have not been detected in the groundwater since the original hazardous waste permit was issued in 1991. Additionally, the general groundwater quality parameters (magnesium, potassium and zinc) analyzed during the latest sampling event on May 6, 2008 exhibited concentrations below the statistically based Upper Concentration Limits (UCLs) established in their solid waste permit. Parameter concentrations above these UCLs would be an indication of potential landfill impact to groundwater. No such exceedances have occurred. 2008 was the 26th year of monitoring in which the hazardous constituents of concern (cadmium and lead) have remained near or below their respective detection limits. With the EAF dust now contained in a RCRA-engineered landfill and capped, it is unlikely that there will be any future significant concentration increases of these parameters.

Air (indoors): There are no indoor components to this facility.

Soil (surface & subsurface): Air pollution control baghouse dust collected from B&W’s electric furnace operation was pelletized and stored in an unlined outdoor waste pile in a former on-site quarry area, overlapping in the location of the current closed landfill. Air pollution control dust from the primary production of steel in electric furnaces is classified as hazardous waste by EPA and DEP due to its metal content (waste code K061, electric arc furnace (EAF) dust). The pile was sitting on a heavy clay base, a minimum of 5 feet thick. In 1988 the Department approved a Closure Plan for removal of this dust pile and contaminated subsoils (approximately 50,000 cubic yards). The EAF dust pile was removed and placed indoors onsite. As part of the closure plan, a sampling plan for the soil under the pile was developed. Samples were taken at approximately 2 inches from the surface and repeated at a depth of 24 inches. Both a TCLP analysis and total constituent analysis were performed for cadmium, chromium, lead, and nickel. The results were compared to the RCRA toxicity characteristic limits and showed that some areas still had residual concentrations of contaminants. DEP required the removal of 2 feet of soil in those areas in combination with continued groundwater monitoring. B&W certified that they removed in excess of 2 feet of soil and in some areas as much as 9 feet. Closure was completed in November, 1989. In December, 1989, B&W submitted a permit application for the chemical and physical stabilization of the EAF dust pile and subsequent disposal of the waste in a landfill to be constructed at the former waste pile area. The landfill liner system consists of a 2-foot thick clay layer plus 2, 60 mil thick HDPE geomembranes which should contain any leachate generated from the waste. Additionally, the landfill has a double cap system including a 2 foot thick clay layer and 60 mil thick low density polyethylene geomembrane which will impede infiltration that could potentially carry contaminants to the soil. Surface or subsurface soil contamination is not a concern at this time.

Surface water: There are no streams located onsite. The area is graded to prevent stormwater drainage from entering the landfill boundary. A surface water collection ditch surrounds the perimeter of the landfill and directs run-off away from the disposal area. Leachate is collected via the leachate collection and detection systems and directed to a storage container. A 4,000 gallon aboveground storage serves as a backup for the collection container. Annual generation is estimated between 20 and 40 gallons. Surface water contamination is not a concern because stormwater is prevented from coming into contact with the waste, and leachate is properly managed.

Sediment: There is no sediment in the vicinity of the landfill that would be affected.

Air (outdoors): The landfill is closed and has a double cap system including a 2 foot thick clay layer and 60 mil thick low density polyethylene geomembrane. The landfill also has a vegetative cover. There are currently no dust or particulate emission concerns, although dust control measures were implemented during waste transport, treatment, and disposal operations. No gas monitoring wells were required at this facility due to the nature of the waste.

**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)

<u>"Contaminated Media"</u>	<u>Residents</u>	<u>Workers</u>	<u>Day-Care</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food</u> ³
Groundwater	___	___	___	___			___
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.

_____ 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):

³ 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., potentially⁴ "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)?

_____ 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.

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?

_____ 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): _____

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

Page 6

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 Babcock & Wilcox Company EAF Dust Landfill, EPA ID PAD987335379 located at 6th & Mount Streets, Koppel, PA 16136 under current and reasonably expected conditions.

X 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:

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Date 09/30/2008

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Date 09/30/2008

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Locations where References may be found:

References have been appended to the Environmental Indicator report and can also be found at PA DEP's Pittsburgh office and US EPA's Region III office.

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.