

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: Westinghouse Airbrake Company
Facility Address: 1001 Airbrake Avenue Wilmerding, Pennsylvania 15148
Facility EPA ID #: PAD004341269

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”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			Exceeds non-residential MSCs for VOCs. Presence of TPH and NAPL.
Air (indoors) ²	X			Potential adverse human health effects.
Surface Soil (e.g., <2 ft)	X			Historic fill throughout site. Contamination detected.
Surface Water		X		Trace contamination possible but below surface water quality criteria.
Sediment		X		No record of contamination.
Subsurf. Soil (e.g., >2 ft)	X			Contamination above non-residential MSCs.
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: Five underground storage tanks (USTs) were removed in 1987 and releases associated with these USTs were the subject of groundwater remediation beginning in 1988 that continued until 2008. The two primary categories of

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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environmental concern at the site included volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) dissolved in groundwater and the presence of light non-aqueous phase liquid (LNAPL). A Remedial Investigation (RI) report was submitted to PADEP on May 15, 2001 to address the attainment of site-specific standards under Act 2. Based on all of the previous investigations, it was determined that several site-related constituents of interest (COIs) were present at concentrations that exceeded the Medium Specific Concentrations (MSCs). The results of groundwater sampling identified seven COIs that exceeded their respective non-residential MSCs for used aquifers. These COIs were 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE) (total), 1,1-dichloroethane (1,1-DCA), trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), and vinyl chloride.

Wabtec continues to be responsible for the investigations and remediation of the historical environmental contamination at Lot 1 under a Consent Order and Agreement (COA) entered into in 2001. Under a Buyer-Seller Agreement dated December 18, 2001, Wabtec retained responsibility for addressing historical impacts identified in soil and groundwater at Lot 1.

Indoor Air: A Human Health and Ecological Risk Assessment report was conducted for Lot 1 and Lot 2 (i.e., the entire historical WABCO facility) in 2005. The results of the human health risk assessment indicated that potential adverse effects from exposure to non-carcinogenic and carcinogenic COIs exist for the indoor site worker in the central yard area of the property via the potential for vapor intrusion and inhalation of these COIs in indoor air. The final human health risk assessment submitted to the PADEP in February 2007 and approved by the agency in March 2007 identified seven VOCs as COIs with respect to potential vapor intrusion from soil and/or groundwater to indoor air: benzene, 1,1-DCA, cis-1,2-dichloroethene (cis-1,2-DCE), PCE, 1,1,1-TCA, TCE, and vinyl chloride. In addition, LNAPL was detected on the groundwater surface in two monitoring wells (MW-30S and MW-28S) at the site.

Initial results of conservative vapor intrusion modeling conducted as part of the human health risk assessment indicated that further evaluation of potential vapor intrusion was necessary. Therefore, the human health risk assessment recommended collecting and analyzing soil-gas samples in areas of the site with soil and/or groundwater impacted by VOCs and the two areas where LNAPL was present in monitoring wells. Four soil-gas monitoring points were installed in the Central Yard and two monitoring points were installed in the Former Foundry Area. Two rounds of soil-gas samples (representing winter and spring) were collected and analyzed for the specified COIs.

Soil: Wabtec continues to be responsible for the investigations and remediation of the historical environmental contamination at Lot 1 under a COA entered into in 2001. Under a Buyer-Seller Agreement dated December 18, 2001, Wabtec retained responsibility for addressing historical impacts identified in soil and groundwater at Lot 1.

A Post-Remediation Care Plan is expected to be implemented to remain protective of human health for the remaining contaminated subsurface soil and groundwater at Lot 1. The plan required that institutional controls be implemented at the site to ensure that the Site-specific standards for soil and groundwater are maintained. These institutional controls would include deed notices that identify areas of the site with impacted soil, groundwater and LNAPL, and deed restrictions that prohibit the use of groundwater at Lot 1.

At a minimum and until the deed notices and deed restrictions are recorded to the property deeds, post-remediation care would consist of performing annual audits to ensure the intent of the restrictions are being followed. If additional post-remediation care activities are deemed necessary after completing site remediation, an amended Post-Remediation Care Plan would be submitted with the Final Report.

Surface Water and Sediment: Cracks in the Turtle Creek flood control wall have been repaired. Pennsylvania Single Discharge Waste Load Allocation Program for Toxics and Other Substances (PENTOXSD) modeling performed as part of the risk assessment indicated that groundwater concentrations of site-related chemicals via diffuse flow are estimated to not exceed surface water quality criteria in Turtle Creek as discussed in the 2005 human health risk assessment.

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In the human health risk assessment submitted to the PADEP in 2005, groundwater modeling demonstrated that site-related dissolved VOCs and polynuclear aromatic hydrocarbon (PAH) compounds were not adversely affecting surface water quality in Turtle Creek. However, the model indicated that ambient water quality criteria could be exceeded in Turtle Creek if the concentration of 1,1-DCE exceeded 148 microgram per liter ($\mu\text{g/L}$) at one compliance well (MW-25D).

Therefore, quarterly monitoring at monitoring well MW-25D for up to two years was required to demonstrate attainment of ambient water quality criteria for 1,1 -DCE. If the concentration of 1,1-DCE at MW-25D remained stable or indicated a decreasing trend, no further evaluation would be necessary. However, if concentrations of 1,1-DCE at MW-25D increased, a re-evaluation of the potential effect on the ambient water quality would be necessary. In January 2007, quarterly groundwater sampling was initiated to demonstrate attainment of ambient water quality criteria. Groundwater samples were collected to evaluate 1,1-DCE concentrations at MW-25D. The last quarterly sampling event, which completed the eight quarters of monitoring, was performed on November 5, 2008. The Final Report was submitted to PADEP and approved in December 2010. Attainment for both site specific, non-residential soil and groundwater were illustrated. 1,1,-DCE results for all eight sampling events were consistently well below the site specific remediation goal of 148 $\mu\text{g/L}$.

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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	<u>Residents</u>	<u>Workers</u>	<u>Day-Care</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food</u> ³
Groundwater	no	no	no	no	no	no	no
Air (indoors)	no	yes	no	yes	no	no	no
Soil (surface, e.g., <2 ft.)	no	yes	no	yes	no	no	no
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft.)	no	no	no	yes	no	no	no
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):

Groundwater: The human health risk assessment conducted in 2005 evaluated the potential risks associated with chlorinated VOC-impacted groundwater at the site and concluded that the direct contact pathway would be eliminated through deed restriction to prevent groundwater use.

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

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Indoor Air: The results of the final human health risk assessment submitted to the PADEP in February 2007 indicated that potential adverse effects from exposure to non-carcinogenic and carcinogenic COIs (benzene, 1,1-DCA, cis-1,2- DCE, PCE, 1,1,1-TCA, TCE, and vinyl chloride) exist for the indoor site worker in the central yard area of the property via the potential for vapor intrusion and inhalation of these COIs in indoor air. In addition, LNAPL was detected on the groundwater surface in two monitoring wells at the site.

Soil: Outdoor and indoor site workers and construction/excavation workers were included in the final human health risk assessment submitted to the PADEP in February 2007 as human receptors associated with potentially complete exposure pathways. The outdoor site worker was evaluated for potential direct contact with surface soil (incidental ingestion, dermal contact, and inhalation of particulates). The construction/excavation worker was evaluated for potential direct contact with surface and subsurface soil.

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (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.”

 X 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):

Indoor Air: The risk analyses completed as part of the 2005 human health risk assessment indicated that the potential for adverse noncarcinogenic effects for all constituents, exposure pathways and receptors met the acceptable level (i.e., below the benchmark value of 1) with the exception of the indoor site worker scenario in the central yard. Theoretical excess lifetime cancer risks also met acceptable levels (less than 1×10^{-4} for cumulative effects) for all receptors except the indoor site worker in the central yard and former foundry area. COIs and potential exposures of potential concern were cis-1,2-DCE and TCE in the central yard for the current and hypothetical future indoor worker scenarios and TCE in the former foundry area for the hypothetical future indoor worker scenario only. The report recommended that to more precisely evaluate the model-predicted elevated hazard indices and potential cancer risks for the indoor worker scenario, soil-gas or indoor-air samples should be collected and analyzed. The report recommended as an alternative that buildings could be modified to maintain positive pressure in their lowest elevations.

Soil: The evaluation of exposure to lead in surficial soil indicated that estimated blood lead concentrations resulting from exposure to the contaminated soil were projected to be below the benchmark value of 10microgram per deciliter ($\mu\text{g}/\text{dL}$) for workers in the central yard and former foundry area, but that concentrations in the western yard could potentially exceed this target in two small areas. To address the potential for elevated blood lead concentrations, the report recommended mitigation of surficial soil at two locations.

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?

 X 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):

Indoor Air: The following conclusions were made upon recalculating the risks using the site-specific soil-gas data:

- COI-impacted soil and groundwater in the Central Yard and Former Foundry Area do not represent an unacceptable risk to human health for the potential vapor intrusion into indoor air exposure pathway based on current and hypothetical future buildings in these areas of the site.
- LNAPL present in monitoring wells MW-28S and MW-30S, which are located in the Former Foundry Area and Central Yard, respectively, does not represent an unacceptable risk to human health for the potential exposure pathway of vapor intrusion into indoor air based on current and hypothetical future buildings in these areas of the site.

Additionally, portions of Lot 1 have undergone soil remediation to meet non-residential site-specific standards. Groundwater remediation (pump-and-treat) with LNAPL removal was conducted over several years (from 1989 until 2008) and groundwater monitoring continued in October 2009. Surface soil remediation for Lot 1 was conducted in 2009. A Post-Remediation Care Plan was implemented to ensure that the property remains protective of human health and the environment.

As part of the Final Report approved by PADEP, the environmental covenants identify areas of the property where LNAPL is present as well as areas where soil and groundwater still contain concentrations of metals, PAHs, and/or VOCs above non-residential MSCs. As per the environmental covenants, the property is to be used solely for nonresidential purposes. Groundwater will not used for potable or agricultural purposes. In addition, a vapor barrier or soil-gas mitigation system must be incorporated for any future building constructed within 100 feet of the area of soil and/or groundwater impacted by VOCs. All excavated materials must be managed, transported, and disposed in compliance with all applicable federal, state, and local regulations.

Therefore, it was concluded that the inhalation of COIs as a result of vapor intrusion into indoor air from COI- impacted soil and groundwater and LNAPL is no longer an exposure pathway of concern.

Soil: The risk analyses indicated that the potential for adverse noncarcinogenic effects for all constituents, exposure pathways and receptors met the acceptable level (i.e., below the benchmark value of 1) with the exception of the indoor site worker inhalation of VOCs via vapor intrusion scenario in the central yard. Similarly, theoretical excess lifetime cancer risks also met acceptable levels (less than 1×10^{-4} for cumulative effects) for all receptors except the indoor site worker inhalation of VOCs via vapor intrusion scenario in the central yard and former foundry area.

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In area D3, 68 tons of soil was removed in January 2009 and an additional 20 tons were removed in March 2009. Excavation events removed 20 lbs of lead from Area B3 and 2,281 pounds of lead were removed from Area D3. A post-remediation human health risk assessment was performed and confirmation sampling demonstrated that the direct contact exposure route was eliminated.

The Final Report concerning the remediation of site soil and groundwater contaminated with heavy metals, solvents, BTEX, and PAHs was submitted to the PADEP on October 7, 2010 and approved by PADEP on December 29, 2010. The approval noted that the site had attained site- specific, non-residential standards for all identified COIs in soil and/or groundwater. A post-remediation human health risk assessment was performed and confirmation sampling demonstrated that the direct contact exposure route was eliminated.

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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):

 X 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 Westinghouse Airbrake Company facility, EPA ID # PAD004341269, located at 1001 Airbrake Ave Wilmerding, PA 15148 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) /Griff E. Miller/ Date 1/24/12
(print) Griff Miller
(title) Remedial Project Manager

Supervisor (signature) /Paul Gotthold/ Date 1/24/12
(print) Paul Gotthold
(title) Associate Director
(EPA Region or State) EPA Region 3

Locations where References may be found:

USEPA Region III Waste and Chemical Mgmt. Division 1650 Arch Street Philadelphia, PA 19103	PADEP South West Regional Office 400 Waterfront Drive Pittsburgh, PA 15212
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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.