

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: Berkley Products Company
Facility Address: 405 South 7th Street., Akron, Pennsylvania 17501
Facility EPA ID #: PAD003003894

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).

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			See Rationale and References Below
Air (indoors) ²	x			“
Surface Soil (e.g., <2 ft)		x		“
Surface Water		x		“
Sediment		x		“
Subsurf. Soil (e.g., >2 ft)	x			“

Y

Air (outdoors)		x		“
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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.

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):

Unless otherwise noted, the references for the rationale presented below are as follows:

(1) Berkley Products Final Characterization Report (Amec, August 13, 2004)(prepared for Pennsylvania Department of Environmental Protection (PADEP))

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(2) Berkley Products Soil Gas and Ambient Air Sampling and Analysis (Lockheed Martin, July 21, 2005)(prepared for U.S. Environmental Protection Agency)

Groundwater

Several volatile organic compounds (VOCs) have been detected in groundwater downgradient of the facility. The same VOCs were not detected in upgradient wells or were detected at substantially lower concentrations. The VOCs (and the levels detected in downgradient wells) include the following: trichloroethene (TCE)(260ug/l), cis-1,2-dichloroethene (170ug/l), vinyl chloride (47ug/l), chlorobenzene (940ug/l), ethylbenzene (3700ug/l), toluene(12,000ug/l), xylenes (24,000ug/l) and benzene (15ug/l). All of these VOCs were detected at levels exceeding federal Maximum Contaminant Levels (MCLs) for public water supplies.(1)

Air (indoors)

TCE was detected in the indoor air of six (6) residences at estimated concentrations ranging from 1.6 ug/m³ to 21.8 ug/m³.(1) TCE was also detected in both soil gas samples collected below the concrete slab foundations of these residences in 2005. The detected TCE concentrations in the two subslab soil gas samples were 120 ug/m³ and 260ug/m³.(2) Available data regarding the groundwater flow directions and the results of piezometer and groundwater seep sampling indicate that TCE from the facility is likely to be present in groundwater migrating under four (4) residences where TCE was detected in indoor air and/or subslab soil gas samples. (1) The detected concentrations of TCE in one residence were 11.6 ug/m³ (in 2003) and 21.8 ug/m³ (in 2004). (1) The latter concentration exceeds the Pennsylvania's Statewide Health Standard for TCE in residential indoor air of 12ug/m³.

Surface Soil

Available information does not indicate or suggest that surface soils (e.g., < 2' below ground surface) at the facility are contaminated above protective risk-based levels.

Surface Water

Available information does not indicate or suggest that surface water adjacent to the facility is contaminated above protective risk-based levels.

Sediment

Available information does not indicate or suggest that sediment in surface water is contaminated above protective risk-based levels.

Subsurface Soil

Available soil sampling data indicates that subsurface soil (e.g., >2') in the South Yard area of the facility is contaminated with TCE above PA Statewide Health Standards protective of used aquifer quality. The subject levels of TCE were detected at 4' to 7' in depth and ranged in concentration up to 10mg/kg.(see PADEP Memo Re: Berkley Products, February 6, 2002 and Analytical Results for Berkley Products (UAI Environmental, February 13, 2002)). In addition, soil gas sampling next to the primary building of the facility detected up to 10.9mg/m³ of TCE in soils at 8' in depth, suggesting these soils may also be contaminated above the subject levels protective of used aquifer quality.(1)

Air (outdoors)

Available sampling data does not indicate or suggest that releases at the facility have contaminated outdoor air above protective risk-based levels.(1)

Footnotes:

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

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):

Unless otherwise noted, the references for the rationale presented below are as follows:

- (1) Berkley Products Final Characterization Report (Amec, August 13, 2004)(prepared for Pennsylvania Department of Environmental Protection (PADEP))
- (2) Berkley Products Soil Gas and Ambient Air Sampling and Analysis (Lockheed Martin, July 21, 2005)(prepared for U.S. Environmental Protection Agency)

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Groundwater

A PADEP survey of groundwater use around the facility found the majority of residences and other properties around the facility are serviced by public water supply. All residences and properties immediately downgradient of the facility are known to be serviced by a public water supply. The survey did identify a group of private wells downgradient of and within approximately 1000 feet of the facility. (Telefacimile from PADEP to EPA Re: Private wells around Berkley Products Facility, December 9, 2003) While the subject wells were within areas where available data did not suggest potential impacts by the facility, the PADEP sampled representative wells from this group and found no contaminants associated with the facility were present in the subject wells (1). This available information indicates the pathway between groundwater and groundwater users in the area is incomplete. There also is no available information which would suggest that groundwater is used for watering of food crops.

Air (indoors)

As noted above under (2), available data indicates that TCE released by the facility is present in groundwater and has migrated as a vapor to the indoor air of several residences. To date, indoor air of the facility has not been sampled. Based on available information, it is presumed that TCE is likely to have migrated to the indoor air of the facility, which is active and occupied by workers. Available information does not suggest that any other buildings in the area may have been impacted.

Soil (subsurface, e.g., >2')

As noted under (2) above, subsurface soils in the South Yard area of the facility are known to contain TCE at levels which exceed PA Statewide Health Standards protective of aquifer quality. In addition, soil gas data suggest that subsurface soils immediately adjacent to the facility may also present a threat to used aquifer. There are no physical or institutional controls to prevent contact with the soils in either of these areas. However, available information does not suggest there has been any human contact with these subsurface soils or that such contact would be expected under current use conditions. It is notable that, while the soils may present a threat to aquifer quality, in no case have the detected levels exceeded 10mg/kg. PADEP's Statewide Health Standard for direct contact with TCE contaminated subsurface soils in a non-residential setting is 1100mg/kg.

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

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.”

- ✓ 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

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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):

Air (indoors)

TCE has been detected in one occupied residence at levels of 11ug/m³ and 20ug/m³ (during two (2) different sampling events). PADEPs Statewide Health Standard in indoor air is 12ug/m³. In addition, TCE has been detected in the indoor air of three immediately adjacent residences at levels ranging from 1.6 to 5 ug/m³. With regard to worker exposure to any TCE vapors intruding into the facility, Pennsylvania’s Land Recycling Program Technical Guidance Manual for Vapor Intrusion (dated January 24, 2004) suggests that if organic vapors in a facility workplace are regulated by OSHA, ACGIH Threshold Limit Values or OSHA Permissible Exposure Limits may be considered relevant and appropriate indoor air criteria for intruding vapors. For TCE, these values are 269mg/m³ and 537 mg/m³, respectively. Based on available information, concentrations of TCE in indoor air at the facility are very unlikely to be as high as these levels. On the other hand, while workers at the facility handle volatile organic compounds, these VOCs no longer include TCE. Per EPA’s Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (November 29, 2002), in such a case, facility employees and/or the employer may be unaware that TCE may be intruding into the air of the workplace. This EPA guidance recommends the facility be notified of the potential for the vapor intrusion to cause a hazard in these circumstances. The facility has been notified as recommended via a letter from EPA dated August 30, 2006. It is also notable that, at this time, there appear to be no office or administrative workers at the facility, i.e., no potential “non-residential” receptors.

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.

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):

Air (indoors)

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Based on the information referenced above, PADEP's Hazardous Site Control Act program determined that a prompt interim response should be conducted to mitigate the intrusion of vapors into residences next to the facility until a final response action is implemented to address the contamination. (see Pennsylvania Bulletin dated April 22, 2006). The action selected by PADEP was the installation and operation of vapor mitigation systems at affected (and potentially affected) residences. Installation and operation of these systems in eleven (11) residences was initiated on May 10, 2006 (see letter from Earth Tech to PADEP dated May 22, 2006). As of August 31, 2006, systems had been successfully installed in ten (10) of the residences, including three of the four residences apparently impacted by TCE from the facility (see letter from EarthTech to PADEP re: Vapor Intrusion Mitigation System Installations dated 9/17/06). Installation of the final system (for the fourth residence apparently impacted by TCE from the facility) was planned for 10/6/06 (see electronic mail from PADEP to EPA dated 9/20/06). System installation was considered successful (and exposures considered to be within acceptable limits) if there was a pressure differential of - 1 pascal between the subslab space and indoor air (see Final Work Plan of Berkley Products Site by EarthTech dated 2/10/06).

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 Berkley Products Company facility, EPA ID # PAD003003894, located at 405 South 7th Street, Akron, 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 _____ Date _____
Darius Ostrauskas
Project Manager

Supervisor _____ Date _____
Paul Gotthold
Chief, PA Operations Branch
EPA Region 3

Locations where References may be found:

PA Operations Branch (3WC22)
EPA Region 3
1650 Arch Street
Philadelphia, PA 19103

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.