

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: Ashland Distribution Company, Division of Ashland, Inc.
Facility Address: 150 West Fourth Avenue, Freedom, PA 15042
Facility EPA ID #: PAD000797548

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).

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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			1,2-dichloroethene; PCE; Toluene
Air (indoors) ²		X		PID readings < OSHA exposure limits
Surface Soil (e.g., <2 ft)	X			Soil-to-groundwater
Surface Water		X		None known
Sediment		X		None known
Subsurface Soil (e.g., >2 ft)	X			Soil-to-groundwater
Air (outdoors)		X		None known

_____ 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.
 X

_____ If unknown (for any media) – skip to #6 and enter "IN" status code.

Rationale and Reference(s):

References:

Ashland Distribution Company. Division of Ashland, Inc. 2002. Section J: Corrective Action for Solid Waste Management Units. In Renewal Application for a Hazardous Waste Storage Permit. Rev: May 13, 2002; June 18, 2003; December 31, 2003.

Environmental Strategies Corporation. 1996. Act 2 Final Report. Pittsburgh, Pennsylvania. December 13, 1996.

Material Safety Data Sheets. Acetone and Methyl ethyl ketone.

Pennsylvania Land Recycling Program. 2001. Statewide Health Standards. November 24, 2001.

Rationale:

Seventeen (17) Solid Waste Management Units (SWMUs) were identified at the Ashland Distribution Company Freedom facility. Currently, there are 3 active SWMUs: the north, middle, and south hazardous waste container storage areas located in Warehouse No. 2. A former container storage area in Warehouse No. 3 was closed in April

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.

1993, 12 underground storage tanks used for the bulk storage of industrial chemicals and solvents were removed in September 1990, and 1 aboveground storage tank used for storing n-butyl acetate was removed in March 1989.

Following is the rationale for the responses provided in Question 2:

Groundwater (YES): Although it is discussed here under Groundwater, subsurface water encountered at the facility is more likely to be perched stormwater than a seasonal high water table or groundwater. On March 3, 1989, approximately 930 gallons of n-butyl acetate were released to the ground in the location of the aboveground storage tank used for storing n-butyl acetate near the southern side of Warehouse No. 3. The storage tank was cleaned and removed from the site, and the affected soil was excavated. During a follow-up investigation, 8 soil borings were advanced in the area surrounding the former tank pad. Perched water was encountered in three of the borings at depths ranging from 2.9 to 4 feet below grade and a monitoring well was completed in each of these borings. Water samples collected from one of the wells detected 1,2-dichloroethene [1,400 ug/L], tetrachloroethene (PCE) [2,500 ug/L], and toluene [1,200 ug/L] at levels above the Statewide Health Standards for Organic Regulated Substances in Groundwater (Used Aquifers, TDS \leq 2,500, NR).

Air (indoors) (NO): On June 18, 1996, a confirmatory soil sampling investigation was implemented at the facility. The investigation focused on those areas which exceeded the Act 2 statewide human health residential standards, specifically the exterior portions of former Tanks 8 and 10 and the interior portion of Tank 7. 3 soil borings were drilled (1 at each location). An HNu Systems photoionization detector (PID) was used to scan the samples for organic vapors. The PID readings ranged from 90 ppm – 190 ppm. These readings were **under** the OSHA acceptable exposure limits for the 2 regulated substances at the highest residual concentrations: acetone and methyl ethyl ketone.

Before decontamination activities began in the former hazardous waste container storage area in Warehouse No. 3, an air quality survey was conducted using a PID to identify VOCs that may have been present around or within the area. No concentrations of VOCs above the detection limits of 1 ppm isobutylene equivalents were identified in the breathing zone or at the concrete surface during closure activities.

Soil (surface & subsurface)(YES soil-to-groundwater only): None of the confirmatory soil samples in the area of the 12 underground storage tanks included constituents detected at concentrations above the Act 2 residential Statewide Health standards for direct contact.

Hazardous wastes stored in Container Storage Area 3 were never in contact with the soil outside or underneath the warehouse building.

In the area of the former n-butyl acetate tank, no VOCs were detected at concentrations above the Act 2 residential Statewide Health Standards for direct contact. However, n-butyl acetate was found in concentrations up to 4,400 mg/kg in 4 soil samples collected along the southern edge of the area. Ashland was unable to excavate the soil along the southern edge of the spill area because of its proximity to the nearly vertical roadcut of Route 65. Only a thin strip of soil remained between the southern limits of the excavation and the concrete curb that extends along the southern property boundary. Other than being on the EPA National Contingency Plan hazardous substances list for spill reporting, n-butyl acetate was not located on any other EPA or DEP list. Properties of this substance can be compared to n-butyl alcohol (aka n-butanol), which have some physical similarities to n-butyl acetate and has a residential direct contact standard of 6,600 mg/kg. The maximum concentrations of n-butyl acetate were below the residential direct contact standards for n-butyl alcohol and so the residual concentrations of n-butyl acetate at the Ashland facility are not believed to present a meaningful risk to human health.

A comparison of the PA Act 2 Statewide Health Standards for Organic Regulated Substances in Soil, Soil to Groundwater Numeric Values, Used Aquifers, TDS \leq 2,500, Non-Residential, 100x GW MSC, to the levels of the substances found in residual concentrations from the confirmatory soil sampling, identified the following as key contaminants:

Acetone:	maximum concentration = 4,700 mg/kg	risk-based level = 1,000 mg/kg
Ethylbenzene:	maximum concentration = 73 mg/kg	risk-based level = 70 mg/kg
Methyl ethyl ketone:	maximum concentration = 3,100 mg/kg	risk-based level = 580 mg/kg

Methanol:	maximum concentration = 2,300 mg/kg	risk-based level = 1,000 mg/kg
Methyl chloride:	maximum concentration = 23 mg/kg	risk-based level = 0.3 mg/kg
Tetrachloroethene:	maximum concentration = 20 mg/kg	risk-based level = 0.5 mg/kg
Toluene:	maximum concentration = 360 mg/kg	risk-based level = 100 mg/kg
1,1,1-Trichloroethane:	maximum concentration = 32 mg/kg	risk-based level = 20 mg/kg
Trichloroethene:	maximum concentration = 26 mg/kg	risk-based level = 0.5 mg/kg

Surface water (NO): There are no surface waters in the immediate vicinity of the Ashland facility. The facility sits on top of a bluff overlooking Route 65. Beyond Route 65 there are industrial properties, and then finally the Ohio River.

Sediment (NO): It is not likely that any contaminants could reach Ohio River sediment due to facility location and incomplete soil-to-groundwater pathway (see Question 3 Rationale).

Air (outdoors) (NO): The facility receives by truck containerized shipments of chemicals and solvents and distributes them to local industrial customers. The facility does not manufacture or repackage any of the industrial chemicals or solvents it handles, therefore, no air permit is required and no outdoor air contamination is expected.

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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	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>			<u>NO</u>
Air (indoors)	-	-	-				
Soil (surface, e.g., <2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Surface Water	-	-			-	-	-
Sediment	-	-			-	-	-
Soil (subsurface e.g., >2 ft)				<u>NO</u>			<u>NO</u>
Air (outdoors)	-	-	-	-	-		

Instructions for Summary Exposure Pathway Evaluation Table:

- Strike-out specific Media including Human Receptors -- spaces for Media which are not "contaminated" as identified in #2 above.
- 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):

Due to the high clay content, the water encountered in the shallow wells is more likely to be perched stormwater than a seasonal high water table or groundwater. No known human receptors are downgradient of the facility. The facility sets atop a bluff overlooking Route 65. Beyond Route 65 are industrial properties and then finally the Ohio River. Residents that surround the Ashland facility are all reportedly connected to municipal water supplies. Much of the facility has been paved thereby reducing the chance for infiltration and further migration of residual concentrations of contaminants.

Residual concentrations in the shallow and deep soil only exceed the PA Act 2 Statewide Health Standards for Organic Regulated Substances in Soil, Soil to Groundwater Numeric Values, Used Aquifers, TDS ≤ 2,500, Non-Residential, 100x GW MSC. The groundwater is not reasonably suspected to be contaminated because the soil to

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

groundwater pathway is incomplete. The soils at the Ashland facility are clay rich and dry. The depth between the soils and the phreatic surface is likely greater than 100 feet based on the surface elevation change between the facility and the Ohio River, which is the presumed discharge location for groundwater in the vicinity of the facility. This fact is supported by the lack of groundwater encountered in a deep boring drilled at the facility.

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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.

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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): _____

