US ERA ARCHIVE DOCUMENT

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	Address:	6709 South Main Street, Union, IL 60180				
Facility	EPA ID#:	ILD 005 238 159				
1.	groundwater, sur	e relevant/significant information on known and reasonably suspected releases to soil, rface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste its (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this?				
	<u>X</u>	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

Facility Name:

Definition of Environmental Indicators (for the RCRA Corrective Action)

Aubrey Manufacturing, Inc.

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" 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)?

	Yes	<u>No</u>	?	Rationale / Key Contaminants
Groundwater		X		
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)		X		
Air (outdoors)		X		

X

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):

Surface Impoundment containing F001, F002, F003, F005, F006, F007, and F008 hazardous waste was remediated by a combination of dewatering; and contaminated soil, sludge, and debris removal followed by confirmatory soil sampling.

February 21, 1997 Corrective Action Status Report and Work Plan Addendum No. 1 for closure of former surface impoundment.

July 1, 1997 IEPA letter conditionally approving Corrective Action Status Report and Workplan Addendum No.1, effectively closing the soil remediation.

April 9, 1998 Preliminary Assessment and Visual Site Inspection Report.

Foot

notes:

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).

²Recent 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)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	$Food^3$
Groundwater							
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 f	ît)						
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.

 in to (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.)

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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., 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 Re	terence(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.

^{5.} Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

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	If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> 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
estionale and	Pafaranca(c):

Rationale and Reference(s):

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(CA725), and ob	oriate RCRIS status codes for the Current Human Exportain Supervisor (or appropriate Manager) signature and opriate supporting documentation as well as a map of the	date on the EI determination below
_X	YE - Yes, "Current Human Exposures Under Control review of the information contained in this EI Determinance expected to be "Under Control" at the Aubrey Ma #ILD 005 238 159, located at 6709 South Main Street, I reasonably expected conditions. This determination was Agency/State becomes aware of significant changes as	nation, "Current Human Exposures nufacturing, Inc. facility, EPA ID <u>Jnion, IL</u> under current and vill be re-evaluated when the at the facility.
	NO - "Current Human Exposures" are NOT "Under C	Control."
	IN - More information is needed to make a determin	ation.
Completed by	(signature)	Date 12/09/99
	(print) Todd Gmitro	
	(title) Corrective Action Project Manager	-
Supervisor	(signature)	Date
	(print)	
	(title)	
	(EPA Region or State)	_
Locations where	e References may be found:	
U.S. EPA, Regio RCRA Records (77 West Jackson Chicago, IL 6060	Center, 7 th Floor 1 Blvd.	
Contact telephon	e and e-mail numbers	
(name)	Todd Gmitro	
(phone		
(e-mail)		

FINAL NOTE: THE HUMAN EXPOSURES ELIS 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.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

racinty manie.	Tubley Manufacturing, Inc.				
Facility Address:	6709 South Main Street, Union, IL 60180 ILD 005 238 159				
Facility EPA ID #:					
groundwater me	le relevant/significant information on known and reasonably suspected releases to the edia, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units lated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?				
<u>X</u>	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

Facility Name

Definition of Environmental Indicators (for the RCRA Corrective Action)

Aubrey Manufacturing Inc

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.

<u>Definition of "Migration of Contaminated Groundwater Under Control" EI</u>

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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.	Is groundwater known or reasonably suspected to be "contaminated" above appropriately protective
	"levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines,
	guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

<u>X</u>	If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.
	If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."
	If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Corrective Action Status Report and Work Plan Addendum No.3, dated August 27, 1988.

Ground Water Monitoring Report Third Quarter 1999, dated October 14, 1999. A chlorinated solvent plume is present at the facility. Detected constituents include vinyl chloride, trichloroethene (TCE), trichloroethane (TCA), dichloroethane (DCA), dichloroethene (DCE) and nickel. An upper plume extends approximately 840 feet and a lower plume extends approximately 550 feet down gradient. Some of the contamination in the upper plume has crossed the facility boundary. Constituents above relevant cleanup standards in the lower plume are TCE (83 to 250 ppb), DCE (470 to 560 ppb), and vinyl chloride (70 to 120 ppb).

The upper water-bearing unit contains DCE (9-12 ppb), TCE (5-480 ppb), vinyl chloride (2 to 35 ppb), and nickel (140 to 370 ppb) above relevant cleanup standards. The concentrations decrease downgradient from the former surface impoundment.

The downgradient portion of the plume contains degradation products of TCE including cis-1,2-DCE, 1,1-DCA, and vinyl chloride.

Footnotes:

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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?

<u>X</u>	If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination" ²).
	If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination" ²) - skip to #8 and enter "NO" status code, after providing an explanation.
	If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Plume biodegradation has been shown to be occurring for the chlorinated solvents.

The TCE and TCA is undergoing reductive dechlorination into the following daughter products: cis-1,2-DCE, 1,1-DCA, trans-1,2-DCE, chlorethane, and vinyl chloride.

Parent and daughter product concentrations have decreased with time and distance form the former surface impoundment.

Corrective Action Status Report and Work Plan Addendum No.3, dated August 27, 1988.

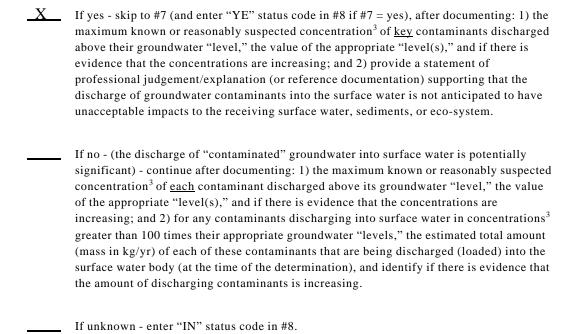
Ground Water Monitoring Report Third Quarter 1999, dated October 14, 1999.

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4.	Does "contamina	ated" groundwater discharge into surface water bodies?
	<u>X</u>	If yes - continue after identifying potentially affected surface water bodies.
		If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.
		If unknown - skip to #8 and enter "IN" status code.
	Rationale and Re	ference(s):
		ter-bearing unit discharges into Railroad Creek (intermittent stream)100 st the facility boundary.

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5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?



Rationale and Reference(s):

Corrective Action Status Report and Work Plan Addendum No.3, dated August 27, 1988.

Ground Water Monitoring Report Third Quarter 1999, dated October 14, 1999.

A one-dimensional, advective model was use to estimate potential future contaminant concentrations of TCE; cis-1,2-DCE; 1,1-DCE; and vinyl chloride at Railroad Creek. The transport model predicted no exceedances of relevant Surface Water Quality Criteria (SWQC) standards for discharge of the upper water-bearing unit into Railroad Creek.

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6.	Can the discharge of "contaminated" groundwater into surface water be shown to be " currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented ⁴)?					
		If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment, appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.				
		If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.				
		If unknown - skip to 8 and enter "IN" status code.				

Rationale and Reference(s):

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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7.	Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"				
	_X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."				
	If no - enter "NO" status code in #8.				
	If unknown - enter "IN" status code in #8.				
	Rationale and Reference(s):				
	Corrective Action Status Report and Work Plan Addendum No.3, dated August 27, 1988. Ground Water Monitoring Report Third Quarter 1999, dated October 14, 1999.				
	Aubrey has in place with the IEPA a groundwater sampling and analysis plan, and has				

proposed the establishment of a Ground Water Management Zone.

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	Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI							
	determination below (attach appropriate supporting documentation as well as a map of the facility).							
	<u>X</u>	YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the <u>Aubrey Manufacturing, Inc.</u> facility, EPA ID # <u>ILD 005</u> 238 159, located at 6709 South Main Street, Union, IL. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.						
		NO - Unacceptable migration of contaminated groundwater is observed or expected.						
	IN - More information is needed to make a determination.							
(Completed by	(signa	ature)	Date <u>12/09/99</u>				
		(print)		_				
		(title)	Corrective Action Project Manager	_				
Supervisor	(signa	ature)	Date					
		(print))	_				
		(title)		_				
		(EPA	Region or State)	_				
J	Locations wher	e Refere	nces may be found:					
	U.S. EPA, Regio		7 th Eloor					
RCRA Records Center, 7 th Floor 77 West Jackson Blvd.								
	Chicago, IL 60604							
C	Contact telephor	e and e-	mail numbers					
	(name)		Todd Gmitro					
	(phone	_						
	(e-mail	_	Gmitro Todd@EPA GOV					