

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

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

Current Human Exposures Under Control

Facility Name: Helena Chemical Company
Facility Address: 101 Martin Luther King Drive, HWY 49 South, West Helena, AR 72390
Facility EPA ID #: ARD030414494

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 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, GPRRA). 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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo 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			Herbicides, Chlorinated Pesticides, Metals, Semivolatile Organics, and Volatile Organics exceed Region 6 Industrial RBCs or SSLs (DAF=20).
Air (indoors) ²		X		Based on Johnson-Ettinger model evaluations, no constituents have the potential to create unacceptable exposure.
Surface Soil (e.g., <2 ft)	X			Metals, Chlorinated Pesticides, Organophosphorous Pesticides, Semivolatile Organics, and Volatile Organics exceed Region 6 Industrial RBCs or SSLs (DAF=20).
Surface Water		X		Based on surface water samples collected from the drainage ditch on the eastern side of the property.
Sediment	X			Metals, Chlorinated Pesticides, Semivolatile Organics, and Volatile Organics exceed Screening levels
Subsurface Soil (e.g., >2 ft)	X			Metals, Chlorinated Pesticides, Organophosphorous Pesticides, Semivolatile Organics, and Volatile Organics exceed Region 6 Industrial RBCs or SSLs (DAF=20).
Air (outdoors)		X		Based on ambient air monitoring data collected during sampling

— 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

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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“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):

Helena Chemical Company occupies approximately 15.71 acres between U.S. Highway 49 South and U.S. Highway 49 Bypass. This location is where the company was founded in 1957. This facility has formulated, but not manufactured, agricultural chemicals such as insecticides, herbicides, and specialty products. From the 1950s through the 1970s, Helena formulated chlorinated pesticides including aldrin, dieldrin, 4,4'-DDT, endrin, lindane (gamma-benzene hexachloride [BHC]), and toxaphene.

Currently, Helena Chemical formulates and packages various agricultural chemicals. The facility receives intermediate materials and custom blends these into finished products per customer specification. The processes for the formulation, blending, and packaging of these products are accomplished using mechanical and pneumatic equipment.

This facility has never operated as a RCRA treatment, storage, or disposal facility; however, the facility is classified by the USEPA and ADEQ as a generator of hazardous waste. There are five SWMU designations and three areas designated AOCs, based on finding from the DOCC and ADEQ RFA prepared in 1999.

Investigated SWMUs and AOCs Helena Chemical Company West Helena, Arkansas			
DOCC Unit #	ADEQ RFA Site Designation	FI Designation	Unit Name
4	AOC #4	AOC #4	Former East Plant Drainage Ditch
8	AOC #1	SWMU #8	Tank Farm No. 1
9	SWMU #1	AOC #9	Liquid Plant (Liquid Area I)
16	SWMU #4	SWMU #16	Old Waste Management Building
18	SWMU #5	SWMU #18	Tank Farm No. 2
19	SWMU #6	SWMU #19	Former Carbon Treatment Cell
20	SWMU #7	SWMU #20	Waste Preparation Building
37	AOC #3	AOC #37	Original Formulating Area

Air and surface water were not identified as media of concern.

Air

Outdoor Air

Ambient air monitoring was recording during the Phase I sampling event conducted in March 2004. Based on these results, outdoor air was not identified as a media of concern.

Indoor Air

All constituents detected in shallow groundwater having a Henry’s Law constant greater than 1E-05 (atmm³/mol) and the potential to migrate beneath occupied buildings were evaluated using the Johnson-Ettinger model. No constituents were found to have the potential to create an unacceptable indoor air exposure via the vapor intrusion pathway. Therefore, indoor air was not identified as a media of concern.

Surface Water

Three surface water samples were collected on September 15, 2004 from the drainage ditch along the eastern side of the property. The samples were analyzed for metals, pesticides, herbicides, semi-volatile organics, and volatile organics. There were no surface water regulatory screening value exceedances. The eastern drainage ditch is

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utilized for storm water runoff from the Helena Chemical Company and surrounding areas. This drainage ditch also receives permitted NDPES discharge from an upgradient fiberglass plant, which inundates the ditch with water.

Groundwater, sediment, surface and subsurface soil were identified as medias of concern. The table below provides the key contaminates driving the concern and the appropriate screening values which concentrations exceeded.

Parameter	Media				Region 6 Industrial RBC	SSL (DAF=20)	Groundwater Screening Value (MCL or Tap water)
	Surface Soil	Subsurface Soil	Shallow Groundwater	Sediment			
Inorganics							
Arsenic	X		X	X	1.77	20	10
Antimony		X	X		454.22	6	6
Cadmium			X				5
Chromium			X				100
Lead			X				15
Nickel			X				100
Selenium			X				50
Thallium			X				2
Chlorinated Pesticides							
4,4'-DDD	X	X			11100	16000	
4,4'-DDE	X	X			7810	60000	
4,4' DDT	X	X		X	7810	40000	
Aldrin	X	X		X	113	400	
Alpha-BHC	X	X			399	0.6	
Beta-BHC	X	X		X	1400	2	
Gamma-BHC (Lindane)	X	X	X		1930	10	0.2
Dieldrin	X	X		X	120	4	
Endosulfan II		X			4100000	18000	
Endosulfan sulfate		X			4100000	18000	
Endrin	X	X	X		205000	1000	2
Heptachlor		X	X		426	20000	0.1
Heptachlor epoxide	X	X	X		210	600	0.2
Toxaphene	X	X		X	1740	40000	
Organophosphorous Pesticides							
Disulfoton	X	X			27400		
Methyl parathion		X			171000		
Herbicides							
2,4-D			X				70
Semivolatile Organics							
1,2,4- Trichlorobenzene			X				70
2,4-Dichlorophenol		X			2050000	1000	
3'3- Dichlorobenzidine		X			4260	6	
4-Chloroaniline		X			2740000	600	
Benzo(a)anthracene				X	2340	1600	
Benzo(a)pyrene			X	X	234	8000	0.2
Dibenz(a,h) anthracene		X		X	234	1600	
Dinoseb		X	X		684000		7
Hexachlorobenzene		X			1200	2000	
Indeno(1,2,3-cd) pyrene		X		X	2340	14000	

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Parameter	Media				Region 6 Industrial RBC	SSL (DAF=20)	Groundwater Screening Value (MCL or Tap water)
	Surface Soil	Subsurface Soil	Shallow Groundwater	Sediment			
Pentachlorophenol	X	X	X	X	10000	20	1
Volatiles Organics							
1,1,2,2-Tetrachloroethane		X			900	4	
1,2-Dibromo-3-Chloropropane			X				0.2
1,2-Dichloroethane		X			766	20	
Acetone		X			100000000	16000	
Benzene		X	X	X	1460	40	5
Chlorobenzene		X	X		549000	1400	100
Chloroform		X			522	600	
Ethylbenzene		X	X		234000	14000	700
Methylene chloride	X	X	X		20600	20	5
Tetrachloroethene		X			1740	60	
Xylene (Total)		X	X		214000	200000	10

Sediment

The Sediment that was found to be contaminated was sampled from the sediment collection boxes; all sediment catch basin collection boxes have been properly cleaned. The cleaning of sediment collection boxes is an ongoing management practice at the facility. This removal activity is done while wearing proper PPE. All known heavily contaminated surface soils have been removed from the facility; minimizing any further contaminated sediment.

Sediments within the drainage ditch along the eastern side of the property are submerged year-round due to upstream NPDES permitted discharge to the drainage ditch. In accordance with USEPA Region IV Supplemental Guidance to RAGS Bulletins, sediment exposure may not necessarily need to be assessed in HHRA, because it can assumed to be an insignificant exposure pathway due to sediments being covered by surface water.

Soil

The majority of the identified SWMUs/AOCs are located on impermeable groundcover, thereby preventing exposure to constituents exceeding regulatory screening values for soil. AOC 4, Former East Plant Drainage Ditch, is the only identified area with exposed surface soils. However, a removal action taking place the week of September 26, 2005 included the removal of impacted surface soil to a minimum depth of one foot and backfilled with clean material.

Groundwater

Although shallow groundwater contamination is identified at the site, there were no users of shallow groundwater identified in the area of the facility. The nearest used well is located approximately 1/4 of a mile from Helena Chemical. This well is screening around 100 feet deep, below the shallow groundwater contamination depth identified at the Helena facility. The geology of the site shows a 40 to 50 feet confining layer of clay below the shallow groundwater interval. There are no groundwater screening value exceedances identified in deep groundwater at the site.

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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

<u>“Contaminated” Media</u>	Potential <u>Human Receptors</u> (Under Current Conditions)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	No	No	<u>No</u>
Air (indoors)	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
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	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Sediment	<u>No</u>	<u>No</u>	No	No	<u>No</u>	<u>No</u>	<u>No</u>
Soil (subsurface e.g., >2 ft)	No	No	No	<u>Yes</u>	No	No	<u>No</u>
Air (outdoors)	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>

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

Based on the current land- and groundwater-use, there is not a completed pathway for any contaminated media-human receptor combination. Shallow groundwater is not used within the surrounding area of the facility. The

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

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nearest well used is located 1/4 of a mile away from the site and is screening around 100 feet, which is below the shallow groundwater contamination at Helena Chemical. A 40 to 50 feet confining layer of clay is located just below the shallow groundwater depth at the site, and there have been no impacts to deep groundwater at the site. Helena Chemical Company will continue groundwater monitoring. Remedial shallow groundwater issues will be addressed in a future Corrective Measures Study.

Soil

Although a direct surface soil exposure pathway was identified at AOC 4, a removal action took place the week of September 26, 2005. Impacted surface soil associated with AOC 4 has been removed to a depth of one foot and backfilled with clean material. The main risk driver for this removal action was toxaphene. With the completion of the removal action, this pathway is not longer valid.

There were additional areas with soil exceedances; however, these locations are under impermeable surface cover thereby preventing exposure. Based on current land-use at the site, contact with subsurface soil contamination is unlikely.

Sediment

The Sediment that was found to be contaminated was sampled from the sediment collection boxes; all sediment catch basin collection boxes have been properly cleaned. The cleaning of sediment collection boxes is an ongoing management practice at the facility. This removal activity is done while wearing proper PPE. All known heavily contaminated surface soils have been removed from the facility; minimizing any further contaminated sediment.

Sediments within the drainage ditch along the eastern side of the property are submerged year-round due to upstream NPDES permitted discharge to the drainage ditch. In accordance with USEPA Region IV Supplemental Guidance to RAGS Bulletins, sediment exposure may not necessarily need to be assessed in HHRA, because it can assumed to be an insignificant exposure pathway due to sediments being covered by surface water.

Construction Worker Receptor

On September 30, 2005, there should be no sub-surface construction on the site. However, should digging occur in the areas most impacted by contamination, the worker would be exposed to contamination in the sub-surface soil and groundwater that may pose an unacceptable risk.

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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.”
- 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):

Areas of subsurface soil and the groundwater are highly contaminated at this facility. Interim measures, both recent and historical have removed all known significant surface soil contamination. If any digging occurs in areas of the facility that are contaminated the construction worker should wear proper PPE to minimize any risks associated with the high levels of contamination in the subsurface.

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 “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):

The areas of highest known areas impacted by contamination are on HCC property and AHTD controlled property. HCC has notified AHTD about the contamination on their right of way, and has requested that AHTD contact HCC before doing any digging beneath the lined concrete ditch. Any digging occurring on the areas of HCC property that are contaminated will be done utilizing HCC’s Health and Safety plan (HASP). This HASP includes PPE requirements needed to ensure the safety of the construction worker.

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6. Check the appropriate RCRAInfo 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 Helena Chemical Company facility, EPA ID # ARD030414494, located at 101 Martin Luther King Drive, HWY 49 South, West Helena, AR 72390 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) Annette Cusher Date 09/30/05
(print) G. Todd Haverkost and Annette Cusher
(title) Professional Geologist, Ensaf e and Engineer II, ADEQ

Supervisor (signature) Daniel Clanton Date 09/30/2005
(print) Daniel Clanton
(title) Engineering Supervisor
(EPA Region or State) ADEQ

Locations where References may be found:

References are attached. The RFI Report will be due by the end of the year, and will contain most of the information used for this determination. The off-site well data will be in a report from EPA Region VI

Contact telephone and e-mail numbers

(name) G. Todd Haverkost
(phone #) (901) 372-7962
(e-mail) thaverkost@ensafe.com

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.