

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: Hercules Incorporated - Franklin, Virginia
Facility Address: 27123 Shady Brook Trail, Courtland, Virginia
Facility EPA ID #: VAD 003 122 165

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).

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)**

Page 2

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			Contaminants of concern discussed under ‘Rationale.’
Air (indoors) ²		X		No significant soil VOC impacts in worker’s buildings.
Surface Soil (e.g., <2 ft)	X			See contaminants of concern under ‘Rationale’, below.
Surface Water		X		Data shows that there are no impacts from the Facility to Will’s Gut and Nottoway River
Sediment	X			Contaminants of concern discussed under ‘Rationale.’
Subsurf. Soil (e.g., >2 ft)	X			Contaminants of concern discussed under ‘Rationale.’
Air (outdoors)		X		Emissions regulated under VADEQ Permit

_____ 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.

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 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.

Rationale and Reference(s):

References: Data supporting this determination is from the *Release Assessment, March 1999*, by ERM and *Release Assessment Addendum, January 2002*, by GES, along with more recent reports listed under ‘References’ on the last page.

Rationale: Samples collected from the Facility property were analyzed for volatile, semivolatile organic compounds and inorganics (metals). The laboratory results for soils and sediments were compared to USEPA risk-based standards (RBCs) for incidental ingestion, and for groundwater, USEPA drinking water standards (MCLs) and RBCs.

Inorganics in groundwater (GW) samples exceeding USEPA’s screening levels do not necessarily reflect contamination from the Facility, but more likely represent the natural dissolved elements from the soil matrix. Only the inorganics not routinely found in GW across the Facility will be used in this EI.

The Facility produces rosin, fatty acids and organic peroxides from the primary raw material called Tall Oil. Tall Oil is a tar-like by-product of wood pulping. An EPA fact sheet on the Facility is available at www.epa.gov/reg3wcmd/ca/va.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

Page 3

Groundwater (water table or shallow aquifer) contaminants of concern (or contaminants exceeding screening levels): Main Plant Area: 1,2-dichloropropane (PDC), benzene. Heat Generation Area: PDC, biphenyl, cresol m+p, naphthalene. Vulcup: PDC, heptane, methyl tert-butyl ether (MTBE). East Area: PDC. West Area: acetone, benzene, cresol m+p, naphthalene, phenol, arsenic, chromium, lead, vanadium.

Surface Soil: Many surficial soils within the process areas had elevated 'tentatively identified compounds' or TICs, however, there are no regulatory standards for TICs. TICs are possibly unidentified Tall Oil constituents. Future work will determine whether this assumption is true. In the Tall Oil storage area, PCB was detected in one soil sample below the industrial risk level, but above the residential level. The only other sample that exceeded risk levels was located in the boiler residue drum storage area, and only for benzo(a)pyrene, a polynuclear aromatic hydrocarbon (PAH). This soil was removed, and therefore is no longer a site risk.

Subsurface Soil: In the manufacturing area, there were no exceedences of industrial levels, however minor levels of TICs were found. In the west area, contaminants above risk levels are benzene, tetrachloroethene, benzo(a)anthracene, bis(2-ethylhexyl)phthalate and PAHs.

Sediments: Sediments were collected from the five outfalls. Outfall ditch 002 had PAHs in sediment at levels that exceed risk levels. The wastewater outfall 002 is shared with an adjacent facility and is contaminated with PAHs from a spill at the adjacent facility that flowed into outfall 002. This outfall is fenced such that human contact is unlikely. Outfall 005 also had PAH's above risk levels, however, these sediments were removed as part of the outfall 005 upgrade.

Wastes: The east area of the facility contained unlined pits with Aquapel 'white waste' that were removed and disposed of off-site. The waste contained elevated levels of PDC, BTEX and SVOC TICs. The facility's west area contains a permitted waste water equalization lagoon and sprayfield, that is now out of service. A composite sample of lagoon sludge contained one dioxin/furan congener (of the 17 congeners analyzed) above the risk level. In addition, lagoon sludge contains acetone, benzene, ethylbenzene, toluene, xylenes (BTEX), PDC and biphenyl ether, at levels below the industrial risk exposure level. TICs were elevated. The three unlined sludge pits were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) for disposal. In one pit, benzene exceeded the TCLP level. Interim Measures to remediate west area wastes is planned for the next phase of Site work.

Air: The Facility's air emissions are permitted by VADEQ. Volatile vapors that may enter buildings from soil and/or ground water is not a concern at the site, as workers in a building located over a GW plume work on the second floor, and the first floor is not enclosed, reducing any potential exposures.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)
Page 4

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	No	No	No	No	No	No	No
Air (indoors)							
Soil (surface, e.g., <2 ft)	No	No	No	Yes	No	No	No
Surface Water							
Sediment	No	No	No	Yes	No	No	No
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.

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

Rationale and Reference(s):

Ground Water: There are no pathways for consumption of contaminated ground water at or around the Facility. Private drinking water wells within a ½-mile radius of the Facility were located and sampled. The five wells showed no Facility-related contaminants. The on-site permitted well is located in a deeper aquifer, well below the shallow contaminated zone, and is tested annually for VOCs. Sampling results meet Virginia’s and USEPA’s regulations. The water table (contaminated zone) is shallow beneath the Facility. In the event of construction, construction

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)
Page 5

workers would not be exposed to contaminated groundwater, because buildings are built on slabs, with no basements. Environmental workers working in the west area may come into contact with contaminated ground water, however, by law, these workers must be trained in OSHA Health and Safety precautions for protecting workers from contaminant exposure, and would require approval/training verification by the Facility Environmental Supervisor.

Soil and Sediments: Worker exposure to environmental contaminants is unlikely. Surface contamination is limited to an area where workers do not spend time. Subsurface soils are not exposed--they are covered by top soil, and workers do not come in contact with sediments. The only place where it is possible for outdoor workers to come in contact with contaminants is in the west area. However, west area work does not routinely involve contact with the lagoon or waste pits. Workers are safety trained and take precautions to protect themselves from contaminant exposure. Consultants such as environmental or hazardous waste removal workers are trained in their OSHA Health and Safety plans and take precautions to protect themselves from exposure.

Trespassers are unlikely, because the main plant is enclosed with 7-foot high linked fencing with three strand barbed wire on top, and the plant is operated 24-hours every day. Any trespassers would have to bypass the fence and would most likely be seen by on-site workers. The east area is fenced and is accessible only from the main plant. The west area is fenced with 8-foot tall linked fencing, with three strand barbed wire on top. Trespasser exposure is unlikely, and would be incidental, resulting in negligible risk if exposure occurred.

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)?

 X 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

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.

Rationale and Reference(s): See discussion under Question #3.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)
Page 6

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):

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 **Hercules, Inc.** facility, EPA ID # **VAD 003 122 165**, located at **27123 Shady Brook Trail, Courtland, Virginia** 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)  Date 9/28/04
(print) Barbara Smith
(title) EPA Project Manager

Supervisor (signature)  Date 9/28/04
(print) Robert E. Greaves
(title) Chief, RCRA Operations Branch
(EPA Region or State) EPA - III

Locations where References may be found:

USEPA-III
Att'n: Barbara Smith (3WC23)
1650 Arch Street
Philadelphia, PA 19103-2029

Release Assessment Report, March 1999, by ERM
Release Assessment Addendum, January 2002, by GES
Residential Well Sampling Summary Letter Report, May 5, 2004, by GES
Rte. 671 Widening Interim Measures Summary Letter Report, May 5, 2004, by GES
Hercules, Inc. Human Health-Environmental Indicator Transmittal, September 14, 2004, GES

Contact telephone and e-mail numbers

(name) Barbara Smith
(phone #) (215) 814-5786
(e-mail) smith.barbara@epa.gov

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.