

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: Clean Harbors Environmental Services, Inc.
Facility Address: 7515 Harvest Road, Prince George, VA 23875
Facility EPA ID #: VAD988175055

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

The Clean Harbors Environmental Services, Inc. (Clean Harbors or CHES) facility is a 3.6 acre property located in Forbes Industrial Park, Prince George County, Virginia. The site is topographically relatively flat and lies at an elevation of approximately 130 feet above mean sea level. There are no waterways or wetlands on the site. A surface water surface impoundment is located on the adjacent property east of the facility site; the surface impoundment receives stormwater from the Clean Harbors facility and other adjacent properties in the Forbes Industrial Park. The facility began operation as Belpar Environmental in the 1980's, and was acquired by Chemical Waste Management (CWM) of Oak Brook, Illinois. CWM operations at the site included lab packaging, underground storage tank removal and installation services, processing, storage, and transportation of waste, and acceptance of waste oil, which was subsequently shipped off-site for treatment and/or disposal. Clean Harbors began leasing the property in September 1994, when it purchased the operations from CWM. The property was leased from A.A. Forbes of Prince George, Virginia. During Clean Harbor's operation, the site has been used as a hazardous and non-hazardous waste storage and treatment facility. Clean Harbors subsequently withdrew the RCRA Part B Application on August 27, 2001, after undergoing RCRA closure of the tank farm, and operated as a wastewater treatment facility regulated under the Clean Water Act (CWA) until 2004. The site was recently used as a service center for oil and hazardous material spill response activities and scheduled environmental services. Clean Harbors vacated the site in November 2010. The site is not currently used for any purpose.

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 RCRA Info as long as they remain true (i.e., in RCRA Info 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	—	✓	—	_____
Air (indoors) ²	—	✓	—	_____
Surface Soil (<2 ft)	—	✓	—	_____
Surface Water	—	✓	—	_____
Sediment	—	✓	—	_____
Subsurf. Soil (>2 ft)	✓	—	—	<u>Hexavalent Chromium</u>
Air (outdoors)	—	✓	—	_____

_____ 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):

In 2007, CHES entered into a Facility Lead Agreement (FLA) with the USEPA, and committed to conducting investigation and remediation activities in accordance with the RCRA Corrective Action program. Under the direction of VADEQ, a RCRA Facility Investigation (RFI) Work Plan was finalized in March 2010, and investigation activities commenced in that same month. The purpose of the RFI was to assess the site for impacts to soil, sediment and groundwater from historical site operation activities. Investigation activities focused on evaluation of surface and near surface impacts to the soil from site operations, and evaluation of surrounding drainage features and shallow groundwater.

Soil:

Previous assessment and regulatory activities identified a total of 13 SWMU/AOC areas. As part of the Phase I RFI a total of 24 test pits were performed in these 13 SWMU/AOC areas. Soil samples were collected from the upper 12-inches and the top of a shallow semi-confining clay layer for laboratory analysis for TPH by EPA Method 1664, VOCs by EPA Method 8260B, SVOCs by EPA Method 8270C, PCBs by EPA Method 8082, and 13 priority pollutant metals (including chromium speciation) by EPA Methods 6020, 7196A, and 7470A. To more completely assess overall site conditions and aid in evaluating the results of the SWMU/AOC area sampling, nine additional soil samples (not associated with known SWMU/AOC areas) and eight background soil samples were also collected in the same manner as the SWMU/AOC samples, and laboratory analyzed for the same suite of parameters.

Three sediment samples were collected from two drainage swales and an outfall to an easterly adjacent impoundment to assess impacts from surface runoff from the site. These samples were collected from the upper 12-inches, and were laboratory analyzed for the same suite of parameters as the soil samples.

The analytical results were evaluated to identify COCs based on detections in site samples, statistical comparison to background samples, and comparison to EPA Region 3 Regional Screening Levels (RSLs). No surface soil samples

exceeded the industrial RSLs for direct contact. Hexavalent Chromium was the only COC that exceeded industrial RSLs in subsurface soil. One subsurface sample (AOC-2C at clay layer depth) showed a hexavalent chromium concentration of 23.3 mg/kg (it should be noted that the hexavalent chromium analysis was performed twice for each sample in accordance with EPA Method 7196A, and the second analysis for soil sample AOC-2C showed a concentration of 0.47 J, which is well below the industrial soil screening level of 5.6 mg/kg).

The soil analytical data was evaluated in an initial quantitative human health risk assessment to estimate potential health risks using residential and commercial/industrial exposure scenarios. The initial risk assessment indicated that only one constituent (arsenic) posed an increased risk under a residential scenario, but is attributed to naturally occurring or anthropogenic sources not related to site operations. No other COCs in site soils exhibited an increased cancer or non-cancer risk. Based on the available data, site operations do not appear to have significantly impacted site soils. The VDEQ is working with CHES to finalize the Phase I RFI Report and associated risk assessment in the near future and will re-evaluate this determination if necessary.

Sediment:

Sediment samples were collected from drainage swales on site. No COCs were detected above industrial soil screening levels in the samples.

Surface Water:

The site does not contain any surface water bodies.

Groundwater:

Historical groundwater sampling results indicated that MTBE was the only hazardous constituent detected above tap water RSLs. In 2010, as part of the Phase I RFI, a comprehensive groundwater monitoring event was conducted at the onsite monitoring wells. During this event, one of the monitoring wells (MW-2) could not be located therefore the facility installed a replacement well (MW-2R) within vicinity of the original location. Results of monitoring the replacement well indicated that MTBE was detected at a concentration of 140 ug/l, which is above the tap water RSL of 12 ug/l but within EPA's acceptable risk range of 10E-6 to 10E-4 for carcinogenic compounds. Subsequently, the facility conducted a supplemental investigation in 2012, which included installation of additional wells to evaluate the extent of MTBE in groundwater. Results of the supplemental investigation indicated that MTBE was detected at a concentration of 71 ug/l at MW-2R, which was the highest concentration during that event. The results also indicated that the extent of MTBE in groundwater was limited. However, as a conservative measure in 2013, the facility installed another monitoring well (CHES-4) in the down gradient direction adjacent to the facility's property boundary based on the most current site-wide groundwater level measurements. An additional groundwater monitoring event was completed, the results of which indicated that MTBE was detected at concentrations of 42 ug/l and 28 ug/l in monitoring wells MW-2R and CHES-4, respectively.

Based on the results of groundwater samples collected to-date, it has been demonstrated that the extent of MTBE in groundwater at the facility is limited and is within EPA's acceptable risk range. In addition, MTBE concentrations at MW-2R indicate a decreasing trend. There is no current use of the site and there are no longer any known sources or source areas.

Air (indoor and outdoor):

Representative groundwater data for volatile constituents was screened against applicable vapor intrusion levels and indicated no risk is present at the site.

Supporting Documentation:

1. RCRA Facility Investigation Report by Clean Harbors Environmental Services, Inc., dated April 19, 2011
2. Supplemental Investigation for Clean Harbors Environmental Services, Inc., Letter Report by Leppert Associates, dated October 24, 2012
3. Supplemental Well Installation, Letter Report by Clean Harbors Environmental Services, Inc., dated May 13, 2013

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.

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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	_____	_____	_____	_____	_____	_____	_____
Air (indoors)	_____	_____	_____	_____	_____	_____	_____
Soil (surface, e.g., <2 ft)	_____	_____	_____	_____	_____	_____	_____
Surface Water	_____	_____	_____	_____	_____	_____	_____
Sediment	_____	_____	_____	_____	_____	_____	_____
Soil (subsurface e.g., >2 ft)	<u>no</u>	<u>no</u>	<u>no</u>	<u>yes</u>	<u>no</u>	<u>no</u>	<u>no</u>
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).
- If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation. (potential contamination of subsurface soil and potential exposure pathway evaluation)
- _____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The Phase I RFI analytical results showed Hexavalent Chromium exceeded the industrial RSL in subsurface soil. One subsurface sample (AOC-2C at clay layer depth) contained a hexavalent chromium concentration of 23.3 mg/kg. The site is currently an industrial setting and the only potential human exposure would be to a construction worker.

Supporting Documentation:

1. RCRA Facility Investigation Report by Clean Harbors Environmental Services, Inc., dated April 19, 2011

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"**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 expected not to be "significant."
- If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

The site is currently unused and the probability of human exposure (construction worker) to the single location of subsurface soil with elevated hexavalent chromium is extremely low. In addition, the hexavalent chromium analysis was performed twice for each soil sample in accordance with EPA Method 7196A, and the second analysis for soil sample AOC-2C showed a concentration of 0.47 J, which is well below the industrial soil screening level of 5.6 mg/kg, and indicates the original analytical result may be an outlier.

Supporting Documentation:

1. RCRA Facility Investigation Report by Clean Harbors Environmental Services, Inc., dated April 19, 2011

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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6. Check the appropriate RCRA Info 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 Clean Harbors Environmental Services, Inc. facility, EPA ID # VAD988175055, located in Prince George, 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  Date 9/26/2013
Ryan J. Kelly
Corrective Action Project Manager

Supervisor  Date 9/26/2013
Jutta Schneider
RCRA CA/GW Program Manager
Virginia DEQ

Locations where References may be found:

Virginia Department of Environmental Quality
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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.