

**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:** Arlington County Equipment Division  
**Facility Address:** South Taylor Street, Arlington Co, VA 22206  
**Facility EPA ID #:** VAD988204921

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 Arlington County Equipment Division (Trades Center) is a 42-acre continued use facility owned and operated by Arlington County located at the intersection of South Arlington Mill Drive and South Taylor Street in Arlington, Virginia. The Trades Center is comprised of municipal office buildings and facilities used for various county functions, which include automotive vehicle repair, vehicle storage, carpentry, chemical storage, parts and equipment storage, vehicle washing, vehicle refueling, fire training, equipment repair, and earth products handling and recycling.

**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)**

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **“contaminated”**<sup>1</sup> 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			benzene, ethylbenzene, MTBE, Isopropylbenzene, naphthalene, 2-methylnaphthalene, arsenic, lead
Air (indoors) <sup>2</sup>		X		
Surface Soil (e.g., <2 ft)	X			Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene, arsenic, total chromium
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			Arsenic, total chromium, chromium VI
Air (outdoors)		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:**

1. Site-wide groundwater was sampled for VOCs, SVOCs, PAHs, PCBs, and metals in 2011 as part of the Corrective Action Phase I Site Assessment. Groundwater associated with SWMU 7 (Former USTs) and SWMU 9 (Old Equipment Building) has been monitored for petroleum related constituents periodically since 1994. The contaminants of concern listed above were observed above MCLs and/or risk-based RSLs for tap water during the phase I site assessment.
2. Indoor air at the site was evaluated qualitatively based on VOC detections in soil and groundwater and potential complete exposure pathways under current use conditions and unrestricted use during the phase I site assessment. VOCs detected in groundwater and soil were not observed beneath or within reasonable distance to any buildings currently occupied or having potential to be occupied. In addition, groundwater results at monitoring wells located down gradient from locations where VOCs were detected indicate that VOCs do not migrate substantially from their point of origin. Therefore it is not suspected that indoor air could be impacted under the site’s current use.
3. Surface soil (0-2 ft bgs) at the site was sampled from discrete boring locations associated with SWMUs in 2011 during the phase 1 site assessment, which indicated that the contaminants listed above were found above conservative risk-based RSLs for direct contact. The PAHs listed above were observed above residential risk-based RSLs in one sample (SB-R-01) associated with SWMU 7. However, only benzo(a)pyrene and dibenz(a,h)anthracene were observed above industrial risk-based RSLs in the same sample. Total arsenic and chromium were observed above residential RSLs in all surface soil samples and several samples exceeded industrial risk-based RSLs. However, the observed concentrations of total arsenic and chromium at the site are in line with regional background concentrations.

4. Surface water and associated sediments are not present based on site mapping and survey. Therefore, impacts were not identified and potential impacts are not of concern.
5. Subsurface soil (>2 ft bgs) at the site was sampled from discrete boring locations associated with SWMUs in 2011 during the phase I site assessment, which indicated that the contaminants listed above were observed above risk-based RSLs for direct contact. Arsenic and total chromium were observed above residential RSLs in all subsurface soil samples and chromium VI was observed above residential risk-based RSLs in one subsurface soil sample (SB-R-06) associated with AOC 2 (Fire Training Area). In several of these samples, arsenic and total chromium were observed above industrial RSLs, but chromium VI was not observed above industrial RSLs. The observed concentrations of total arsenic and chromium are in line with regional background concentrations.

**Reference:**

1. RCRA Corrective Action Phase I Site Investigation Report by Greenhorn & O'Mara, Inc. and Chesapeake GeoSciences, Inc., December 9, 2011

Footnotes:

<sup>1</sup> "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).

<sup>2</sup> 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.

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

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)

<b><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	NO	NO	NO	YES	NO	NO	NO
Air (indoors)							
Soil (surface, e.g., <2 ft)	NO	NO	NO	YES	NO	NO	NO
Surface Water							
Sediment							
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).
- 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:**

1. Although contaminants are present in groundwater in concentrations that exceed MCLs and/or risk-based RSLs for tap water, the groundwater pathway is not applicable to day-care, trespassers, recreation, and food due to the current industrial use of the site. In addition, the groundwater pathway is not applicable to residents because it is demonstrated that contaminants are not leaving the facility and the Arlington County public water system supplies potable water to the facility and residents. The groundwater pathway for construction may be potential via direct contact because depth to groundwater at the site is relatively shallow typically ranging from 5 to 14 ft bgs across the site. Given the current

industrial use of the site, this pathway will be mitigated by utilizing a site specific health and safety plan, construction plans, and personal protective equipment (PPE) when necessary.

2. Although contaminants are present in surface and subsurface soil in concentrations that exceed residential and industrial risk-based RSLs for direct contact, the soil pathway is not applicable to residents, workers, day-care, trespassers, recreation, and food given the current industrial use of the site and because contaminants were observed in soil within areas surfaced with asphalt and/or concrete restricting access and/or exposure. The soil pathway for construction may be potential via direct contact because contaminants have been observed sporadically at relatively shallow depths ranging from 2 to 13.5 ft bgs. Given the current industrial use of the site, the soil pathway may be mitigated by utilizing a site specific health and safety plan, construction plans, and PPE as necessary.

**Reference:**

1. RCRA Corrective Action Phase I Site Investigation Report by Greenhorn & O'Mara, Inc. and Chesapeake GeoSciences, Inc., December 9, 2011

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

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

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (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:**

Given that the potential for complete exposure pathways are limited to direct contact with contaminants in soil and groundwater during construction and that the location of contaminants is known, it can be reasonably expected that potential exposures will be mitigated by utilizing health and safety plans and PPE as necessary during construction activities. As standard practice, Arlington County Risk Management Group in coordination with the county’s Design and Construction Bureau and individual facilities evaluate potential risks and health and safety issues prior to the approval of construction activities on its facilities. The results of the Corrective Action Phase I Site Investigation will be provided to the Risk Management Group and the Design and Construction Bureau so that the risk associated with contaminants in soil and groundwater is known prior to developing site specific health and safety plans and identifying required PPE.

**Reference:**

1. RCRA Corrective Action Phase I Site Investigation Report by Greenhorn & O’Mara, Inc. and Chesapeake GeoSciences, Inc., December 9, 2011

<sup>4</sup> 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.

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

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):

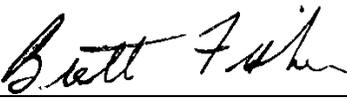
**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

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 (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 Arlington County Equipment Division facility, EPA ID #VAD988204921, located at South Taylor Street, Arlington Co, Virginia 22206 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: 6-1-2012  
(print) Brett Fisher, P.G.  
(title) RCRA CA Project Manager

Supervisor (signature)  Date: 6-1-2012  
(print) Jutta Schneider  
(title) RCRA CA/GW Program Manager  
(EPA Region or State) VDEQ

Locations where References may be found:

US EPA Region III  
Land and Chemicals Division  
1650 Arch Street  
Philadelphia, PA 19103

Virginia Department of Environmental Quality  
Office of Remediation Programs  
629 East Main Street  
Richmond, VA 23219

Contact telephone numbers and e-mail

(name) Mike Jacobi (EPA)  
(phone #) 215-814-3435  
(e-mail) Jacobi.mike@epa.gov

(name) Brett Fisher, P.G. (VDEQ)  
(phone #) 804-698-4219  
(e-mail) brett.fisher@deq.virginia.gov