

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: Celanese Acetate, LLC

Facility Address: 3520 Virginia Ave, Narrows, VA 24124

Facility EPA ID #: VAD005007679

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 Celanese Plant is located in Giles County east of the town of Narrows, Virginia along U.S. Route 460. The total site encompasses 1332 acres and is divided into two major areas separated by Route 460. The plant area is located adjacent to the New River, and the landfill area is located on the hillside north of the plant area. The site is characterized by a narrow, flat valley floor surrounded by relatively steep mountainous hillsides and ridge tops.

The Celanese Plant has been in operation since late 1939 and manufactures fiber-based products. Raw materials in the formulation of cellulose acetate are cellulose (wood pulp), acetic anhydride, acetic acid, sulfuric acid, and magnesium oxide. In 2015, a new boiler system using natural gas with an oil backup began operation, replacing the coal fired boiler system used since 1939. Solid wastes are managed in onsite landfills, process wastewaters are treated on-site under a VPDES permitted wastewater treatment plant, and some wastes are sent off-site for regeneration/recycling and treatment/disposal.

An environmental investigation was performed under a RCRA Facility Lead Agreement (signed with the USEPA Region III in January 2006). The site-wide comprehensive RCRA Facility Investigation (RFI) was conducted between June 2011 through February 2012 (Phase I RFI) and May 2012 through May 2013 (Phase IB RFI).

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”**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)?

- 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.

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater ¹	X			Arsenic, Barium, Benzene, Cadmium, Dichlorobiphenyl, Lead, Monochlorobiphenyl, Nitrite-as-Nitrogen, Tetrachloroethene, Trichlorobiphenyl, Chromium VI, Cobalt, Iron, Manganese, Phosphorus, 1,4-Dioxane, 2-Methylnaphthalene, 2-Naphthylamine, Naphthalene, Chloroform
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft) ³	X			3-Methylchloranthrene, 7,12-Dimethylbenz(a)anthracene, Aroclor 1232, Aroclor 1254, Aroclor 1260, Arsenic, Benzene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Cobalt, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Lead, Manganese, Mercury, Naphthalene, Thallium
Surface Water ⁴	X			Metals
Sediment ⁴	X			Metals, PAHs
Subsurf. Soil (e.g., >2 ft) ³	X			3-Methylchloranthrene, 7,12-Dimethylbenz(a)anthracene, Aroclor 1232, Aroclor 1254, Aroclor 1260, Arsenic, Benzene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Cobalt, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Lead, Manganese, Mercury, Naphthalene, Thallium
Air (outdoors)		X		Facility maintains a Title V Air Permit (BRRO-20304) with no active enforcement issues

Rationale:

1. Site-wide groundwater was sampled as part of the RCRA Facility Investigation. The contaminants listed above were observed above National Primary Drinking Water Maximum Contaminant Levels (MCLs) and/or risk based Regional Screening Levels (RSLs) published by EPA where no MCL is available.
2. VOCs in groundwater and soil were generally detected at low concentrations or not at all. Lack of detections and low concentrations suggest that vapor intrusion is likely not a significant concern.
3. On-site soil and waste were analyzed for VOCs, SVOCs, PCBs, and metals and were compared to USEPA Region III Industrial Soil Regional Screening Levels (IRSL). For purposes of conservatively identifying potential soil contaminants no distinction was made between surface and subsurface sampling depth intervals.
4. The constituents listed in the table above were detected in surface water above the Federal Water Quality Criteria (WQC) for Consumption of Water + Organism and/or the Virginia Public Health Water Quality Standards. The constituents detected in sediment samples were detected above EPA Region 3 BTAG screening benchmarks.

Reference:

Data Package RCRA Phase I/IB Investigation Data – 2011/2013, Arcadis, July 16, 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) suggests 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?

- 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.

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food*
Groundwater ¹	NO	NO	NO	NO	NO	NO	NO
Air (indoors)							
Soil (surface, e.g., <2 ft) ²	NO	YES	NO	YES	NO	NO	NO
Surface Water ³	NO	NO	NO	NO	NO	NO	NO
Sediment ³	NO	NO	NO	NO	NO	NO	NO
Soil (subsurface e.g., >2 ft) ²	NO	YES	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.

Rationale:

1. Although contaminants are present in groundwater at concentrations that exceed MCLs and/or risk-based RSLs for tap water, the groundwater pathway is not applicable to residents, day-care, trespassers, recreation, and food due to the current industrial use of the site and security. Although deep groundwater is used for industrial and non-drinking potable supply in the plant area the groundwater pathways is not applicable to on-site worker since bottled water is provided. The groundwater pathway for construction worker is not likely due to the depth to groundwater in a large portion of the plant area.

2. Although contaminants are present in surface/subsurface soil in concentrations that exceed residential and industrial risk-based RSLs for direct contact, the soil pathway is not applicable to residents, day-care, trespassers, recreation, and food given the current industrial use of the site, security, and the fact that a large portion of the plant area is covered (macadam, gravel, grass or buildings) and would help prevent exposure to soil. Site workers and construction workers involved in activities which disturb site soil are considered potential exposure pathways.
3. The surface water and sediment pathways are not applicable to residents, day-care, worker, trespassers, recreation, and food due to the industrial use of the site, limited access of these areas, and security. "No Trespassing" signage, fencing, and overall site security is adequate to protect against trespasser exposure. Construction activities are unlikely to occur in on-site tributaries containing surface water and sediment.

Reference:

Data Package RCRA Phase I/IB Investigation Data – 2011/2013, Arcadis, July 16, 2013.
SWMU and AOC Discussion and Status Update, Celco Site, Narrows, VA, AECOM, March 28, 2019.

* 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**”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 cannot 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):

Soil: Site soils have been generally characterized through historical environmental investigations, including the RFI, and as result the facility management recognizes that disturbance of impacted soil by on-site workers and construction workers should be avoided or limited where possible. In addition the facility has site-specific policies in place for proper PPE, procedures, and oversight of activities which involve disturbance of soil. As part of the final CA Remedy Decision process a Materials Management Plan (MMP) will be required for the Facility and reviewed by VDEQ/EPA. The MMP will help prevent exposure in the event that construction, subsurface utility repairs, capital improvement projects, or various soil disturbing activities in the future are conducted.

References:

Data Package RCRA Phase I/IB Investigation Data – 2011/2013, Arcadis, July 16, 2013.
SWMU and AOC Discussion and Status Update, Celco Site, Narrows, VA, AECOM, March 28, 2019.

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.

**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 Celanese Acetate, LLC facility, EPA ID # VAD005007679, located at 3520 Virginia Ave, Narrow, VA 24124, 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

Ryan Kelly
Corrective Action Project Manager

Date 9/24/2020



Supervisor

Tara Mason
RCRA CA and Groundwater Team Leader
Virginia Department of Environmental Quality

Date 9/24/2020

Locations where References may be found:

Virginia Department of Environmental Quality
1111 E. Main Street, Suite 1400
Richmond, Virginia 23219

Contact telephone and e-mail numbers

(name) Ryan Kelly
(phone #) 804-698-4045
(e-mail) ryan.kelly@deq.virginia.gov