

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: Continental Teves, Inc.
Facility Address: 13456 Lovers Lane, Culpeper, VA, 22701
Facility EPA ID #: VAD030341077

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 AIN@ (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 ACurrent Human Exposures Under Control@ EI

A positive ACurrent Human Exposures Under Control@EI determination (AYE@status code) indicates that there are no Aunacceptable@human exposures to Acontamination@ (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 Acontamination@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 ACurrent 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).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **Acontaminated**¹ above appropriately protective risk-based **Alevels**² (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	<u>X</u>	---	---	<u>PCE,TCE,VC,CIS-1,2,Cr</u>
Air (indoors) ²	<u>X</u>	---	---	<u>PCE,TCE,VC,CIS-1,2</u>
Surface Soil (e.g., <2 ft)	---	<u>X</u>	---	-----
Surface Water	---	<u>X</u>	---	-----
Sediment	---	<u>X</u>	---	-----
Subsurf. Soil (e.g., >2 ft)	---	<u>X</u>	---	-----
Air (outdoors)	---	<u>X</u>	---	-----

----- If no (for all media) - skip to #6, and enter **A YE,**³ status code after providing or citing appropriate **Alevels,**² and referencing sufficient supporting documentation demonstrating that these **Alevels**² are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each **Acontaminated**¹ medium, citing appropriate **Alevels**² (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 **A IN,**³ status code.

Rationale and Reference(s)

- Groundwater – Table A – Attachment 1
- Air Indoor – Lab Data – Attachment 1
- Surface Soil – Table B – Attachment 1
- Surface water – Table C – Attachment 1
- Sediment – Table B – Attachment 1
- Subsurface soil – Table B – Attachment 1
- Air (Outdoors) – Lab Data – Attachment 1
- Supplemental Guidance for Evaluation the Vapor Intrusion to Indoor Air Pathway – EPA- Attachment 2

Key Contaminants

PCE-Perchloroethylene

TCE-Trichloroethylene

VC-Vinyl Chloride

CIS-1,2-CIS 1,2-Dichloroethene

Cr-Chromium

Footnotes:

¹ **AContamination**² and **Acontaminated**² 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 **Alevels**² (for the media, that identify risks within the acceptable risk range).

²Recent 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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Rational and Reference(s):

A comprehensive groundwater and soil sampling program was conducted as part of the RFI Work Plan implementation in March 2002. This program included the collection and analysis of the following media:

- Groundwater
- Surface Soil
- Surface Water
- Sediment
- Subsurface Soil

In addition to the above sampling, indoor air samples within the plant were collected and analyzed.

The results of this sampling effort are presented in Table 1 and summarized in Table A, Table B, Table C attached to this document. The results of the indoor air sampling are provided as a separate laboratory sheet.

These summary tables are provided in Attachment 1 to this document.

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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?

No. (See Appendix A, Exhibit 6)

Summary Exposure Pathway Evaluation Table

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

Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ^f
Groundwater	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>
Air (indoors)	<u>no</u>	<u>yes</u>	<u>no</u>		<u>yes</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>
Sediment	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>
Soil (subsurface 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>
Air (outdoors)	<u>no</u>	<u>yes</u>	<u>no</u>	<u>yes</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 (**A___**). 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): _____

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

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Analytical results used to support the conclusions regarding Pathways are shown on the Tables included in Attachment 1.

RESIDENTS:

No residential properties are located in the immediate vicinity of the Continental Teves Facility.

- Groundwater – No completed pathway – no residential groundwater supply wells are located in the vicinity of the Continental Teves facility. The leading edge of the contaminant plume will continue to be monitored.
- Air (indoors) – No completed pathway – no residents live above or adjacent to soils or groundwater contaminated with VOCs
- Soil (surface) – No completed pathway – no residents live above or adjacent to contaminated soils. No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Surface Water – No completed pathway – no residents live in the immediate vicinity of the unnamed tributary of Meadowbrook Run and concentrations within the unnamed tributary are below the MCL.
- Sediment – No completed pathway – no residents live in the immediate vicinity of the unnamed tributary of Meadowbrook Run. No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Soil (subsurface) – Not applicable pathway
- Air (outdoor) – No completed pathway – no residents live in the immediate vicinity of the Continental Teves facility.

Workers:

- Groundwater – No completed pathway – groundwater at the facility is approximately twenty feet below the ground surface. No current activities at the site would result in a plant worker coming in contact with the groundwater.
- Air (indoors) – **A pathway does exist** – Indoor air sampling has shown that there is no impact to indoor air quality from the contamination at the site.
- Soil (surface) – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Surface Water – No completed pathway – no current facility activities occur in the immediate vicinity of the unnamed tributary of Meadowbrook Run and concentrations within the unnamed tributary are below the MCL.

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Construction:

- Groundwater – No completed pathway – groundwater at the facility is approximately twenty feet below the ground surface. No current activities at the site would result in a construction worker coming in contact with the groundwater. If activities to this depth were necessary a Health and Safety Plan would be required. All subsurface work will be cleared prior to commencement to evaluate exposure potential.
- Air (indoors) – **A pathway does exist** – Indoor air sampling has shown that there is no impact to indoor air quality from the contamination at the site.
- Soil (surface) – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties. All subsurface work will be cleared prior to commencement to evaluate exposure potential.
- Surface Water – No completed pathway – no current construction activities occur in the immediate vicinity of the unnamed tributary of Meadowbrook Run and concentrations within the unnamed tributary are below the MCL.
- Sediment – No completed pathway – no current construction activities occur in the immediate vicinity of the unnamed tributary of Meadowbrook Run. No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties. All subsurface work will be cleared prior to commencement to evaluate exposure potential.
- Soil (subsurface) – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties. All subsurface work will be cleared prior to commencement to evaluate exposure potential.
- Air (outdoor) – **A pathway does exist** – Indoor air sampling has shown that there is no impact. Outdoor air would show less of an impact due to dilution.

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Trespassers:

No evidence of Trespassers under current site conditions has been detected.

- Groundwater – No completed pathway – groundwater at the facility is approximately twenty feet below the ground surface.
- Air (indoors) – Not applicable pathway.
- Soil (surface) – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Surface Water – No completed pathway – concentrations within the unnamed tributary of Meadowbrook Run are below the MCL.
- Sediment – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Soil (subsurface) – Not applicable pathway.
- Air (outdoor) – No completed pathway – Indoor air sampling has shown that there is no impact. Outdoor air would show less of an impact due to dilution.

Recreation:

No evidence of recreational users under current site conditions has been detected.

- Groundwater – No completed pathway – groundwater at the facility is approximately twenty feet below the ground surface. No recreational activities would involve groundwater.
- Air (indoors) – Not applicable pathway.
- Soil (surface) – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Surface Water – No completed pathway – concentrations within the unnamed tributary of Meadowbrook Run are below the MCL.
- Sediment – No completed pathway – No soil contamination was detected above the EPA Region III Risk Based Criteria (RBC) for residential properties.
- Soil (subsurface) – Not applicable pathway.
- Air (outdoor) – No completed pathway – Indoor air sampling has shown that there is no impact. Outdoor air would show less of an impact due to dilution.

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Food:

- Groundwater – No completed pathway – groundwater at the facility is approximately twenty feet below the ground surface. No food items are produced/grown in contact with or are irrigated with groundwater.
- Air (indoors) – Not applicable pathway.
- Soil (surface) – No completed pathway – No food items are produced/grown in contact with contaminated surface soil.
- Surface Water – No completed pathway – No food items are produced/grown in contact with or are irrigated with surface water from the unnamed tributary of Meadowbrook Run.
- Sediment – No completed pathway — No food items are produced/grown in contact with contaminated sediment.
- Soil (subsurface) – Not applicable pathway.
- Air (outdoor) – Not applicable pathway.

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **Asignificant**⁴ (i.e., potentially **Aunacceptable** 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 **Alevels** (used to identify the **Acontamination**); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable **Alevels**) could result in greater than acceptable risks)?

 X If no (exposures can not be reasonably expected to be significant (i.e., potentially **Aunacceptable** for any complete exposure pathway) - skip to #6 and enter **AYE** status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to **Acontamination** (identified in #3) are not expected to be **Asignificant**.)

_____ If yes (exposures could be reasonably expected to be **Asignificant** (i.e., potentially **Aunacceptable** for any complete exposure pathway) - continue after providing a description (of each potentially **Aunacceptable** exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to **Acontamination** (identified in #3) are not expected to be **Asignificant**.)

_____ If unknown (for any complete pathway) - skip to #6 and enter **AIN** status code

Rationale and Reference(s): _____

⁴ If there is any question on whether the identified exposures are **Asignificant** (i.e., potentially **Aunacceptable**) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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Rationale and Reference(s):

The only potentially complete pathways as determined by and evaluations of the data collected as part of the implementation of the RFI work plan are:

- Indoor Air for workers and construction
- Outdoor Air for workers and construction

To evaluate the indoor air pathway the data was referenced to the “Supplemental Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (Vapor Intrusion Guidance)” prepared by the EPA. While this document indicates that there may be a potential concern, indoor air data that was collected show that there is no impact to indoor air. Therefore, while this pathway may be complete the exposure is not anticipated to be significant, if even detectable. A copy of the guidance and associated tables and worksheets are provided in Attachment 2.

Since the potential accumulation of VOCs in the indoor air did not occur the potential for these vapors to accumulate outdoors with the mixing and dilution that occur outside will significantly reduce the possibility of a significant exposure.

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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):

X YE - Yes, ~~A~~Current Human Exposures Under Control~~@~~has been verified. Based on a review of the information contained in this EI Determination, ~~A~~Current Human Exposures~~@~~are expected to be ~~A~~Under Control~~@~~at the Continental Teves, Inc. facility, EPA ID #VA030341077, located at Culpeper, 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 - ~~A~~Current Human Exposures~~@~~are NOT ~~A~~Under Control.~~@~~

____ IN - More information is needed to make a determination.

Completed by (Original Signed) _____ Date 9/17/03 _____
(print) Julia M. King-Collins
(title) Env. Eng. Senior _____

Supervisor (Original Signed) _____ Date 9/17/03 _____
(print) Leslie A. Romanchik
(title) Office Director _____
(State) Virginia _____

Locations where References may be found:

Attachment 1 _____
Attachment 2 _____
RFI WorkPlant _____

Contact telephone and e-mail numbers

(name) Julia M. King-Collins
(phone #) (804) 698-4237
(e-mail) jmking-col@deq.state.va.us

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.