

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: Teknicircuits, Inc.
Facility Address: 84 Shelter Rock Road, Danbury, CT 06810
Facility EPA ID #: CTD053707741

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?

XXX 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).

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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)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	XXX			1,1-Dichloroethane 1,1,1-Trichloroethane 1,1-Dichloroethylene
Air (indoors) ²			XXX	Off-site migration. Abutting facility located to the west of Teknicircuits.
Soil (surface, e.g., <2 ft)	XXX			Loading Dock – Copper above RDEC
Surface Water		XXX		
Sediment		XXX		
Soil (subsurface e.g., >2 ft)	XXX			SWMU’s 7&8 – Copper above RDEC
Air (outdoors)		XXX		

_____ 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.

XXX If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Groundwater

Groundwater at the site has been investigated to determine if the historic sludge drying beds (SWMUs 7 and 8) and operations at the facility has been impacted through releases. The investigation has not identified any such releases to the groundwater from the site. However, groundwater in three monitoring wells (CEE – 4, 6, and 15) is above the Connecticut Department of Environmental Protection regulations concerning Remediation Standards (CT RSR) for 1,1-Dichloroethane, 1,1-Dichloroethylene, and 1,1,1-trichloroethane. According to the Facility, these levels exceeding the CT RSR are attributable to an off-site source. Presently, the source has not been identified, however, the Facility presumes it to be from the northeast or east of the site. Monitoring data acquired since 1989 does suggest a steady decline.

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.

Groundwater, in the vicinity of the facility is classified as a GB area and is presumed not suitable for use as a current or potential source of drinking water, and is subject to the GB Groundwater Objectives for the State of Connecticut. No direct users of the groundwater are within the area. The nearest active well according to the Danbury Water Department is approximately 8,000 feet to the northwest (up gradient of the site). In addition, the Danbury Water Department stated that a municipal ordinance, on the records since 1940's, forbids the construction and use of new wells in areas served by city water.

Soil (surface, e.g. < 2ft.)

Loading Dock – Total copper is the only metal detected on a mass basis above the Connecticut Remediation Standard Regulations Residential Direct Exposure Criteria (RDEC). The total copper concentration in Sample 05 (RAP980416-05) was 2,630 mg/kg, slightly above the DEC of 2,500 mg/kg.

Soil (subsurface e.g., >2 ft)

SWMUs 7 and 8 – Both SWMUs have been eliminated from the site along with any related contaminated soil. Residual VOC and metal contamination remains in soil at a few sporadic locations in the tank graves, in the case of VOC's the levels were well below the RDEC and pollutant mobility criteria for class GB ground water quality areas. The single occurrence of copper above the residential DEC, **but below the Industrial Direct Exposure Criteria (IDEC)**, is in inaccessible soil.

References:

Demonstration Of No Further Action VOC's In Groundwater, Charter Oak Environmental Services, Inc., September 1998.

Assessment Monitoring Report, Consulting Environmental Engineers, Inc. August 1991.

RCRA Corrective Action Voluntary Program – Investigation of AEC 16 and Loading Dock, Consulting Environmental Engineers, Inc., June 12, 1998.

RCRA Corrective Action Voluntary Program – Investigation of SWMU's 3,4,5,6,9,10, 11, 12, 13, 14, and 15; AEC's 16, 17, and 18, Consulting Environmental Engineers, Inc., June 25, 1997.

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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

Contaminated Media	Potential Human Receptors (Under Current Conditions)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater							
<i>Air (indoors)</i>							
Soil (surface, e.g., <2 ft)							
<i>Surface Water</i>							
<i>Sediment</i>							
Soil (subsurface e.g., >2 ft)							
<i>Air (outdoors)</i>							

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 and Reference(s):

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 not expected to be “significant.”

_____ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

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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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):

