

**Documentation of Environmental Indicator Determination
in accordance with EPA Interim Final Guidance 2/5/99**

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)**

Current Human Exposures Under Control

Facility Name: Offutt Air Force Base
Facility Address: 55 CES/CEV 106 Peacekeeper Drive STE 2N3, Offutt AFB, NE 68113
Facility EPA ID #: NE8571924648

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

Definition of Environmental Indicators (for 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 EIs 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 EIs 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 is 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 the 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).

- 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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TCE & daughter products exceed MCLs
Air (indoors) ²	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TCE levels w/in 10-4 to 10-6 risk range
Surface Soil (e.g., <2 ft)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surface Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TCE levels below levels of concern
Sediment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Subsurf. Soil (e.g., >2 ft)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TCE & daughters exceed risk levels
Air (outdoors)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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): TCE and daughter products at Offutt exceed MCLs in the groundwater and likely exceed acceptable direct contact levels in subsurface soils (see Remedial Investigation Reports, and Feasibility Studies for Building 301, Hardfill 2, Fire Training Area 3, OJETS, Landfill 4.) Indoor air TCE levels are currently present within Bldg 407, with detected levels falling within the 10-4 to 10-6 risk range (see FY03 HF2C Vapor Intrusion Sampling Report and EPA response letter dated 09/15/03.) Previously high

contaminant levels in surface water discharging from a storm sewer have been adequately addressed (reduced to below risk levels) by Offutt’s relining of a deteriorated storm sewer (see email correspondence from Offutt dated 01/21/04.)

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.

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)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	no	no	no	yes			no
Air (indoors)	no	yes	no				
Soil (surface, e.g., <2 ft)	---	---	---	---	---	---	---
Surface Water	---	---			---	---	---
Sediment	---	---			---	---	---
Soil (subsurface e.g., >2 ft)				yes			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 and Reference(s): Offutt has recently documented the presence of TCE in indoor air of Bldg 407 (currently used as an office) at levels within a 10-4 to 10-6 carcinogenic risk range (see FY03 HF2C Vapor Intrusion Sampling Report and EPA response letter dated 09/15/03.). Offutt has qualitatively compared other building locations to potential sources and determined no other likely indoor air problems exist at the site. Elevated levels of TCE have also been documented where a storm sewer discharges to a facility-marginal creek (Bldg 301 area). It was determined that detected contamination was primarily a product of groundwater infiltration of a deteriorated storm sewer. These surface water discharges have been effectively eliminated from a risk standpoint by Offutt’s relining of the sewer (see email correspondence from Offutt dated 01/21/04.) Elevated contaminant levels also exist in subsurface soils and groundwater where they could pose an exposure threat to construction workers.

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

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): Indoor air TCE levels in Bldg. 407 fall within a 10-4 to 10-6 carcinogenic risk range. These levels are considered marginally acceptable in an occupational setting where TCE is the only contaminant and the estimated 30 year exposure duration would be unlikely for a military occupation (Offutt estimated 6 years as more likely). Institutional controls will be established for areas with elevated contaminant levels in groundwater and subsurface soils to eliminate the exposure risk to construction workers not wearing protective equipment (see Offutt Land Use Control Management Plan).

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.

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): Offutt has documented that indoor air levels of TCE exceed the 10-4 carcinogenic risk value at one of their buildings currently used as an office.

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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):

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 **Offutt Air Force Base**, EPA ID # **NE8571924648**, located at **Bellevue, NE** 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: Original signed by _____ Date 03/12/04 _____
William J. Johnson
(Title) EPA Project Manager

Supervisor: Original signed by _____ Date 03/16/04 _____
Jody Hudson
(Title) Chief, RCRA Corrective Action and Permits Branch
(EPA Region or State) EPA Region 7

Locations where References may be found: EPA Region 7 Records Center

Contact telephone and e-mail numbers

(Name) Jeff Johnson
(Phone #) 913-551-7849
(E-mail) johnson.jeff@epa.gov

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.