RCRA RECORDS CENTER
FACILITY Stratford Army Engine Plant
I.D. NO. CTD001181502
FILE LOC. R-13
OTHER RDMS # 3968

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: Stratford Army Engine Plant
Facility Address: 550 Main Street, Stratford, CT 01665
Facility EPA ID #: CTD001181502

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 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	✓			Site is classified GB but has levels > CT RSR Vol. criteria & SWPC
Air (indoors)[2]	✓			Some on-site bldgs test with levels above CT IATC
Surface Soil (e.g., <2 ft)	✓			VOCs, metals (Cr), TPH > CT RSR DEC & GWPMC
Surface Water	✓			Cr in surface water @ outfalls 8, PAHs, VOCs, & Cr in surface water over tidal flats
Sediment	✓			metals in sediment @ outfall 8, PAHs, PCBs, & metals in tidal flat sediments
Subsurf. Soil (e.g., >2 ft)	✓			Same issues as surface soils
Air (outdoors)	✓			infrequent detections > CT RSR IATC

____ 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): See January, 2003 Draft Remedial Investigation Report for Site characterization Criteria

CT RSR = Remediation Standards Regulation of the State of Connecticut
V.C = Volatilization Criteria
SWPC = Surface Water Protection Criteria
DEC = Direct Exposure Criteria
GWPMC = Ground Water Pollutant Mobility Criteria
IATC = Indoor Air Target Criteria

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) 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.

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 ②	Construction ③	Trespassers ④	Recreation	Food[3]
Groundwater ①	No	No	No	No			No
Air (indoors)	No	YES	No				
Soil (surface, e.g., <2 ft) ⑤	No	No	No	No	No	No	No
Surface Water	No	No			No	YES	YES
Sediment	No	No			No	YES	YES
Soil (subsurface e.g., >2 ft)				No			No
Air (outdoors)	No	YES	No	No	No		

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): ① Groundwater is not used for drinking water; there are no wells, other than monitoring wells, w/in a 1/2 mile radius. ② there is no day-care facility on-site ③ there is an on-site safety plan protocol for any below grade work. ④ Site is fully fenced and patrolled/monitored 24 hrs/day. ⑤ Site is paved Workers occupy indoor areas w/ GT RSR IATC exceedances and are not barred from access to outdoor areas w/ infrequent IATC exceedances. Tidal flat areas with PAH/PCB/metals contamination are accessible A limited seed oyster industry still exists on the Housatonic River in the vicinity of the site.

[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 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): Indoor air in occupied areas of site is routinely monitored (monthly 1999-2003, expected to shift to quarterly beyond 2003.) Outdoor areas w/ infrequent past IATC exceedances no longer monitored but not routinely visited/occupied. No areas sampled have ever exceeded OSHA PELs or ACGIH TLV values where no PEL exists (See Section 9.5 of draft January 2003 Remedial Investigation Report.)

Tidal flats, while open to recreational use, are not easily accessible (access barred on most of the landward side by the facility itself & frequency of exposure is likely to be very limited. Outfall 8 is partly open to access but not easily accessible as it is in a heavily vegetated wetland area surrounded by industrial/commercial land uses

There is a statewide advisory on fish consumption due to mercury and PCBs in fish tissue. Chromium and chlorinated solvents which are the principal contaminants discharged by the site do not bioaccumulate and would not be expected to drive a food chain risk. Seed oysters stored in Housatonic River are transferred to Long Island Sound for growth before harvesting. They are commercially harvested and subject to FDA Standards.

[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):_____

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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 the Stratford Army Engine Plant facility, EPA ID # CTD00~~0~~1181502, located at Stratford, CT 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) E. R.P. W. Date 8-4-2003
(print) Ernest R.P. Waterman
(title) Geologist

Supervisor (signature) [signature] Date 9/16/03
(print) Matthew R. Hoagland
(title) Section Chief
(EPA Region or State) Reg. I

Locations where References may be found:

Connecticut DEP Records Center
79 Elm Street
Hartford, CT 06106

Contact telephone and e-mail numbers

(name) Ernest Waterman
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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.