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: Facility Address:		Bettis Atomic Power Laboratory P.O. Box 109, West Mifflin, PA 15122					
	X	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.					
	ROUND on of Environme	ental 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**" 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	<u>No</u>	<u>?</u>	Rationale / Key Contaminants
Groundwater	X			In all cases, see Rationale/Key Contaminants below
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)	X			
Surface Water	X			
Sediment	X			
Subsurf. Soil (e.g., >2 ft)	X			
Air (outdoors)		X		

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):

A RCRA Facility Investigation (RFI) identified potential contaminants in the subject media at concentrations above EPA Region III's Risk-Based Concentrations ((RBCs) which indicate a potential unacceptable risk. Key contaminants include volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and trichloroethene, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) (primarily benzo(a pyrene).

References: (1) Final RFI Report for Bettis Laboratory dated June 1994; and,

- (2) EPA letter (Z. Maldonado) to Pittsburgh Naval Reactor Office (J. Sage) dated August 2, 1994, approving Final RFI Report of June 1994
- Indoor air is not reasonably suspected to contain VOCs at levels which present an unacceptable risk to human health. In particular, available groundwater data (see Final RFI Report dated 1994) indicates groundwater contaminated with VOCs either migrates vertically to the deep Pittsburgh Coal formation or is limited to portions of the facility property where there are no structures and no structures are planned.

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As part of the RFI, PCB and VOC air samples were collected above the ground surface in two areas which contained the highest concentrations of these contaminants. The results indicated that these contaminants were not present in outdoor air above EPA Region III RBCs.

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).

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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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?

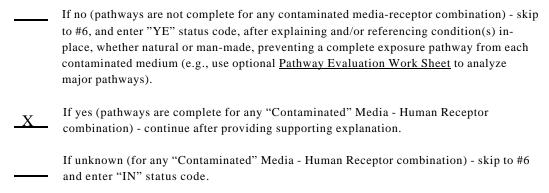
Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)							
"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	$Food^3$
Groundwater	NO	NO	NO	NO	NO	NO	NO
Air (indoors)							
Soil (surface, e.g., <2 ft)	YES	YES	NO	YES	YES	NO	NO
Surface Water	YES	YES	NO	YES	YES	NO	NO
Sediment	YES	YES	NO	YES	YES	NO	NO
Soil (subsurface e.g., >2	ft) 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.

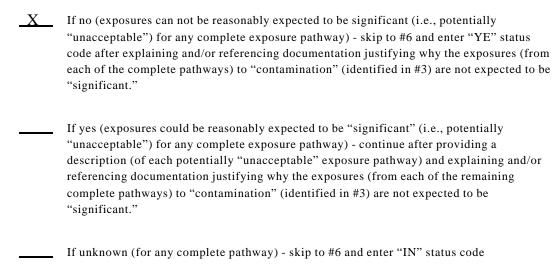


Rationale and Reference(s): The Final RFI Report contains a risk assessment that was performed to identify the effects of "reasonable maximum exposure" of on-site and off-site populations to environmental contamination from the facility. The risk assessment concluded that the subject pathways were of potential concern.

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" (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)?



Rationale and Reference(s): The risk assessment in the RFI calculated carcinogenic risk and non-carcinogenic hazard values for complete exposure pathways judged to be significant. Only one exposure pathway(offsite worker exposure to soil at an industrial property that abuts the facility) had a calculated carcinogenic risk which exceeded 1E-06 under reasonably expected land- and groundwater-use conditions. The carcinogenic risk in this case was estimated at 2E-05. However, this risk estimate was judged to be highly conservative and falls within the acceptable risk range.

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 <u>and</u> 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):								
	_X	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 Bettis Atomic Power Laboratory facility, EPA ID # PA0 89 009 0004, located in West Mifflin, PA 15122 (P.O. Box 109) 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 - "Cur	ent Human Exposures"	are NOT "Under Conti	ol."				
		IN - Mor	e information is needed	to make a determination	on.				
	Completed by	(signature)		Date	09/23/02			
		(print)	Darius Ostrauskas						
		(title)	Remedial Project M	anager					
	Supervisor	(signature)		Date	09/23/02			
		(print)	Paul Gotthold						
		(title)	PA Operations Bran	ch Chief					
		(EPA Reg	ion or State) EPA, Re	gion 3					
	Locations where	Locations where References may be found:							
	EPA Region III	·							
	Waste and Chen	Waste and Chemicals Management Division (3WC22)							
	1650 Arch Stree	1650 Arch Street - 11 th Floor RCRA Fileroom							
	Philadelphia, PA	Philadelphia, PA 19103-2029							
	Contact telepho	Contact telephone and e-mail numbers:							
	(name)	Dari	us Ostrauskas						
	(phone		814-3360						
	(e-mail	(e-mail) ostrauskas.darius@epa.gov							

FINAL NOTE: THE HUMAN EXPOSURES ELIS 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.