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: **_____Honeywell International, Inc. _____**
Facility Address: **_____1000 Wills Street, Baltimore, Maryland 21231_____**
Facility EPA ID #: **_____MDD 06 939 6711_____**

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?

__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.

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).

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	_x_	___	___	_____chromium (primarily), also selenium, thallium, zinc, antimony, arsenic, beryllium, cadmium, copper, lead, mercury, nickel, beryllium, cyanide, benzene, bis(2ethylhexyl)phthalate [DEHP], methylene chloride, and 4-nitrophenol
Air (indoors) [2]	___	_x_	___	_____
Surface Soil (e.g., <2 ft)	_x_	___	___	_____PAHs are present on acquired contiguous properties
Surface Water	___	_x_	___	_____Since several months following completion of construction of the barrier wall in February 1996, levels of dissolved chromium in surface water have been less than the 50 ppb standard established in the Consent Decree and its exhibits. In addition, analyses performed beginning in 1999 demonstrates that the level of dissolved chromium in the surface water is less than the fresh water contingency standard - (11 ppb dissolved chromium). See quarterly progress reports.
Sediment	_x_	___	__	___ Chromium, selenium, thallium, zinc, antimony, arsenic, beryllium, cadmium, cyanide, benzene, DEHP, and polynuclear aromatic hydrocarbon compounds (PAHs),
Subsurf. Soil (e.g., >2 ft)	_x_	___	___	Containment property: Chromium, copper, lead, mercury, nickel, zinc, arsenic, cyanide, phenols, chloroform, methylene chloride, phthalates, and PAHs; southeast quadrant: chromium and PAHs; acquired contiguous properties: PAHs
Air (outdoors)	___	_x_	___	There have been no detections of chromium or asbestos during monitoring that occurs during all actions that expose contaminated soil , although actions are required to minimize dust during such activities, and monitoring during all activities that expose contaminated soil is required. See quarterly progress reports.

_____ 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.

_x___ 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):

The following documents describe contamination that has been identified at the site:

1. Site Study - Phase I, Baltimore Chrome Works, Baltimore Maryland prepared by IT Corporation for AlliedSignal 5/85.
2. Allied Baltimore Works - Remedial Investigation Report, prepared by NUS Corporation for AlliedSignal 7/86.

3. Supplemental Site Characterization Report prepared by NUS Corporation for AlliedSignal. 5/1/90.
4. Supplemental Off-site Investigation Report, prepared by NUS Corporation for AlliedSignal 10/29/89 and
5. Letter Report of Findings, Boring OGW-8 prepared by Geraghty and Miller, 5/3/90.
6. Environmental Assessments performed for Allied of the Newly Acquired Contiguous Properties (former Sidney Meyer-Atlantic Mill and Lumber properties, former Lacy Foundry Properties, former Caroline Limited Partnership-Autoline properties, former Michael Silver properties).
7. December 1997 Data for former Michael Silver properties.
8. April 1999 Data for former Michael Silver properties.
9. Quarterly Progress Reports.

The following documents identify standards applied to the site:

1. 1989 Consent Decree: Established that surface water standard is 50 ppb dissolved chromium.

2. Chapter 11 of the Corrective Measure Implementation Program Plan, 1993: Established that the soil standard for hexavalent chromium is 10 ppb.

3. Statement of Basis and Final Decision: Established soil standards for PAHs.

These documents are located in the RCRA Administrative Record, the RCRA file room, or in the project manager's office or may be located on the RCRA imaging system.

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	Construction	Trespassers	Recreation	Food[3]
Groundwater	No__	_no__	_no	_no_			_no
Air (indoors)	_x_	_x_	_x_				
Soil (surface, e.g., <2 ft)	_no__	No	_no	yes	no no_	no	
Surface Water	__x	_x_			_x_	_x_	__x
Sediment	_no	_no			_no	_no	_yes_
Soil (subsurface e.g., >2 ft)				_yes			_no
Air (outdoors)	_x_	_x_	_x_	_x_	__x		

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).

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):

Groundwater: Contaminated groundwater is being contained in a containment structure built around 18 acres of the former manufacturing facility. Construction of the containment structure was completed in the Spring of 1999. As there is no current or expected use of groundwater for drinking, there are no current or expected exposures to residents, workers, or day care. Construction of a street through the former Michael Silver properties is planned and no known contaminants in the soil on those properties were found in samples of groundwater collected downgradient and below the former

Michael Silver properties (See preliminary results in 6/24/99 memo from Gary Snyder, Black & Veatch; and 8/99 Data Validation Report for Aqueous Sample Analyses Prepared for US Army Corps of Engineers - Baltimore District). Construction on other portions of the property is possible, however there is no current or defined future use of the land.

Soil < 2 ft: Caps have been constructed over the containment area and the southeast quadrant (construction completed in the Spring of 1999, oversight by COE and MDE). Access to the entire facility, including the acquired properties is prevented via a fence and there are no current uses. Construction of a street through contaminated soil at the former Michael Silver properties is planned. Construction on other portions of the property is possible, however there is no defined future use of the land.

Sediment: Since the harbor surface bottom is generally 20 to 30 ft below the water surface and a steep rock embankment surrounds the property, there are no reasonable resident, worker, trespasser, or recreational pathways to the sediment. Crabs in contaminated sediment are a potential food source.

Soil > 2ft: Construction of a street through contaminated soil at the former Michael Silver properties is planned. Construction on other portions of the property is possible, however there is no current or defined future use of the land.

[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."

__x_ 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):

Construction worker exposure to soil < 2 ft and > 2 ft: Exposure by construction workers to contaminated surface and subsurface soil can be expected during the realignment of Caroline Street onto the former Michael Silver properties.

Food source exposure to contaminated sediment: Exposure to chromium from crab consumption may be significant. Note that while subsistence fishing/crabbing has been observed in the past, there have been no observations of fishing/crabbing in recent years. However, this pathway was further evaluated because many recreational boats are stored in docks located around the perimeter of the facility, a public interest organization recently publicized fishing/crabbing in the area, and locations adjacent to the facility are available to support potential crabbing/fishing.

[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.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

__x___ 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.

Unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

Construction worker exposure to contaminated surface and subsurface soil below the former Michael Silver Property is within the 1x10E-6 risk range, which is an acceptable risk range. See "Calculation of Risk below former Michael Silver properties based on data collected by Allied Signal in Spring, 1999, calculations by EPA Region III toxicologist Betty Ann Quinn.".

Food source exposure to contaminated sediment: Assessment of crab data collected in 1986 subsequent to the RI, demonstrates level of total chromium in crabs is less than current applicable risk based level for hexavalent chromium in crabs (4.1 ppm, Region III Health Based Numbers). See "Body Burden of Chromium in Baltimore Harbor Blue Crabs: Results of 1986 Survey, Feb. 9, 1987.

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 **Honeywell International, Inc.** facility, **EPA ID # MDD 06 939 6711**, located **at 1000 Wills Street in Baltimore, Maryland** 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)_____ Date 11-02-99
(print) Diane Schott
(title) Remedial Project Manager

Supervisor (signature)_____ Date 11-05-99
(print) Robert E. Greaves
(title) Chief, General Operations Branch
(EPA Region or State) EPA, Region 3

Locations where References may be found:

_Administrative Record
Office of RCRA Project Coordinator_____
_RCRA Imaging System_____

Contact telephone and e-mail numbers

(name)__Diane Schott_____
(phone #)_215-814-3430_____
(e-mail)_schott.diane@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.