

US EPA ARCHIVE DOCUMENT

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: Morton International, Inc.
Facility Address: 2000 West Street, Reading, Hamilton County, Ohio
Facility EPA ID #: OHD 000 724 138

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, GPRAs). 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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals
Air (indoors) ²		X		VOCs and SVOCs
Surface Soil (e.g., <2 ft)				VOCs, SVOCs, pesticides and metals
Surface Water				Pesticides and metals (based on concentrations measured in seep water)
Sediment				SVOCs, pesticides and metals
Subsurf. Soil (e.g., >2 ft)				VOCs, SVOCs, pesticides, PCBs and metals
Air (outdoors)				VOC, SVOCs and metals

_____ 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):
Morton International Inc. (Morton) has conducted a facility investigation and risk assessment for their facility as

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.

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documented in a draft Facility Investigation Report and Baseline Risk Assessment dated June 2002. EPA's review of the information available from the report and risk assessment indicates the following:

Groundwater

The facility investigation included site-wide groundwater sampling and analysis with focus on characterization of various solid waste management units and areas of concern, including a swale and burial areas (e.g., trenches such as T-1 were excavated at burial areas during the facility investigation), the former surface impoundments (previously excavated), a combined sewer system and french drain with groundwater collection system. Based on the results from the facility investigation, several volatile and semivolatiles organic constituents (VOCs and SVOCs) as well as pesticides, polychlorinated biphenyls (PCBs) and metals have been detected in groundwater from the upper and lower aquifers beneath the facility. Contamination in the lower aquifer appears to be related to former operations at the Pristine facility, a Superfund site located upgradient from Pristine (refer to a Superfund Record of Decision for the Pristine facility). It also appears that some contamination from the upper aquifer at the Morton facility may have migrated from Pristine.

Various metals, VOCs, SVOCs, pesticides and PCBs in the upper aquifer exceed Region 9 Preliminary Remediation Goals (PRG) in groundwater for the worker industrial scenario. PRG exceedances in groundwater from the upper aquifer seem to be mainly associated with the combined sewer system, the vicinity of the french drain and the overtime migration of contamination from former surface impoundments and burial areas. Further groundwater monitoring will be collected at area T-1 to delineate extent of contamination from metals. Significant exposures exist for indoor industrial workers from exposure to arsenic, thallium and tin in groundwater at the T-1 area. Significant exposures also exist for construction workers from exposure to acetone, toluene, antimony, benzene, chlorobenzene and 1,2-dichlorobenzene in groundwater from localized contamination areas potentially related to the combined sewer system, the french drain and T-1 area. A future revised risk assessment will incorporate all constituents detected in groundwater at the Morton facility regardless of their relationship to background or off-site sources to confirm whether cumulative risk may affect risk at the facility.

Mill Creek is located adjacent to the western property boundary. Groundwater from the shallow sand in the upper aquifer discharges to surface water from Mill Creek. Major discharges of groundwater contamination above MCLs include benzene, chlorobenzene, toluene, aniline, and arsenic.

Surface and subsurface soil

The facility investigation included soil sampling and analysis for characterization of the various solid waste management units and areas of concern. Buried drums or material found during the investigation were removed and disposed off properly.

The EPA's review of the Morton's facility investigation report has indicated that concentrations of various metals, VOCs, SVOCs, pesticides and PCBs exceed Region 9 Preliminary Remediation Goals (PRG) for soil for the industrial worker scenario. PRG exceedances in soil are mainly associated with contamination from former burial area associated with investigations at trench T-1, the former surface impoundments, and other areas where no on-going sources of contamination are apparent. Additional data collection will include soil sampling at the vicinity of wells UAW17-40 and UAW 04-20, the surface impoundments and the T-1 area. The results from the additional data collection will be included in the future revised risk assessment.

There are significant exposures for construction workers from exposure to arsenic in soil at the T-1 area. The future revised risk assessment will also incorporate all constituents detected in soil at the Morton facility regardless of their relationship to background or off-site sources to confirm whether cumulative risk may affect risk at the facility.

Sediments and surface water

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In addition, there are PRG exceedances for SVOCs, pesticides and metals in sediments as well as exceedances of MCL and tap water criteria for pesticides and metals in water from seeps (seep water was used to represent concentrations from surface water). Based on the draft risk assessment, a total hazard index of 0.01 was determined for the child recreational user scenario at Mill Creek for surface water as represented in seep water indicating no unacceptable exposures.

Based on the available data for Mill Creek, no carcinogenic constituents were detected in Mill Creek. It is noted that additional data will be collected for sediment and surface water in Mill Creek to include analysis for constituents of concern for which no previous analysis has been conducted. However, it is not anticipated that the additional data will indicate a level of risk that would be unacceptable with respect to the short-term goals under this EI determination. The results from the additional data collection will be included in the future revised risk assessment. The future revised risk assessment will also incorporate all constituents detected in sediment and surface water regardless of their relationship to background or off-site sources to confirm whether cumulative risk may affect risk at Mill Creek.

Air (indoors and outdoors)

Outdoor air concentrations were modeled based on particulate emission and volatilization factors for soil VOC, SVOCs and metal concentrations. Indoor air concentrations were modeled from soil and groundwater concentrations for VOCs and SVOCs. These concentrations did not exceed the Occupational Safety and Health Administration levels and Permissible Exposure Limits for industrial workers through indoor air exhalation pathways. Similar conditions are anticipated for outdoor/ambient air. There are no significant exposures for the off-site residential scenario related to the inhalation pathway.

Refer to attached figure of the facility.

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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	Yes	-	Yes	No	No	No
Air (indoors)	No	No	-	No	-	-	-
Soil (surface, e.g., <2 ft)	-	Yes	-	Yes	-	-	-
Surface Water	-	-	-	-	-	No	-
Sediment	-	-	-	-	-	No	-
Soil (subsurface e.g., >2 ft)	-	Yes	-	Yes	-	-	-
Air (outdoors)	No	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).

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

The lower aquifer beneath the facility is a source of drinking water. However, it appears that contamination in the lower aquifer is related to operations from the Pristine site located upgradient from the Morton facility (refer to the

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

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Superfund Record of Decision for the Pristine facility). Currently, the Pristine site is currently addressing the remediation of contamination from the lower aquifer. The field and safety plan is in place for routine worker and construction worker activities. Therefore, there will be no contact with groundwater.

Soil

No trespasser scenario is anticipated based on the facility's practices regarding property access control and security. The field and safety plan is in place for routine worker and construction worker activities.

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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):

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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 Morton International Inc. facility, EPA ID # OHD 000 724 138, located in Reading, Hamilton County, Ohio, 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 _____
 (print) Mirtha Capiro
 (title) Environmental Scientist

Supervisor (signature) _____ Date _____
 (print) George Hamper
 (title) Chief, Corrective Action Section
 (EPA Region or State) EPA Region 5

Locations where References may be found:

U.S. EPA Region 5
7th Floor Records Center
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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.