

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: Olin Microelectronics Materials
Facility Address: 731 Enger Road, Nazareth, PA 18064
Facility EPA ID #: PAD002389104

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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Facility Background

The site is located at 731 Enger Rd. in Nazareth within Plainfield Township in Northampton County, Pennsylvania. The facility was established in 1972 as Hi-Pure Chemicals, Inc. The site facility consists of parcel #1 and parcel # 2. The parcels are non-contiguous properties, and industrial activity was limited to Parcel # 1. The site is approximately 360 feet by 650 feet and consists of a large manufacturing building/warehouse and an office building. Industrial activities conducted by the Olin Corporation began in 1984. The facility repackaged and purified industrial, electronic, and food grade acids. Materials handled at the site included: ammonium hydroxide, hydrochloric acid, hydrofluoric acid, acetic acid, nitric acid, ammonia, hydrogen fluoride, phosphoric acid, sulfuric acid, and ammonium bifluoride.

The site is currently inactive and zoned for use as Industrial/Business Park. During operations, the facility obtained several permits, including a water management permit, an air permit, and a RCRA (Resource Conservation Recovery Act) permit for the treatment and storage of hazardous waste. Permitted units, including the RCRA Elementary Neutralization Unit and storage pad are currently closed and dismantled. The groundwater and surface water monitoring program originally associated with the permitted units is still conducted at the site.

Storage tanks, both aboveground and underground, and sumps have been removed during the site demolition activities, which were completed in 1998. A permitted spray irrigation system, for non-contact cooling water, was operated on the northwest side of the property. The use of the spray irrigation system ended in 1987. Two surface water impounds were formerly in use at the site. The firewater pond located west of the property has been drained, but may be re-commissioned for use by a new owner. The retention pond has been drained, cleaned, and filled with crushed decontaminated concrete and stone fill. In addition, during demolition activities that occurred in 1998, process equipment, process lines, HVAC units, and duct work were removed, and minor building repairs completed. One production well, PW-1, remains at the site, but is inactive.

The site soil is glacial drift overlying shale/slate bedrock. The upper layer of the bedrock is characterized by fractures. Site monitor wells were completed in overburden, fractured bedrock, and bedrock to monitor groundwater quality in multiple zones. Groundwater flow in the upper aquifer is towards the Little Bushkill Creek.

Nine groundwater monitor wells and one production well are currently located within and on the perimeter of the facility. Quarterly groundwater monitoring was initiated in the 1980's for seven of the monitoring wells. Beginning in 1999 groundwater sampling has been conducted on an annual basis, and surface water has been collected bi-annually from two locations in Little Bushkill Creek.

The groundwater and surface water samples have been analyzed for inorganic compounds (chloride, sulfate, nitrate, nitrite, fluoride, and ammonia as nitrogen), pH, and total dissolved solids. The majority of the site monitor wells are in compliance with Statewide Health Standards. However, three constituents, fluoride, nitrate, and sulfate, are not in compliance with Statewide Health Standards in select on-site wells and are addressed under Site Specific Standards, which were developed in the risk assessment. Nitrate could be attributed to Agricultural run-off, and fluoride and sulfate are covered by Secondary Drinking Water Regulations which are not based on health risks and cover the aesthetic affects these chemicals might have on drinking water.

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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 | <u>X</u> | <u>—</u> | <u>—</u> | <u>Nitrate, fluoride, sulfate above health-based screening levels</u> |
| Air (indoors) ² | <u>—</u> | <u>X</u> | <u>—</u> | <u>Not applicable</u> |
| Surface Soil (e.g., <2 ft) | <u>—</u> | <u>X</u> | <u>—</u> | <u>No</u> |
| Surface Water | <u>—</u> | <u>X</u> | <u>—</u> | <u>No</u> |
| Sediment | <u>—</u> | <u>X</u> | <u>—</u> | <u>No</u> |
| Subsurface Soil (e.g., >2 ft) | <u>—</u> | <u>X</u> | <u>—</u> | <u>No</u> |
| Air (outdoors) | <u>—</u> | <u>X</u> | <u>—</u> | <u>No</u> |

— 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.

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 Department 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 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 contaminates) does not present unacceptable risks.

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Groundwater

Reference Olin's Final Report for investigation of contaminants and associated levels in groundwater, and supporting documentation and studies.

References:

Remedial Investigation Report Olin Nazareth Facility, MACTEC Engineering and Consulting, Inc., November 2004 prepared for Olin Corporation, Charleston, Tennessee

Risk Assessment Report Olin Nazareth Facility, MACTEC Engineering and Consulting, Inc., November 2004 prepared for Olin Corporation, Charleston, Tennessee

Final Report Olin Nazareth Facility, MACTEC Engineering and Consulting, Inc., August 2005 prepared for Olin Corporation, Charleston, Tennessee

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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)

| <u>“Contaminated” Media</u> | Residents | Workers | Day-Care | Construction | Trespassers | Recreation | Food |
|------------------------------------|-----------|---------|----------|--------------|-------------|------------|------|
| Groundwater | No | No | No | No | No | No | No |
| Air (indoors) | | | | | | | |
| Soil (surface, e.g., <2 ft) | | | | | | | |
| Surface Water | | | | | | | |
| Sediment | | | | | | | |
| Soil (subsurface e.g., >2 ft) | | | | | | | |
| 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.

- X 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. (Uncertainties are summarized below)

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

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Rationale and Reference(s):

GROUNDWATER:

Neither groundwater nor public water supply is presently being used at this site by Olin. Field technicians do have the potential of being in contact with the contaminated groundwater during sampling events of the groundwater monitoring wells. However, since they wear protective clothing/gloves during each groundwater sampling event, the likelihood of exposure is minimized. This facility has a secured chain link fence around the perimeter of the property.

Reference Olin's Final Report for investigation of contaminants and appropriate "levels" in groundwater, and supporting documentation and studies.

REFERENCES:

Remedial Investigation Report Olin Nazareth Facility, MACTEC Engineering and Consulting, Inc., November 2004 prepared for Olin Corporation, Charleston, Tennessee

Risk Assessment Report Olin Nazareth Facility, MACTEC Engineering and Consulting, Inc., November 2004 prepared for Olin Corporation, Charleston, Tennessee

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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” levels 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.

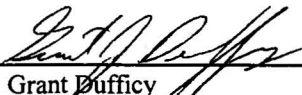
_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code.

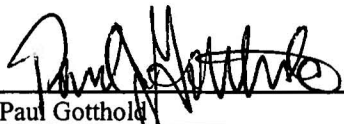
Rationale and Reference(s):

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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):

- 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 Olin Microelectronics Materials facility, EPA ID # PAD002389104, located at 731 Enger Road, Nazareth, PA 18064 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  Date 12/22/05
Grant Dufficy
RCRA Project Manager

Supervisor  Date 12-22-05
Paul Gotthold
PA Operations Branch Chief
EPA, Region III

Locations where References may be found:

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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.