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:	General Electric Plastics
Facility Address:	State Route 892, DuPont Road, Washington, West Virginia
Facility EPA ID #:	WVD088911854

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		
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		

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): GE Plastics(GEP) acquired the Washington, West Virginia facility from Borg-Warner Chemicals in 1988. USEPA Region III issued a draft HSWA Permit to the site in 1992 and conducted a RCRA Facility Assessment in 1993, identifying approximately 40 Solid Waste Management Units (SWMUs) and eight Areas of Concern (AOCs). GEP developed Corrective Action Work Plans covering RCRA Facility Investigations(RFIs), Verification Investigations(VIs), and Interim Measures (IMs) that were approved by USEPA Region III between September and November 1995. Field work began in March 1996 and was conducted in three separate mobilizations during 1996, 1997, and 1998. Throughout the program, GEP biased sample collection towards areas of known contamination and utilized random sampling in areas where contamination had not been previously documented. Those areas where significant contamination was detected were immediately addressed under interim corrective actions. GEP completed a number of substantial remedial actions as IMs to proactively remove material or upgrade facilities, thereby eliminating potential adverse impacts to human or environmental receptors. An abbreviated human health risk assessment was conducted for contaminants detected in soil at concentrations exceeding risk-based screening levels. Populations with the potential for exposure to contaminated media related to the facility operations include on-site workers only. The results of the human health risk assessment indicate that there are no risks resulting from exposures to non-carcinogens in soil that exceed USEPA's risk target of 1.0. Antimony was found in a soil sample from SWMU 14 at a concentration of 3970 mg/kg, exceeding the RBC of 820 mg/kg for this metal. This sample however was collected from a depth of approximately six feet, and therefore would not represent an area of contamination that would be expected to impact the worker population. In addition, there are no cancer risks resulting from exposures to soil at the site that exceed USEPA's acceptable risk range of 10^{-6} to 10^{-4}. Arsenic(130 mg/kg) at SWMU 3 and Benzo(a)pyrene (.92 mg/kg) at SWMU 33 resulted in increased cancer risks of less than 10^{-5}. The potential risks posed by emissions of hazardous air pollutants were evaluated using a tiered approach. Tier 1 involved a review of historic fenceline data from 1990-1992 which suggested potentially unacceptable risks (greater than 10^{-4}) may have been posed by emissions of acrylonitrile and 1,3 butadiene. SWMUs or AOCs with the potential to emit these chemicals were evaluated further. These included AOC I, the location of a former underground transfer line leak where 1,3 butadiene was detected in shallow soils up to 27 ppm, open top sumps in the wastewater stream (coagulation pits) where both 1,3 butadiene and acrylonitrile were emitted, and the Waste Water Treatment Plant (WWTP) itself which was a significant emission source for acrylonitrile.

Tier 2 evaluated the risk posed by shallow soils impacted from the historic leak of 1,3 butadiene using a conservative box model which indicated soil concentrations were approximately three orders of magnitude below levels which could pose an unacceptable risk.

Further evaluation of the coagulation pit emissions and the WWTP was conducted using a three-dimensional air dispersion computer model. The model and its input parameters were approved by USEPA in 1996 and enabled prediction of concentrations at focused receptors off site. Initial model runs (1997) indicated potentially unacceptable risks posed by acrylonitrile emissions from the WWTP while coagulum pit emissions were within the acceptable range.

GE subsequently reconfigured the WWTP to eliminate emissions from the equalization basin (EQ Basin), the primary source of acrylonitrile emissions. These changes included construction of a new spill basin to contain significant spills for treatment prior to discharge and removal of the equalization basin from service to reduce air emissions.

The air dispersion model was rerun in 2000 with the new configuration and the predicted concentrations were found to be well within USEPA's acceptable range (10^{-5}). Recent additions of a small catch basin and screen filter to the WWTP contribute less than 2.7 % of the total emissions used in the 2000 model. These increases are offset by production process improvements (efficiencies) and decreased usage of the EQ Basin, which have reduced the overall concentration of acrylonitrile in the wastewater stream, and consequently the potential emissions, by approximately 20%. Furthermore, additional emissions reduction will be realized when the EQ Basin is permanently taken out of service in September 2003. The net result is that total emissions are currently less than or equal to those modeled in 2000.

In all instances, no unacceptable risk was identified.

References:

RCRA Facility Investigation, Final Report, General Electric Plastics. West Virginia Prepared by, GeoTrans, Inc., April, 2001.

RFI Work Plan Addendum for Air Contaminant Characterization, GE Plastics Inc., Washington, West Virginia. Prepared by, Geo Trans, Inc., December12, 1996.

Correspondence from Dale R. VanDeVelde, General Electric to William Wentworth, EPA, August 28, 2003. Regarding Air Dispersion Model Information.

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	___	___	___	___			___
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.

____ 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):

[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):

[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):

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 **General Electric Plastics** facility, EPA ID # **WVD088911854**, located at **State Route 892, Dupont Road, Washington, West Virginia** 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)	/s/	Date 9/15/03
	(print)	Bill Wentworth	
		Project Manager	

Supervisor	(signature)	/s/	Date 9/15/03
	(print)	Bob Greaves	
	(title)	Chief, General Operations Branch	
	(EPA Region or State)	Region III	

Locations where References may be found:

EPA Region III RCRA File Room
11th Floor
1650 Arch Street
Philadelphia, Pa 19103-2029

Contact telephone and e-mail numbers:

(name)	Bill Wentworth
(phone #)	(215) 814-3184
(e-mail)	wentworth.william@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.