

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

### Resource Conservation and Recovery Act (RCRA) Corrective Action Environmental Indicator (EI) RCRAInfo Code (CA725) Current Human Exposures Under Control

**Facility Name: Caribe General Electric Products**

**Facility Address: Sabana Llana Industrial Park, Río Piedras, Puerto Rico**

**Facility EPA ID#: PRD000692590**

#### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EIs) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. The two EIs 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 (CA725)**

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 objectives of the RCRA Corrective Action program, the EIs 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 is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does 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 determination status codes should remain in the Resource Conservation and Recovery Information System (RCRAInfo) national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

#### **Facility Information**

The former Caribe General Electric (GE) Products Inc. (facility) was located in an industrial area in Río Piedras on the northeastern coast of Puerto Rico. The facility covers approximately four acres in a relatively low lying terrain. Currently the facility is bordered to the north by Max Chemicals, to the south by Caribbean Signs, to the east by the Puerto Rico Electric Power Authority’s San Juan regional offices, and to the west by Calle 5.

The facility is situated on the northern coastal plain in a relatively flat industrial/urban area of Río Piedras with an elevation between 20 and 40 feet above mean sea level (amsl). The nearest surface water body is Laguna San José, located approximately 2 kilometers north of the facility immediately followed by the Atlantic Ocean north of Laguna San José. Groundwater flow direction at the facility is assumed to be north towards Laguna San José and the Atlantic Ocean. Regional geology of the area is characterized by alluvial deposits (Ref. 4). The alluvium consists of silty and sandy clay and is mainly red or mottled red-light gray in color. The thickness of the unit is estimated to be greater than 100 meters.

The facility was originally used for manufacturing fuses and other electrical accessories including current limiting fuses, home lighting protectors, fuse links, radio energy management systems, watt hour meters, and electrical relays (Ref. 1 & 2). Manufacturing operations began in March 1966 within Building 1. A second building (Building 2) was added to the manufacturing operations in August 1969. Building 2 was reportedly used for storage of finished products manufactured from other GE plants and the manufacturing of plastic parts for electrical accessories. Building 1 was sold to General Electric of Caribe in 1986 (Ref. 1 & 2). The building was subsequently sold to the Puerto Rico Industrial Development Company (PRIDCO) sometime between 1986 and 1999 (Ref. 2). PRIDCO then sold Building 1 to Active Salesman Company in 1999 (Ref. 2). PRIDCO currently owns (i.e., as of 2013) Building 2. The facility is currently used for general storage, warehousing, and process activities involved with the fabrication of metal signage. Active Salesman Company utilizes Building 1 for administrative activities and storage of packing materials and paper products (e.g., take-out containers, paper towels, napkins, etc.). Building 1 stored products used to supply local restaurants and event planning companies. As of 2013, Building 2 was operated by Caribbean Signs to produce signage. The two buildings are no longer connected to one another. Prior to 1985, the facility-generated waste from the GE manufacturing and painting processes included 1,1,1-trichloroethylene, alcohol flux, a corrosive solution from bright dip process, flux oil, lead scrap, polybutadiene resin, sludge from phosphatizing process, sodium hydroxide, spent cresylic acid, spent oil, waste oxidizer, waste paint, and wastewaters from electroplating processes (Ref. 1 & 2).

On August 18, 1980 GE submitted a Notification of Hazardous Wastes Activity to the United States Environmental Protection Agency (EPA) and identified the facility as a Generator and a Treatment, Storage and Disposal (TSD) facility. Then, on November 19 1980, GE submitted the Part A Permit Application to EPA. According to the application, Building 1 was used for the storage of the following hazardous wastes: D001, D002, D008, F001, F004, K054, P104, P098, and U133 while Building 2 stored the following hazardous wastes: D001, D002, K054, and U133. On November 29, 1984 GE submitted a petition to the Puerto Rico Environmental Quality Board (EQB) to reclassify their status to a Large Quantity Generator (LQG). As a result, GE submitted a work plan for closure of its Hazardous Waste Storage Area on October 20, 1985. The closure work plan was revised by EPA and EQB between 1986 and 1987. A public notice announcing the closure plan was issued on January 16, 1988 and the plan was finally approved by EPA and EQB on March 8, 1988. With the concurrence of EPA (Ref. 3), EQB finally approved the final closure certification for the former Hazardous Waste Container Storage Area on January 28, 1991 (Ref. 4) and the Facility was reclassified as a LQG.

On September 8, 1984 a spill of approximately 20 to 25 gallons of cresylic acid occurred within the Paint Room of Building 1. The spill was contained within the building and spill waste was managed using absorbent pads which were containerized within 55-gallon drums and disposed appropriately (Ref. 1 & 2). On July 6, 1989 EQB conducted a Visual Site Inspection (VSI) as part of a RCRA Facility Assessment (RFA). The RFA recommended further investigation to determine if spill of cresylic acid migrated to soil media (Ref. 1 & 2). Based on the RFA, EPA imposed a RCRA Facility Investigation (RFI) on July 12, 2010 (Ref. 5).

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 (SWMUs), regulated units (RUs), and areas of concern (AOCs)), 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

### **Summary of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs):**

In November 1989, a RCRA Facility Assessment (RFA) of the Caribe General Electric Products, Inc. facility in Río Piedras Puerto Rico was completed by EQB. The RFA identified one SWMU, the Hazardous Waste Container Storage Area (SWMU 1), and one AOC, the Paint Room (AOC 1).

SWMU 1 consisted of an 18-ft by 40-ft drum storage area with a 4-inch high dike and three sumps to contain any release of hazardous waste (Ref. 1). The base of the SWMU 1 was made of a 4-inch thick concrete slab. The RFA recommended no further action for SWMU 1. In 1988 this SWMU was closed. EPA and EQB approved the closure of SWMU 1 (Ref. 3 & 4).

AOC 1 was located on the east side of the facility, on the manufacturing area and was used for the painting of relay steel enclosures. Among the raw materials used in this area were paint thinner and cresylic acid. On September 8, 1984 a spill of approximately 20 to 25 gallons of cresylic acid occurred within AOC 1. The spill was contained within the building and spill waste was managed using absorbent pads which were containerized within 55-gallon drums and disposed appropriately (Ref. 1 & 2). The RFA recommended further investigation to determine if spill of cresylic acid migrated to soil media (Ref. 1 & 2). Based on the RFA, EPA imposed a RCRA Facility Investigation (RFI) on July 12, 2010 (Ref. 5). The RFI consisted of surface (0-2 ft) and subsurface (2-4 ft) samples that were collected beneath the concrete slab at the former location of AOC 1 and analyzed for cresol compounds (i.e. 2-methylphenol, 3-methylphenol, 4-methylphenol). Results indicate that surface and subsurface soils beneath AOC 1 were not impacted by cresylic acid. Given the results of the RFI, no groundwater contamination is expected and No Further Action (NFA) is necessary at the facility (Ref. 2). On November 20, 2012, EPA concurred with GE and recommended that Corrective Action at the facility be terminated (Ref. 6).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> 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)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater		X		Not sampled. See discussion below.
Air (indoors) <sup>2</sup>		X		Not sampled. See discussion below.
Surface Soil (e.g., <2 ft)		X		Sampled. See discussion below.
Surface Water		X		Not sampled. See discussion below.
Sediment		X		Not sampled. See discussion below.
Subsurface Soil (e.g., >2 ft)		X		Sampled. See discussion below.
Air (Outdoor)		X		Not sampled. See discussion below.

- 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:**

On March 2012, GE conducted soil sampling as part of the RCRA Facility Investigation. Surface (0-2 ft) and subsurface (2-4 ft) samples were collected beneath the concrete slab at the former location of AOC-1 and analyzed for cresol compounds (i.e. 2-methylphenol, 3-methylphenol, 4-methylphenol). Results indicate that surface and subsurface soils beneath AOC 1 were not impacted by cresylic acid. Given the results of the RFI, no groundwater contamination is expected and No Further Action (NFA) is necessary at the facility (Ref. 2). On November 20, 2012, EPA concurred with GE and recommended that Corrective Action at the facility be terminated (Ref. 6).

<sup>1</sup> “Contamination” and “contaminated” describe 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).

<sup>2</sup> Recent evidence (from the Colorado Department of Public Health and Environment, and others) suggests 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	Trespasser	Recreation	Food <sup>3</sup>
Groundwater	--	--	--	--	--	--	--
Air (indoor)	--	--	--	--	--	--	--
Surface Soil (e.g. < 2 ft)	--	--	--	--	--	--	--
Surface Water	--	--	--	--	--	--	--
Sediment	--	--	--	--	--	--	--
Subsurface Soil (e.g., > 2 ft)	--	--	--	--	--	--	--
Air (outdoors)	--	--	--	--	--	--	--

Instruction 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 checked spaces. These spaces instead have dashes (“--”). 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:**

Not Applicable

---

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

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **significant**<sup>4</sup> (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 cannot 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:**

Not Applicable

---

<sup>4</sup> 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:**

Not Applicable

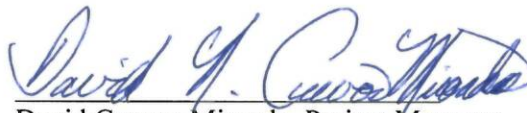
6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

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 Caribe General Electric Products, Inc. site, EPA ID# PRD000692590, located at in Río Piedras, Puerto Rico, 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:



David Cuevas-Miranda, Project Manager  
Response & Remediation Branch/CEPD  
EPA Region 2

Date: 3/25/13

Reviewed by:



Ramón Torres, Branch Chief  
Response & Remediation Branch/CEPD  
EPA Region 2

Date: 3/25/13

Approved by:



José C. Font, Director  
Caribbean Environmental Protection Division  
EPA Region 2

Date: 3-25-13



## **References:**

1. RCRA Facility Assessment Report, Caribe GE Products, Inc., Río Piedras, Puerto Rico, PRD000692590. Prepared by Puerto Rico Environmental Quality Board. November 1989.
2. RCRA Facility Investigation Report, Río Piedras, Puerto Rico, Caribe General Electric Products, September 2012. Prepared by Arcadis of New York, Inc.
3. Correspondence from Michael Poetzsch, USEPA, to Flor del Valle, EQB. Re: Closure Certification of Container Storage Area, Caribe GE Rio Piedras, Puerto Rico. Nov 30, 1990
4. Correspondence from Flor del Valle, EQB, to Heriberto Ayala, Plant Manager Caribe GE Product Río Piedras. Re: Closure Certification Approval Hazardous Waste Containers Storage Area. January 28, 1991.
5. Correspondence from David N. Cuevas, USEPA, to Joel Robinson, Global Remediation Manager GE Consumer & Industrial. Re: RCRA Facility Investigation. July 12, 2010.
6. Correspondence from David N. Cuevas, USEPA, to Joel Robinson, Global Remediation Manager GE Consumer & Industrial. Re: Approval of the September 2012 RCRA Facility Investigation Report, former Caribe GE Products, Río Piedras, Puerto Rico. November 20, 2012.

## **Locations where references may be found:**

References reviewed to prepare this EI determination have been identified under the Facility Information Section. Reference materials are available at U.S. EPA, Region 2.

**Contact telephone and e-mail numbers:** David Cuevas-Miranda  
787-977-5856  
Cuevas.David@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.**