DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA725)
Current Human Exposures Under Control

Facility Name: Genie Facility, Phillips Electronics North America Corporation (PENAC)
Facility Address: 611 Williams Avenue, Shenandoah, Virginia 22849
Facility EPA ID #: VAD000019620

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 RCRA Info as long as they remain true (i.e., in RCRA Info status codes must be changed when the regulatory authorities become aware of contrary information).

Site Description

The Genie Manufacturing facility, located at 611 Williams Avenue, Shenandoah, Page County, Virginia, was formerly owned and operated by Philips Electronics North America Corporation (PENAC). The facility is now operating under new ownership, GMI Holdings Inc., with current operations by The Genie Company / Overhead Door Corporation, a subsidiary of Sanwa Shutter Corporation. The Genie property encompasses approximately 13 acres, of which approximately 30% is covered with buildings.

PENAC is continuing to manage corrective action activities in accordance with the EPA Region 3 Facility Lead Program (FLP) and VDEQ Consent Order. As part of the program, PENAC has conducted an evaluation to determine the nature and extent of release of hazardous constituents from its former operations at the Genie facility. Also associated with the investigation, is an adjacent property where hazardous materials were handled, known as the KVK Property. The primary target compound of concern at the site is trichloroethylene (TCE), with lesser concentrations of TCE daughter products and BTEX (benzene, toluene, ethyl benzene, and xylene).

The Genie facility has historically been used for the manufacturing of small electrical components and currently makes parts and control components for automated garage-door openers. The Genie Company first occupied the property in 1960, before which the land was used as a knitting mill and earlier, farmland.

It was owned by PENAC from 1965 through 1990. Specific ownership prior to PENAC is believed to be The Genie Company from 1960-1965. Prior to 1960 the site was owned by Shenandoah Knitting Mills (1943-1959) and prior to that the land was used for farming. The Genie Company was a business that was owned by PENAC. Genie Manufacturing Inc. (GMI) acquired the property and business in 1990 from PENAC and manufacturing at the site has always been related to garage door openers, overhead door systems, and associated ancillary components.

The Genie Facility is located on the northern border of the Town of Shenandoah. The area is mixed in character with undeveloped land parcels located immediately to the east, north and west and residential properties located to the south, approaching the Town. Most of the residences in the vicinity of the facility obtain their potable water from the Town of Shenandoah supply system. However, homes located outside of Town limits commonly utilize groundwater wells for their potable water supply.

The following reports and documents were considered in the preparation of this EI report:

- ENSR, 2005. *Supplemental Remedial Investigation Work Plan, The Genie Company Inc., Shenandoah, Virginia*, January 2005.
- ENSR, 2005. *Supplemental Remedial Investigation Work Plan Addendum – Bedrock Investigation*, October 19, 2005.
- ENSR, 2005. *Thomas House Residence – Focused Investigation Results*. April 25, 2005.
- ENSR, 2006. *2005 Annual Groundwater Monitoring Report*. November 2006.
- ENSR, 2006. *Final Pre-Design Investigation Report- The Genie Company, Inc., Shenandoah, Virginia*. February 2006.
- ENSR, 2007. *Risk Assessment Work Plan*. Genie Company Site. Shenandoah, VA. Submitted October 2007.
- ENSR, 2007. *Supplemental Remedial Investigation Work Plan Addendum (Additional Intermediate Soil Borings, Sub-Slab Soil Investigation, Sub-Slab Vapor Investigation)*, April 17, 2007.

- ENSR, 2007. *Supplemental Remedial Investigation Work Plan Addendum –Genie Facility Indoor Ambient Air Sampling,* July 25, 2007.
- ENSR, 2007. *2006 Annual Groundwater Monitoring Report- Genie Company Facility, Shenandoah, Virginia.* September 10, 2007.
- ENSR, 2007. *Project Work Plan- Genie Facility, Shenandoah, Virginia.* September, 2007.
- ENSR, 2007. *2006 Annual Groundwater Monitoring Report.* September 2007.
- ENSR, 2007. Technical Memo – "Preliminary Results, Genie and KVK Facility Sub-slab Vapor Sampling", July 30, 2007.
- Indoor Ambient Air Sampling Results for Genie Plant and 600 Shenandoah River Road – sampling occurred 2007 and 2008.
- Key Environmental, 2004. Phase I Remedial Investigation Report, Genie Company Site, Shenandoah, Virginia. 2004.
- AECOM, June 5, 2009, Annual Progress Report, 2008-2009, Genie Company Site, Shenandoah, Virginia.

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			Volatile Organic Compounds – See Below
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			Volatile Organic Compounds – See Below
Air (outdoors)		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.

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):

Concentrations of TCE in groundwater and subsurface soil are higher than USEPA's conservative risk-based screening levels for tap water (0.026 ug/l or 5 ug/l as MCL) and industrial soil (7.2 mg/kg), respectively. (See Groundwater Environmental Indicator (GWEI))

Measured indoor air concentrations of TCE and related VOCs inside buildings at the Genie Property are well below occupational exposure limits. Measured indoor air concentrations of TCE and related VOCs in off-site downgradient residential properties are either not detected, below risk-based residential screening levels, or consistent with published residential background levels.

All other listed media (surface soil, surface water, sediment, and outside air) has been evaluated and determined to be below risk-based screening levels.

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) 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	Trespassers	Recreation	Food[3]
Groundwater	YES*	NO	NO	YES	NO	NO	NO
Air (indoors)	YES*	YES	NO	YES	NO	NO	NO
Soil (surface, e.g. < 2 ft)	NO	YES	NO	YES	NO	NO	NO
Surface Water	NO	NO	NO	NO	NO	NO	NO
Sediment	NO	NO	NO	NO	NO	NO	NO
Soil (subsurface e.g. > 2 ft)	NO	NO	NO	YES	NO	NO	NO
Air (outdoors)	NO	YES	NO	YES	NO	NO	NO

* = off-site

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.

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

Section 3 – Rationale and Reference(s):

1. **Groundwater**
   REFERENCE: All available information within the Department files.

   RATIONALE:

   Residents

   YES – On-site groundwater is not used or expected to be used in the future as drinking water. Ongoing sampling of a number of off-site residential water wells has reported detections both above and below MCLs. In each case current exposure has been eliminated through the installation of a water treatment system. All residences with water wells are included in a plan for hookup to the town water supply, currently in the permitting phase.

   Workers

   NO – The workers at the facility will not potentially be exposed to the subsurface since workers do not get involved in excavation activities. The facility's water supply is provided by a public water supply (PWS) and no contact with contaminated groundwater typically occurs at the site.

   Day-Care

   NO – There is no information indicating the presence of a day-care on the facility.

   Construction

   YES – On-site groundwater in drywell hotspot area has limited access for future construction worker and requires access permission by knowledgeable Plant personnel. Construction workers at the facility may potentially be exposed to groundwater if construction activities required them to excavate down to the groundwater table. Construction activities would be covered by the facilities health and safety plan.

   Trespassers

   NO – Trespassing is prohibited from the site, however if it were to occur it is unlikely that the trespasser would be exposed to the groundwater table. All construction activities will be fenced off to prevent access from trespassers.

   Recreation

   NO – There is no information indicating that any portion of the facility is for recreational use.

   Food

   NO – There is no information indicating that food is grown within the facility's boundary.

2. **Air (indoors)**
   REFERENCE: All available information within the Department files.

   RATIONALE:

   Residents/Workers/Construction

   YES – On and off-site indoor air has been tested and evaluated and determined to be non-detect for COCs or within EPA acceptable risk range. The workers and construction workers in the work

environments are protected under the OSHA standards; therefore, it can reasonably be assumed that the indoor air does not pose a risk above acceptable OSHA standards.

3. **Soil (surface)**
REFERENCE: All available information within the Department files.

RATIONALE:
Workers/Construction
YES – The workers and construction workers at the facility may potentially be exposed to surface soils that may be high in contaminant concentrations in the vicinity of the drywell hotspot area. This area has limited access for future construction worker and requires access permission by knowledgeable Plant personnel. Construction activities in this area would be covered by the facilities health and safety plan.

6. **Soil (subsurface)**
REFERENCE: All available information within the Department files.

RATIONALE:
Construction
YES – On-site subsurface soil in drywell hotspot area has limited access for future construction worker and requires access permission by knowledgeable Plant personnel. Construction workers at the facility may potentially be exposed to subsurface soil if construction activities required them to excavate. Construction activities would be covered by the facilities heath and safety plan. Currently, there are no planned construction activities at the facility except for the installation of a in-situ electrical resistive heating system to remediate the subsoils in the primary source area of VOC's; the former drywell source area (OU-1). Therefore, the exposure to subsurface soil is considered to be under control.

7. **Air (outdoors)**
REFERENCE: All available information within the Department files.

RATIONALE:
Workers/Construction
YES – On and off-site indoor air has been tested and evaluated and determined to be non-detect for COCs or within EPA acceptable risk range. The workers in the work environments are protected under the OSHA standards; therefore, it can reasonably be assumed that the outdoor air does not pose a risk above acceptable OSHA standards.

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)?

   __X__ 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 expected not to be "significant."

   _____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

- On-site groundwater is not used or expected to be used in the future as drinking water;
- Off-site groundwater currently used for drinking water has been tested and determined be below MCL or non-detect, or otherwise being treated to be below MCL;
- On-site subsurface soil in drywell hotspot area has limited access for future construction worker and requires access permission by knowledgeable Plant personnel;
- On-site groundwater in drywell hotspot area has limited access for future construction worker and requires access permission by knowledgeable Plant personnel and requires work under the Health & Safety Plan; and
- On and off-site indoor air has been tested and evaluated and determined to be non-detect for COCs or within EPA acceptable risk range.

[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 (CA 725), 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 **Genie Facility**, EPA **ID # VAD000019620**, located at **611 Williams Avenue, Shenandoah, 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 Matthew M. Stepien Date 9-1-09
(signature)

Matthew M. Stepien
(print)

Environmental Engineer Sr.
(title)

Supervisor Durwood D Willis Date 9/1/09
(signature)

Durwood Willis
(print)

Director, Office of Remediation Programs
(title)

Virginia DEQ – Region III
(EPA Region or State)

Locations where References may be found:
Virginia Department of Environmental Quality, Richmond, Virginia

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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.