# DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

# RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) Current Human Exposures Under Control

Facility Name: Facility Address: PHILIPS DISPLAY COMPONENTS JOHNSTON ST, SENECA FALLS, NY

Facility EPA ID #:

NYD002246015

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" 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)?

Groundwater Air (indoors) <sup>2</sup> Surface Soil (e.g. Surface Water Sediment Subsurf. Soil (e.g. Air (outdoors)		NoXX	<u>?</u>	Rationale / Key Contaminants Groundwater monitoring: VOCs Soil gas, sub slab and indoor air sampling: VOCs Soil sampling: VOCs, metals No impact from facility releases. Sediment sampling: metals Soil sampling: VOCs, metals No impact from facility releases.
		els," and	l referenc	and enter "YE," status code after providing or citing sing sufficient supporting documentation demonstrating ed.
	"contaminated"	medium at the m	, citing a	after identifying key contaminants in each ppropriate "levels" (or provide an explanation for the buld pose an unacceptable risk), and referencing
	If unknown (for	any med	dia) - skij	o to #6 and enter "IN" status code.

#### Rationale and Reference(s):

The facility occupies approximately 85 acres of land on Johnston Street in Seneca Falls, New York, with interconnected buildings occupying 13 acres of the site. The facility is bordered by Van Cleef Lake and the Seneca River/Seneca and Cayuga Canal to the south, undeveloped and agricultural areas to the north and east, and a residential area to the west. The original facility buildings were constructed by Rumsey Pump. In 1948, Sylvania purchased the plant and began the manufacture of black and white television tubes. In 1960, the facility was sold to GTE and the manufacture of color television tubes began in 1962. Philips Display Components Company acquired the facility in 1981, and production ceased in 1986. The hazardous waste management units operated by Philips included a surface impoundment and a container storage area. The impoundment was certified closed in 1993 and the container storage area was certified closed in 1995. The RCRA Facility Assessment (RFA) and the investigative activities conducted at the site identified ten areas to be investigated during the RCRA Facility Investigation (RFI). The RFI report submission was approved in 2003 and a Corrective Measures Study (CMS) Workplan was submitted by GTE Operations Support Incorporated (GTEOSI) in May 2005.

<sup>&</sup>lt;sup>1</sup>"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).

<sup>&</sup>lt;sup>2</sup>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.

#### Groundwater

Groundwater is contaminated with solvents related to historic operations that were conducted at the site. Trichloroethene (TCE) is the primary contaminant and the related TCE breakdown products cis-1,2-dichloroethene and vinyl chloride are also present. The most recent round of groundwater sampling results shows that concentrations of TCE range up to 5200 parts per billion in certain areas of the site. These values are far above the protective level of 5 parts per billion or lower set by New York State Department of Environmental Conservation (NYSDEC) Technical Operation Guidance Series (TOGS). TOGS 1.1.1 provides a compendium of protective levels for ambient water quality criteria for New York State waters, including groundwater.

Migration of contaminated groundwater has stabilized and contaminated groundwater is expected to remain within the facility area that is defined by groundwater monitoring locations. "Tight" soils underlying this site minimize groundwater velocity. In addition, a hydraulically downgradient boundary exists as a high bluff along the facility property. The elevation of this bluff is such that the watertable elevation "daylights" at a level on the bluff. There is no visible evidence of seeps, with surveys being performed in the spring at the time of maximum seepage and minimum foliage. It is believed that seepage, if any, occurs at a rate equal to evaporation.

The overburden aquifer does not appear to be in direct hydraulic connection with the bedrock aquifer, with overburden flow to the southeast and bedrock flow to the south. Overburden consists of silt, clay and minor sand glaciolacustrine layers deposited over weathered bedrock. There is adequate clay material in the overburden to retard vertical flow and horizontal flow appears to be the major component of groundwater movement. Contamination is predominantly found in the overburden aquifer with minor or minimal amounts found in the bedrock. A full groundwater monitoring program remains in place with semi-annual sampling scheduled in the Spring and Fall of each year.

#### Air (indoors)

A Soil Vapor Intrusion Investigation was conducted in 2003 and 2004, with soil vapor samples collected in July 2003. Three rounds (Summer, Fall, and Winter) of indoor and outdoor air samples were collected in July 2003, October 2003, and January 2004. The Soil Vapor Intrusion Pathway Investigation Report dated September 15, 2004, details the analytical results of more than 100 soil vapor and indoor air samples collected during the investigation. Soil vapor and indoor/outdoor air sampling results were evaluated in accordance with the New York State Department of Health (NYSDOH) Decision Matrix, showing that discernible soil vapor intrusion pathways are present in all buildings except for Building 12.

## Soils - Surface and Sub SurfaceSoil

More than 130 soil samples were collected from all portions of the Site as part of the RFI. Soil was collected and analyzed from soil borings, sumps, and as grab samples from the ground surface. Parameters detected at the highest concentrations and frequency included cadmium in the soil samples collected from the historic outfall ravines and TCE and 1,2-dichloroethane (1,2-DCA) in the soil samples collected south of Buildings 2, 3, 7, 9 and 11. Several other metals and volatile organic compounds (VOCs) have been detected in at least one soil sample collected at the site at concentrations greater than NYSDEC Technical Administrative Guidance Memorandum (TAGM) HWR-94-Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046 values) or Site-specific background concentrations. Details of soil analytical results were presented in the RFI.

Observations made during the RFI field activities indicated the likely presence of dense non-aqueous phase liquids (DNAPL) in a soil sample collected from 28 to 30 feet below ground surface (bgs) at the bedrock interface in the boring for MW-BI-01. This boring was approximately 85 feet south of Building 2. MW-BI-01 has remained dry since its installation, indicating the lack of appreciable groundwater at the bedrock interface at this location. The areas where surface and subsurface soils are impacted include areas directly to the south of Buildings 2, 7, and 11, where soils contain elevated concentrations of VOCs. In addition, soils in the historic outfall ravines contain concentrations of some metals, particularly cadmium, at concentrations greater than TAGM 4046 values.

## **Sediment**

The Historic Outfall Sediment Sampling Work Plan was implemented in May 2005. There were 120 sediment samples collected from Van Cleet Lake and the Seneca River/Seneca and Cayuga Canal in the vicinity of the historic wastewater outfalls from the facility. Sediment samples were analyzed for cadmium, arsenic, chromium, copper, mercury, nickle and zinc. Cadmium is the primary constituent of concern and concentrations ranged up to 78.4 mg/kg. This highest sample was collected from Van Cleef Lake and is buried beneath unaffected sediments with "non-detect" levels for cadmium. Cadmium in the surface sediments (sampled at 0 to 0.5 feet) range up to 8.36 mg/kg.

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 <sup>3</sup>	
Groundwater	NO	NO	NO	YES		f.	NO	
Air (indoors)	NO.	YES	NO					
Soil (surface, e.g., <2 ft)	NO	YES	NO	YES	YES	NO	NO	
Surface Water			9)					
Sediment	NO	NO			NO	NO	NO	
Soil (subsurface e.g., >2 ft)				YES			NO	
Air (outdoors)							83 - 38	

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 <u>Pathway Evaluation Work Shee</u> tto analyze major pathways).					
<u>X</u>	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					

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

# Rationale and Reference(s):

#### Groundwater

There is no on-site groundwater usage, and the migration of contaminated site groundwater is under control. A municipal water system provides water to the site and nearby residences. Therefore, the most likely exposure pathway in these areas is construction/utility worker contact with groundwater during construction activities. No excavations at the facility are currently planned by the owner or operator. The areas of soil and groundwater contamination have been defined by investigation reports. The operator of the facility will consult the investigation reports and the NYSDEC before planning any excavation.

#### Air (indoors)

The indoor air analytical results indicated that there were concentrations of TCE in the Building 9 office area that could be reduced through ventilation of the crawl space beneath this portion of the building. In 2004, GTEOSI installed a permanent ventilation system to improve indoor air quality in the Building 9 office area. Confirmatory samples demonstrate that the system is effective.

At this point in time, only building 9 has a remedial measure in place. Indoor air samples have verified TCE concentrations to be consistently well below the NYSDOH's guideline level of 5 ug/m3 in this area. Efforts at the remainder of the facility are underway and acceptable verification of lowered TCE concentrations are expected in the future.

As part of the CMS Work Plan, the Appendix B - Buildings 2, 7, and 11 Work Plan was implemented during July, 2005. Sub slab soil vapor extraction wells were installed in Buildings 7, 11 and 11a and a test blower system was connected. Pressure monitoring points were installed and it was demonstrated that the system will be capable of maintaining an effective pressure differential. Permanent blower systems are currently on order and should be installed during October 2005.

Various remedial activities such as contaminated soil removal external to Building 2 are being evaluated for the remainder of the interconnected buildings. Contaminated soil is a possible source of vapor intrusion in the Building 2 area. Because the buildings are interconnected and have open air pathways it is expected that remedial efforts at key buildings or sections of buildings will alleviate vapor intrusion issues for the entire complex. Testing will be ongoing to demonstrate the effectiveness of this approach.

#### Soils - Surface and Sub SurfaceSoil

Soil containing VOCs are primarily located in the vicinity of Buildings 2, 7, and 11 and are currently capped by asphalt parking lots and roads. Therefore, the most likely exposure pathway in these areas is construction/utility worker contact with soil during construction activities (i.e., trenches or excavations to repair or maintain underground utilities). No excavations at the facility are currently planned by the owner or operator. The areas of soil contamination have been defined by the RFI investigation. The operator of the facility will consult the investigation report and the NYSDEC before planning any excavation. If the CMS concludes that areas of soil contamination are to be excavated, the workers will be covered by a required health and safety plan.

Site access is not completely restricted as there are uncontrolled site perimeter locations. This could allow heavy metal exposure to trespassers as heavy metals were found in the isolated ravines downgradient of certain historic outfalls (i.e., HO-2, HO-3, HO-4, HO-5, HO-6, and HO-7).

Exposure to onsite surface soil by trespassers is determined to be insignificant primarily because of the unattractiveness of the site and the resultant infrequency of trespasser exposure. For example, there are elevated cadmium levels in the surface soils in ravines downgradient of HO-2, HO-3, HO-4, and HO-5, however, this is located on an heavily vegetated steep embankment that is difficult to negotiate. The portions of the ravines associated with these outfalls are buried under fill. Additionally, as the site is located in upstate New York, it can be expected to be frozen or covered with snow during part of the year, reducing the likelihood of exposure to any trespasser, and thereby further reducing the annual possible cumulative exposure.

## Sediment

The August 2005 draft Historic Outfall Sediment Sampling Preliminary Summary Report shows sampling results of sediments collected from Van Cleef Lake and the Seneca River/Seneca and Cayuga Canal in May 2005. While it does appear that there is a minimal site impact to sediments based on a comparison to metal concentrations in upstream locations, exposures to contaminated sediments are unlikely. The highest contaminant concentrations are found in sediments away from the shore and mostly in deep water, therefore, there is little potential for humans to come in contact with these sediments.

4.	Can the <b>exposures</b> from any of the complete pathways identified in #3 be reasonably expected to be " <b>significant</b> " (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."					
	8	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):

In addition to the below response, please see responses to questions 2 and 3.

## \* Air (indoors)

EPA's Office of Solid Waste and Emergency Response (OSWER) issued "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" in November 2002. Among the exposure scenarios discussed in this draft guidance, EPA addressed vapor intrusion into non-residential buildings, including those in occupational settings that may be regulated by the Occupational Health and Safety Administration (OSHA). Specifically, in the Introduction of the Draft Guidance, under Section I.D. ("What Is The Scope of The Guidance?"), OSWER states that "OSHA and EPA have generally agreed that OSHA will take the lead in addressing occupational exposures", and that "...EPA does not expect this guidance to be used for settings that are primarily occupational." OSWER reaffirmed this position in a fact sheet titled "Vapor Intrusion and RCRA Corrective Action Environmental Indicators (EI)," issued June 2003.

<sup>&</sup>lt;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.

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However, at this time, OSWER is reevaluating the guidance for the vapor intrusion to indoor air pathway in occupational settings. The matter is currently under internal review. OSWER plans to issue updated recommendations on when and how the Draft Guidance should be used.

For purposes of this Human Exposures Under Control EI determination, EPA Region 2 is deferring the determination of whether an unacceptable exposure to human health exists from the vapor intrusion to indoor air pathway in the on-site occupational setting at Philips Display Components. Once new draft guidance is issued by OSWER, EPA Region 2 expects to recommend that the vapor intrusion to indoor air pathway be reevaluated at Philips Display Components to determine if this pathway poses an unacceptable risk to human health in the occupational setting. This deferral applies only to the vapor intrusion to indoor air pathway in the on-site occupational setting exposure scenario.

Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

5.

		If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).			
	<u>.</u>	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" statucode			
Not ann	Rationale and F	Reference(s): uses to questions 2, 3 and 4.			
rvot app	meable, see respon	ises to questions 2, 3 and 4.			
6.	(CA725), and ob	priate RCRIS status codes for the Current Human Exposures Under Control EI event code tain Supervisor (or appropriate Manager) signature and date on the EI determination below opriate 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 Philips Display Components facility, EPA ID #NYD002246015, located at Johnston St, Seneca Falls, NY under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.			
	(MATERIAL PROPERTY)	NO - "Current Human Exposures" are NOT "Under Control."			
		IN - More information is needed to make a determination.			

EPA Project Manager:	Wilfredo Palomino New York Section  Rev. 15 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	Date:	5/30/05
Supervisor:	James Reidy NY Section USEPA Region 2	Date:	9/30/05
Chief:	Adoph Everett, Chief RCRA Program Branch USEPA Region 2	Date:	9/30/05
Director:	Walter Mudgan, Division of Environmental Planning and Protec USEPA Region 2		9/30/05-

Locations where References may be found:

New York State Department of Environmental Conservation, Central Office 625 Broadway 12<sup>th</sup> Floor Albany, New York 12233-7252

Contact, telephone number and e-mail

## NYSDEC

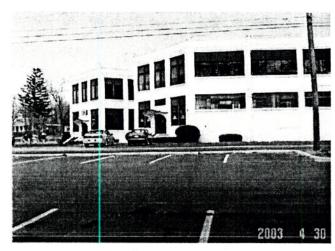
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# **USEPA**

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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.

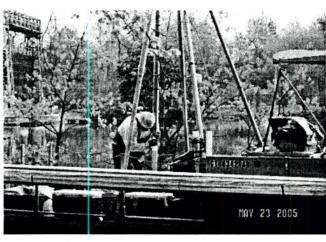
# PHILIPS DISPLAY COMPONENTS JOHNSTON ST, SENECA FALLS, NY



Bldg. 1A, 2A and Bldg. 2 Former Philips Components Facility



Bluff overlooking Seneca Canal above historical outfall #4. Note steepness of incline and heavy vegetation.



Sediment sampling on Van Cleef Lake.

