

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**  
**RCRA Corrective Action**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
**Current Human Exposures Under Control**

**Facility Name:** Chempump Division of Teikoku USA  
**Facility Address:** 175 Titus Ave. Warrington, PA 18976  
**Facility EPA ID #:** PAD 003916798

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 SolidWaste 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 Controls" 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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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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	_____	<u>X</u>	_____	See rationale below.
Air (indoors) <sup>2</sup>	_____	<u>X</u>	_____	See rationale below.
Surface Soil (e.g., <2 ft)	_____	<u>X</u>	_____	See rationale below.
Surface Water	_____	<u>X</u>	_____	See rationale below.
Sediment	_____	<u>X</u>	_____	See rationale below.
Subsurface Soil (e.g., >2 ft)	_____	<u>X</u>	_____	See rationale below.
Air (outdoors)	_____	<u>X</u>	_____	See rationale below.

X If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient support 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.

*Acronyms, figures, tables, and superscript references cited herein apply to those items presented in the EI Report completed for the Facility ('EI Report', URS, June 2009).*

**1. Groundwater:**

The primary Areas of Concern (AOC's) at this site include:

- One (1) unregulated 1,000-gallon heating oil underground storage tank (UST), which was removed in October 2004;
- One (1) regulated 2,000-gallon waste oil above ground storage (AST), which was also removed in October 2004;
- Two previously-identified Solid Waste Management Unit (SWMUs), namely the Solvent Storage Area (SSA) and the Paint Booth Area (PBA).

For locations of these AOCs see the June 2009 Environmental Indicator (EI) Report.

<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>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.

The geological formation underlying the Site is the Stockton Formation. The Stockton Formation includes the upper mudstone, middle arkosic sandstone, and lower conglomerate members. According to the Pennsylvania Groundwater Information System (PaGWIS) database, there are currently five (5) wells located within a half-mile radius of the Site. These wells have reported depths of 54 to 550 feet. Two (2) wells are reported as residential wells with depths of 84 and 115 feet and the other three (3) of the wells are reportedly used for commercial purposes. Within a one-mile radius of the Site, PaGWIS reports the presence of 28 wells. The PaGWIS database contains no records of on-site wells, despite the known presence of at least one (1) former on-site water supply well.

The source of drinking water at the Site is supplied from Warrington Township Water and Sewer Department, which operates nine (9) public wells drilled to depths between 300 and 670 feet in the Stockton Formation. According to the Warrington Township Water and Sewer Department, water from four (4) of the wells is treated using air strippers, which remove organic contaminants from the general area, and chlorine is added to all of the wells for disinfecting purposes.

Based on the local topographical surface, the direction of the groundwater flow is presumed to be to the north towards Little Neshaminy Creek, although there is no site-specific data to support this conclusion. The on-site groundwater was investigated in 2003 and 2004 for a limited suite of organic constituents via sampling of a former on-site supply well and two (2) temporary piezometers advanced in former septic leach field areas. None of the organic compounds analyzed for were detected and there were no exceedances of the applicable Statewide Health Standards (SHS) Medium Specific Concentrations (MSCs) in the three (3) groundwater samples collected.

## **2. Indoor Air:**

Exposure to on-site workers via the indoor air pathway can be attributed to regular industrial operations due to the usage and presence of solvents, paints, metal filings, chemicals, etc. It is presumed that this exposure has been and will continue to be maintained in compliance with OSHA regulations. Samples have been collected and analyzed for VOC/SVOC parameter lists representative of organic wastes generated at the Site from the following locations (reference EI report for more information on locations and dates):

- The on-site septic tank(s)/leach field(s) (soils only, as the 2004 septic/leach samples were not analyzed for a representative list of organic compounds);
- The location of the former waste oil AST (soils);
- One (1) former on-site water supply well (groundwater);
- The debris area (soil); and,
- The stormwater outfall (surface water).

There were no VOCs or SVOCs detected in any of these samples. The vapor intrusion pathway is therefore not complete at this facility.

## **3. Soils [Surface (0 to 2 feet bgs) and Subsurface (>2 feet bgs)]:**

According to information obtained from the USDA Natural Resources Conservation Service program, a majority of the Site is underlain by the Abbottstown silt loam soil type, classified as AbB2. The AbB2 soils are characterized as somewhat poorly drained with a 0 to 8 percent slope and a typical profile of silt loam (0 to 20 inches), channery silt loam (20 to 48 inches), and bedrock at 48 inches. However, soil borings installed at the Site have extended to depths of eight (8) to 14 feet below grade, indicating a deeper soil/bedrock interface.

Phase II investigations conducted in 2003 and 2004 have indicated the following relative to the potential contamination sources for which data is available:

- The unregulated 1,000-gallon heating oil UST does not appear to have impacted Site soils based upon the results of three (3) post-excavation samples collected in October 2004 at eight (8) feet below grade. These

samples were analyzed for compounds representative of the tank contents and there were minimal detections and no exceedances of the PADEP Act 2 SHS MSCs.

- The regulated 2,000-gallon waste oil AST (former location unknown) does not appear to have impacted Site soils based upon the results of four (4) samples collected at unspecified depths from beneath the asphalt surrounding this tank when it was removed in October 2004. The samples were analyzed for compounds representative of the tank contents and there were minimal detections and no exceedances of the PADEP Act 2 SHS MSCs.

The septic tanks/leach fields, which were utilized from 1961 until the Property was hooked up to the municipal sewer system in 1995, have been characterized via collection of six (6) soil samples and two (2) piezometer groundwater samples. Of the samples collected, three (3) soils samples from 2003 were analyzed for lists of volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), and polychlorinated biphenyl (PCBs) representative of the chemicals used and wastes generated at the Site, while the remaining samples [three (3) soils and two (2) groundwater, collected in 2004] were not. There was no detection of organic compounds in any of the eight (8) samples collected from the septic tank/leach field areas.

Although there is no analytical data associated with the SWMUs, there are no known or suspected releases to the environment from these units. It is believed that site soils have not been impacted by former Site operations.

#### **4. Surface Water and Sediment:**

The nearest surface water body is the Little Neshaminy Creek, which is located approximately 1,000 feet north of the Chempump Facility. PADEP identifies the Little Neshaminy Creek as an attained segment of the Integrated List according to the standards set by the Pennsylvania Clean Streams Law. These standards are based upon aquatic life, fish consumption, recreational use, and potable water supply criteria. The Little Neshaminy Creek is a tributary to the Neshaminy Creek, which is located approximately seven (7) miles to the northeast of the Facility and ultimately discharges to the Delaware River. The FEMA Floodplain map indicates that the former Chempump facility is not within either the 100 or 500-year flood plain.

There are no registered wetlands or ponds located on the Property and the former Chempump and Doylestown Real Estate representatives were not aware of any sensitive habitats or wetlands on-site. There have been no known direct discharges from the Site to surface water. No signs of stained soil, oily sheens, or stressed vegetation were observed on-site at the time of the URS site visit.

In 2004 one (1) water sample was obtained from the storm outfall located on the northeastern wooded area of the Property. An associated drainage ditch exists along the back of the Facility on the east/southeast side, which serves to direct runoff from the Facility and the BJ's wholesale store located on a topographic high that borders the Facility to the southeast. The water sample was analyzed for TCL VOCs, TCL SVOCs, and TAL dissolved metals. The parameters analyzed did not exceed the PADEP Chapter 16 surface water standards for human health.

#### **5. Outdoor Air:**

As referenced in the EI Report, the former Chempump facility was not required to maintain any air quality permits. There have been no air quality violations recorded at the Site. The outdoor air human exposure pathway from the former Chempump facility is incomplete.

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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>	<u>Residents</u>	<u>Workers</u>	<u>Daycare</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food<sup>3</sup></u>
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. Strikeout 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):**

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No rationale warranted.

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

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant**" (i.e., potentially<sup>4</sup> "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):**

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No rationale warranted.

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<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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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 a "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 a "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.
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**Rationale and Reference(s):**

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No rationale warranted.

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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):

  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 Chempump Teikoku facility, EPA ID # PAD003916798 located at 175 Titus Ave., Warrington, Pennsylvania 18976 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)  Date 5/29/17  
 (print) Grant Dufficy  
 (title) RCRA Project Manager

Supervisor (signature)  Date 5-24-17  
 (print) Paul Gotthold  
 (title) Assoc. Dir, PA Remediation, LCD  
 (EPA Region or State) EPA Region III

Locations where References may be found:

USEPA Region III  
Land and Chemicals Division  
1650 Arch Street  
Philadelphia, PA 19103

PADEP  
South East Regional Office  
2 East Main Street  
Norristown, PA 19401

Contact telephone and e-mail numbers

(signature) \_\_\_\_\_  
 (print) \_\_\_\_\_  
 (title) \_\_\_\_\_

**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.**