**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: **Betz Laboratories, Inc.**
Facility Address: **985 Wheeler Way Langhorne, PA 19047**
Facility EPA ID #: **PAD000824805**

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 | | | Low levels of petroleum contamination were left in place. |
| Air (indoors)[2] | | X | | No VOCs released to subsurface. |
| Surface Soil (e.g., <2 ft) | | X | | No releases are known to have occurred. |
| Surface Water | | X | | No releases are known to have occurred. |
| Sediment | | X | | No releases are known to have occurred. |
| Subsurf. Soil (e.g., >2 ft) | X | | | Low levels of petroleum contamination were left in place. |
| Air (outdoors) | | X | | Facility is no longer in operation |

____ 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 thatthese "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):**

**Background**
The former Betz Laboratories, Inc. (Betz) facility occupies an 8acre property comprised of a production/warehouse building and parking lots in Middletown, Langhorne Borough, located 10 miles northeast of Philadelphia within Bucks County, Pennsylvania. The majority of the property consists of the

[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.

production building and paved surrounding lots. The property is surrounded by light industrial and commercial establishments in a business park. To the east, is a railroad spur owned by Conrail Corporation and a shallow stream (Mill Creek) both of which traverse the eastern boundary of the property. Properties in the general vicinity surrounding the commercial entities are predominantly residential towards the north and across US Route 95 towards the east.

Beginning in 1979, Betz produced specialty chemicals at this location. The facility went through a variety of name changes, as the entity was bought by Betz Dearborn by 1996, which designed and developed water purification systems. The facility was then purchased by Hercules, Inc. in 1998, and was later purchased by General Electric effective May 15, 2002, and subsequently known as GE Betz, Inc. On May 11, 2004, Betz notified the Pennsylvania Department of Environmental Protection (PADEP) that operations ceased, the facility was closed, and property was turned over to Hercules Hydrocarbon Holdings, Inc. (Hercules) on April 30, 2004. Hercules entered into a lease agreement with GE Betz Inc., which was to remain the operator of the facility for operations other than chemical processing.

Waste types handled at the facility included ignitable (D001), corrosive (D002), and chromium (D007). The bulk of the hazardous waste generated was wastewater which was removed twice weekly by a licensed hauler. No discharges to surface water were reported. Other hazardous wastes were stored in containers. This container storage area operated under a Part B permit. This storage area was closed in 2002.

Former solid waste management units (SWMUs) and tanks associated with the processes employed by Betz were no longer present during a site visit conducted on April 29, 2009. Former aboveground storage tanks (AST) pads associated with the Betz operations continued to be present in the truck parking area and loading dock area adjacent to the warehouse building currently operated by United Refrigeration Inc. (UR) and National Refrigeration Products (NRP).

In 2003, baseline environmental sampling was conducted under the ownership of Hercules, Inc. In 2005, Phase II Activities were conducted for UR after the facility was vacated. The report concluded that no apparent adverse environmental impacts were present.

No land-use controls were required under the transfer of ownership, according to the representative of UR. UR and NRP have been operating a warehouse and machine repair shop at the facility since March of 2007. The majority (80 percent) of the facility is dedicated to warehouse space. The remaining 20 percent is office space and a repair shop where refrigerant recycling units are maintained. UR and NRP do not generate hazardous waste. The property is zoned non-residential and potable groundwater use is not permitted by municipal ordinance.

**1990 and 1993 Groundwater Investigations**
**2003 and 2005 Soil and Groundwater Investigations**

**Groundwater:**
Three 20,000-gallon heating oil underground storage tanks were removed in September 1990 along with associated contaminated soil. Follow-up recovery of light non-aqueous phase liquid was completed leaving total petroleum hydrocarbons (TPH) and benzene, ethylbenze, toluene and xylene (BTEX) as the primary constitutents of concern to analyze and monitor in groundwater and soil. (BCM 1990)

A hydrogeologic study was conducted to determine the extent and impact of contamination, and to develop a monitoring program. The 1993 Hydrogeologic Investigation Report concluded that BTEX concentrations were below detection limits for soil, and that there was evidence that soil TPH concentrations were decreasing compared to post-excavation analytical data. Groundwater concentrations of BTEX were below

their detection limits. Based on a recommendation of the 1993 Hydrogeologic Investigation Report, quarterly groundwater monitoring of the four monitoring wells and two standpipes in the vicinity of the former USTs was conducted for one year (1993 to 1994). On August 27, 1993, PADEP determined that because BTEX was not detected, analyzing for those compounds could be discontinued. In December 1994, PADEP reviewed quarterly sampling results for onsite monitoring wells and standpipes and noted TPH concentrations fluctuated, indicating petroleum contaminated soils and groundwater still existed but at low and declining concentrations and limited size. PADEP concurred with the facility to discontinue monitoring in 1994. Betz discontinued groundwater sampling and properly abandon the wells.

Groundwater and soils were investigated at other locations of the facility as part of a 2003 Baseline Sampling Program and a 2005 Phase II investigation.

In 2003, the facility (under the ownership of Hercules, Inc.), conducted an investigation with the purpose of obtaining baseline environmental data about the property. Four groundwater samples were collected from the Hazardous Materials and Petroleum Products area, four groundwater samples were collected from the Drain, Sumps and Clarifiers area; and one groundwater sample was collected from the AST area. All of the samples were analyzed for metals and volatile organic compounds (VOCs), nitrates, and nitrites. One groundwater sample from the Drain Sump and Clarifier area and the groundwater sample from the AST area was also analyzed for semi-volatile organic compounds (SVOCs). Concentrations of detected constituents in groundwater were compared to Pennsylvania Act 2 Non-Residential Non-Use Aquifer standards, and the more stringent Non-Residential Used Aquifer standards. No exceedances of either standards was found to be present.

As part of a Phase II investigation in 2005, four groundwater samples were collected from temporary wells installed at boring locations B-1, B-6, B-8, and B-10. B-1 is located within the building near the former truck loading/unloading area and boring locations B-6, B-8 and B-10 were located on the southern, eastern, and northern sides of the former AST farm. All groundwater samples were analyzed for metals and VOCs. No VOCs were detected in the groundwater samples at concentrations exceeding their Non-Residential Used Aquifer standards. Among metals, only manganese slightly exceeded its Non-Residential Used Aquifer standard in all of the samples; however, it is most likely naturally-occurring, according to a regional geology analysis presented in the report.

**Subsurface Soil:** During the 2003 Baseline Sampling Program, five soil samples were collected from the Drain, Sumps and Clarifiers area and one soil sample and was collected from the AST area. All of the samples were analyzed for metals, VOCs, nitrates, and nitrites. A selected soil sample from the Drain, Sumps, and Clarifier area was also analyzed for SVOCs. Depths of the soil samples varied between 4 to 6 feet bgs and 16 to 18 feet bgs, and were selected for analysis based on visual indications of contamination or PID readings. Concentrations of detected constituents in soil did not exceed Pennsylvania's Act 2 Non-Residential Direct-Contact and Soil-to-Groundwater standards.

**Air:** Current operations do not manage hazardous wastes and detectable concentrations of VOCs from former operations were not present in the subsurface. Therefore, there are no exposures via the air pathway.

**Surface Water:** No releases to surface water have been reported. Groundwater flowing into Mill Creek does not exceed non-residential used aquifer standards. There are no recreational or potable uses of Mill Creek.

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 | No | No | No | No | No | No | No |
| ~~Air (indoors)~~ | | | | | | | |
| ~~Soil (surface, e.g., <2 ft.~~ | | | | | | | |
| ~~Surface Water~~ | | | | | | | |
| ~~Sediment~~ | | | | | | | |
| Soil (subsurface e.g., >2 ft. | No | No | No | No | No | No | No |
| ~~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.

__X__ 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):**
**Groundwater:** Public water is supplied to the facility and the facility is not dependent on the use of groundwater. Chapter 485-104 (2) of the Township of Middletown, Bucks County, Pennsylvania Codified Ordinances - October 2009 prohibits private well water connections. Therefore, the groundwater exposure pathway is incomplete

**Subsurface Soil:** The majority of the property consists of the production buildig and paved surrounding lots. The facility is currently being used for industrial purposes The area of low residual petroleumimpact will not be buillt upon and has been paved. The exposure pathway is incomplete.

[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):**

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):**

[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.

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 **Betz Laboratories, Inc.** facility, EPA ID # **PAD000824805**, located at **985 Wheeler Way Langhorne, PA 19047** 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 09/28/2014

(print) Linda A Matyskiela

(title) Project Manager

Supervisor (signature) _____ Date 12-15-14

(print) Paul Gotthold, Assoc. Director

(title) Office of PA Remediation

(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 E. Main Street
Norristown, PA 19401

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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.**