

Commonwealth of Pennsylvania  
Department of Environmental Protection  
January 11, 2010

SUBJECT: Pennsylvania Priority List Request  
Bishop Tube Site  
East Whiteland Township, Chester County

TO: Craig Olewiler, Group Manager  
Storage Tanks and HSCA Section  
Bureau of Waste Management

FROM: Dustin A. Armstrong, Project Manager  
Hazardous Sites Cleanup Section  
Southeast Region

*DA* 1/11/10

The Southeast Regional Office requests that the site be placed on the Pennsylvania Priority List of Hazardous Sites for Remedial Response (PAPL). Attached is a Determination to List document and a Pennsylvania Bulletin Notice of Listing summary.

Joseph A. Feola  
Regional Director

*Joseph A. Feola* Concur 1/12/2010 Date

Stephan B. Sinding  
Regional Manager, Environmental Cleanup Program

*Stephan B. Sinding* Concur 1/11/10 Date

Ragesh R. Patel  
Regional Hazardous Sites Cleanup Manager

*Ragesh R. Patel* Concur 1/11/10 Date

**BISHOP TUBE SITE**  
**East Whiteland Township, Chester County**  
**Southeast Region**

**January 11, 2010**

**Purpose:**

Section 502(a) of HSCA requires the Department to list sites with a release or threatened release of hazardous substances or contaminants for the purpose of taking a remedial response. The purpose of this request is to receive approval to list the Bishop Tube Site on the Pennsylvania Priority List of Hazardous Sites for Remedial Response (PAPL).

**Executive Summary:**

**SITE INFORMATION**

The Bishop Tube Site (Site) is located in East Whiteland Township, Chester County, Pennsylvania. The Site is found on the USGS 7.5 minute topographic map for the Malvern, Pennsylvania, quadrangle. The site coordinates are approximately 40° 02' 24" north latitude and 75° 32' 13" west longitude. Groundwater on the 13.7 acre former Bishop Tube Company property has been found to be contaminated with trichloroethylene, also referred to as TCE. TCE contamination has been identified in groundwater in wells located approximately 1/3 mile northeast of the site. TCE contaminated soils associated with metal degreasing and chemical storage areas on the former Bishop Tube property have been identified as sources of the TCE groundwater contamination. The area of groundwater contamination is located in an area comprised of mixed commercial and residential land uses. One residential well, located approximately 1/3 mile from the site has historically contained TCE at a concentration, which exceeds the Federal drinking water standard (commonly called the Maximum Contaminant Level or MCL) for TCE. MCLs are also applicable to the Statewide Health Standard for groundwater cleanup under the Pennsylvania Land Recycling and Remediation Standards Act. The affected home was provided a point-of-entry treatment (POET) system by Christiana Metals (a former operator of Bishop Tube). Water for other homes and businesses in the area is supplied by the Aqua America Water Company. Surface water samples collected from Little Valley Creek (part of the Exceptional Value Valley Creek Watershed) have historically contained elevated concentrations of TCE attributed to the Site.

The Department initially discovered fluoride contamination in the stream associated with the Site in the early-1970's. The fluoride contamination was traced to a discharge pipe leading from Bishop Tube, which employed a hydrofluoric and nitric acid mixture in its stainless steel tube manufacturing process. Follow-up groundwater investigations eventually led to the discovery of TCE contamination in groundwater. EPA performed a Site Inspection under the CERCLA Program in the mid-1980's and detected TCE at a concentration of over 20,000 ug/l in a groundwater sample. The MCL for TCE is 5 ug/l. The Department's Bureau of Water Quality, Bureau of Solid Waste Management and Environmental Cleanup Program worked with the Site operator Christiana Metals to investigate Site contamination. Christiana Metals leased the Bishop Tube operation to Marcegaglia USA in the mid-1990's, but continued the groundwater studies on a voluntary basis. In 1999 Christiana Metals' representatives informed the Department that they would no longer be performing characterization or remediation activities.

The Hazardous Sites Cleanup Program initiated further investigations at the Site under a Response Justification Document (RJD) dated March 14, 2000. The further investigation activities have included installation of additional groundwater monitoring wells, soil sampling, stream sampling, evaluation of the vapor intrusion pathway, and continued monitoring and maintenance of the POET system located at the affected residence. Samples from two onsite bedrock wells, installed by the Department (screened at depths of more than 100 ft), revealed TCE concentrations exceeding 100,000 ug/l. A group of potentially responsible parties is currently performing additional groundwater characterization work to further delineate the groundwater contamination associated with the Site.

Stream samples collected from the site to a point more than one-mile downstream have revealed TCE concentrations ranging from non-detect (just upstream from Bishop Tube) to more than 50 ug/l (just downstream from the Site). Samples from springs and groundwater seeps located up to one-mile northeast of the source area have also contained TCE at more than 15 ug/l.

Selected homes have been evaluated for vapor intrusion, resulting from volatilization and migration from the contaminant plume. Indoor air samples were collected because of the shallow nature of groundwater in the area, and the presence of preferential pathways for migration of vapors into homes (i.e. basement sumps). TCE has been detected in indoor air at four homes. Indoor air at one of these homes exceeded the Department's Statewide Health Standard for TCE. Because the full extent of the groundwater plume has not been delineated, additional evaluation of the groundwater to indoor air pathway is on-going.

The results of the site investigation were used to calculate a Hazardous Ranking System (HRS) score. The overall score for the Bishop Tube site is 40.79, on a scale of 0 to 100. Because the source of the TCE contamination is not considered an open pathway, the site was scored based on the groundwater pathway only. The Department does not have a cut-off score for listing sites on the PAPL. However, for comparison purposes only, the U.S. Environmental Protection Agency requires a HRS score of 28.50 or more for a site to be listed on the National Priorities List.

### **Response Actions Taken:**

Under the terms of a Consent Order and Agreement (CO&A) with the site owner/developer (Constitution Drive Partners or CDP), the Department has completed a Prompt Interim Response at the Site, installing an air sparging and soil vapor extraction system. The response action addresses three distinct source areas at the Site. Construction activities were completed in 2007. CDP failed to meet some of the performance criteria established in the CO&A, and the system has not been operational since April 2008.

DEP and its contractor, Michael Baker Jr., Inc. began a phased investigation in 2000 to determine the direction and flow characteristics of the contaminant plume, the areal and vertical extent of the contaminant plume, and the source or sources of contamination. The investigation included installation of single and multiple screen (cluster) monitor wells; free-product evaluation, three-dimensional groundwater modeling, membrane interface probe (MIP) and soil boring investigation; geophysical borehole logging; surface geophysical surveys; soil, groundwater and surface water sampling. Significant conclusions from the remedial investigation are as follows:

- Residual free-phased product (dense non-aqueous phased liquid or DNAPL) was detected or indicated in unsaturated soil and saturated soil and bedrock zones (within fractures).
- Shallow groundwater migrating beneath the stream and toward the nearby General Warren Village residential area may pose a risk for vapor intrusion.

- The literature review and borehole logging during well installation indicate that groundwater flow is controlled by flow through fractures within the bedrock. Bedrock transitions from crystalline schist to limestone north of the site.
- Rock beneath the source areas at the site dips at approximately 70 – 80 degrees, providing a conducive pathway for downward migration of DNAPLs.
- Samples from a well located approximately one-third mile northeast of the Site drilled by the property owner, as a potential water supply, contained TCE at approximately 9,000 ug/l.

Remedial Investigation (RI) activities continue at the site through a Consent Order and Agreement (CO&A) between Johnson Matthey and Whittaker Corporation. Additional off site well installation, modification of former production wells on site, surface water sampling, and assessment of the vapor intrusion pathway are included in the RI activities.

### **Enforcement Actions:**

The Department issued a CO&A with prospective purchaser CDP on March 17, 2005, which was amended on January 22, 2007. These agreements conditionally resolved CDP's liability under HSCA and facilitated the Department's response action to address the three soil and shallow groundwater source areas on the former Bishop Tube property.

The Department reached a CO&A with Johnson Matthey on August 18, 2008 to facilitate transfer of site investigation activities.

The Department filed a civil action in US District Court against Whittaker Corporation in December 2008. This suit was placed in suspension after Whittaker joined with Johnson Matthey in an amended CO&A executed on August 24, 2009 to continue the site investigation activities.

Other potentially responsible parties include Christiana Metals and Marcegaglia USA. The Department continues to investigate and seek participation from these entities.

### **Determination to List:**

In order for the Department to carry out a remedial response at this site, it is necessary for the Bishop Tube Site to be listed on the PAPL. The Hazard Ranking System Score for this site is 40.79.

Releases of hazardous substances and contaminants from the Site pose a substantial danger to the public health or safety and the environment. Additional remedial actions will be required to address continued off site migration of contaminants in groundwater and the resultant impacts to the Exceptional Value stream and indoor air quality in buildings (including homes and commercial establishments).

Listing of the site on the PAPL will give the Department additional authority to require Potentially Responsible Parties to implement additional response actions to address the site.

The Bishop Tube Site (Site) is located in East Whiteland Township, Chester County, Pennsylvania. Land uses at the Site include industrial, commercial and residential. From 2000 through 2008, the Department performed surface water, groundwater and soil investigations. Trichloroethylene (TCE) has been detected in groundwater at concentrations exceeding 100,000 parts per billion (ppb). A home well located approximately 1/3 mile from the Site contains TCE in excess of 5 ppb, the Maximum Contaminant Level (MCL) for public water supplies and the Statewide Health Standard for groundwater cleanup for TCE. TCE is listed as a probable human carcinogen by the U.S. Environmental Protection Agency. Chronic effects to the liver, kidneys and immune and endocrine systems have been seen in humans exposed to TCE through inhalation or from drinking contaminated water. TCE has also been detected in indoor air at 4 of 5 homes selected for indoor air sampling. It is suspected that volatilization of TCE from groundwater is responsible for these detections. At one home the concentration of TCE exceeded the Statewide Health Standard for indoor air ( $12 \text{ ug/m}^3$ ). TCE attributed to the site has been detected in the adjacent stream, which is designated as exceptional value by the Department.

A former site owner/operator installed a point of entry carbon treatment (POET) system at the affected residential well. A group of former site owners/operators (Group) is currently acting to identify and address indoor air contamination resulting from the Site, under a consent order and agreement (CO&A) with the Department. Under the terms of the CO&A the Group is performing a remedial investigation to further characterize deep groundwater and off-site contamination.

Under a Prompt Interim Response, the Department, acting with the current site owner, constructed an air sparging/soil vapor extraction system to address soil in three source areas associated with the former steel tube manufacturing facility.