

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL CLEANUP PROGRAM**

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Subject: Analysis of Alternatives and Proposed Response
Limekiln PCE HSCA Site
Horsham Township, Montgomery County, PA

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Attached is the Analysis of Alternatives and Proposed Response for the Limekiln PCE HSCA Site

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COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Hazardous Sites Cleanup Program
Limekiln PCE HSCA Site
Horsham Township, Montgomery County, Pennsylvania

ANALYSIS OF ALTERNATIVES AND PROPOSED RESPONSE

The purpose of this Analysis of Alternatives and Proposed Response document is to outline the decision making process involved in the selection of the proposed response and to provide a description of the proposed response. This document will be included in the Administrative Record which will be compiled for this response pursuant to Section 506 of the Pennsylvania Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756 No. 108 ("HSCA"), 35 P.S. § 6020.506.

The Pennsylvania Department of Environmental Protection (Department) proposes an Interim Response to abate the PCE contamination in the private drinking water wells at the Limekiln PCE HSCA site.

I. SITE INFORMATION

A. Site Location and Description

The Limekiln PCE Site ("Site") is located near the intersection of Limekiln Pike and Horsham Road in Horsham Township, Montgomery County, Pennsylvania. It is a primarily residential area with some commercial land use in the vicinity. Park Creek, a tributary of the Little Neshaminy is also close to the site and flows through nearby community parks. Some homes in the area are connected to public water, but others use private well supplies. The Site contains Tetrachloroethylene (PCE) in the groundwater above the maximum contaminant level (MCL) of 5 micrograms/liter ($\mu\text{g/L}$). The contamination currently affects 11 private residences. The source of the contamination has not yet been identified.

B. Site History

The site was first discovered in June 2011 through Department sampling related to a nearby underground storage tank case. Three homes were initially discovered to have PCE above the MCL, and the Department immediately supplied bottled water to those residents. Subsequent sampling of approximately 40 private wells throughout 2011 and 2012 revealed 8 additional homes which have PCE above the MCL in their well-water. The Department is currently providing bottled water for potable purposes to all 11 affected properties.

C. Release of a Hazardous Substance

Eleven residential wells in the site area are contaminated with PCE above the MCL of 5 µg/L. The highest level detected throughout the investigation was 71.5 µg/L. PCE is included on the 2011 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, 42 U.S.C. §§9601-9675 Priority List of Hazardous Substances, prepared by the Agency for Toxic Substances & Disease Registry (ASTDR). It is also listed as a likely human carcinogen on the Environmental Protection Agency's (EPA's) Integrated Risk Information System (IRIS) database. It meets the definition of a hazardous substance and poses a threat to human health when present in groundwater above the MCL, which has occurred at this site.

II. RESPONSE CATEGORY

Because of the PCE in private drinking water wells, the Department shall conduct an Interim Response action as defined in Section 103 of HSCA, 35 P.S. § 6020.103, to alleviate the threat to public health and safety.

The response category is an Interim Response, because it is expected to cost less than Two Million Dollars (\$2,000,000) and be completed in less than one year.

III. ANALYSIS OF ALTERNATIVES

The selected response will be conducted as an Interim Response under Section 103 of HSCA, 35 P.S. § 6020.103, and shall be funded by the Hazardous Sites Cleanup Fund.

Applicable, Relevant and Appropriate Requirements (ARARs)

The following standards, requirements, criteria or limitations are legally applicable, or relevant and appropriate under the circumstances presented by the Site.

Remediation Standards

Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995, P.L. 4, No. 1995-2, 35 P.S. § 6026.101, *et seq.* ("Act 2")
25 Pa. Code Chapter 250 – Administration of Land Recycling Program

Waste Management

Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108, as amended, 35 P.S. § 6020.101, *et seq.* ("HSCA")

Water Quality

Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. § 691.1 *et seq.*

Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, No. 43, 35 P.S. § 721.1, *et seq.*

Evaluation of Alternatives

Pursuant to its authority under Section 501 of HSCA, 35 P.S. § 6020.501, the Department shall implement an interim response action at the Limekiln PCE HSCA Site. In order to achieve the objective of eliminating the threats posed by ingestion of PCE in drinking water, the Department considered the following four potential alternatives:

1. No Further Action.
2. Delivery of bottled water combined with restrictions on the use of groundwater.
3. Installation and maintenance of whole house carbon filtration systems combined with restrictions on the use of groundwater.
4. Installation of a municipal water supply waterline combined with restrictions on the use of groundwater.

ALTERNATIVE 1: No Further Action

Description of the Alternative:

The no further action alternative serves as a baseline to compare against other response actions. Under this alternative the Department would take no further action and would not continue providing bottled water to affected residents.

Protection of Human Health and Environment:

This alternative would not eliminate the threats to the public health and safety due to the potential of exposure to Site contaminants.

Compliance with ARARs:

This alternative would not comply with ARARs because it does not prevent exposure to PCE above the MCL in drinking water from the affected private wells in the area.

Feasibility, Effectiveness, Implementation and Permanence:

This alternative would be feasible and able to be implemented, but it would not be effective, and therefore, cannot be considered a permanent alternative.

Costs and Cost Effectiveness:

There is no cost associated with this alternative.

ALTERNATIVE 2: Delivery of Bottled Water with Restrictions on the use of Groundwater

Description of the Alternative:

Under this alternative, the Department would continue to supply bottled water to all the residences in the site area now relying on private wells with concentrations of PCE above

the MCL for a period of one year. The Department would also sample wells for one additional year while providing bottled water to the affected residences during that time. After one year, residents would be responsible for well water sampling and securing bottled water for their consumption. Residents would also sign covenants limiting their use of ground water for domestic purposes.

Protection of Human Health and Environment:

This alternative is protective of public health and safety because it prevents the public's ingestion of contaminated drinking water. However, the Department's provision of bottled water would not protect residents from exposure through inhalation.

Compliance with ARARs:

This alternative would comply with ARARs as bottled water meets the Safe Drinking Water Act's standards.

Feasibility, Effectiveness, Implementation and Permanence:

Delivery of bottled water is feasible and easily implemented, but is an inconvenience to the residents because of sampling, scheduling, potential interruptions in service, and the need to lift and move cases of water. Additionally, this alternative would not permanently prevent the potential for exposure to PCE since private wells would remain contaminated and accessible.

Costs and Cost Effectiveness:

The cost of the Department's delivery of bottled water to the 11 affected residences in the site area is estimated to be approximately \$7,500. This amount is based on 11 homes receiving an average of 40 gallons of bottled water a month over a one year period. Additional costs for this alternative are associated with sampling wells within the site area. Sampling of properties within the site area would likely occur twice during the year, at a cost of approximately \$9,000. This alternative would be cost effective at an estimated total cost of \$16,500.

ALTERNATIVE 3: Installation of Whole House Filtration Systems with Restrictions on the use of Groundwater

Description of the Alternative:

Under this alternative, the Department would install point of entry treatment systems (POETs) in the form of whole-house granulated activated carbon (GAC) filters. These systems would be installed at residences in the site area that now rely on private wells with contamination above the MCL. The Department would sample periodically over an initial one year period to determine if the filters are operating properly. Pursuant to the Uniform Environmental Covenants Act (UECA), Act No. 68 of 2007, 27 Pa.C.S. §§6501-6517, residents would be required to execute Environmental Covenants to ensure maintenance of their carbon filtration systems, continued well water sampling, and acknowledgment of contaminated ground water on their properties. An administrative order could be issued to property owners with contamination above the MCL who refuse to sign a covenant.

Protection of Public Health and the Environment:

This alternative has been shown to be protective of public health and safety because the carbon filters prevent the public's ingestion and inhalation of contaminants. However, these systems do not have the ability to notify a homeowner when contamination breaks through a filter. Therefore, periodic sampling and analysis is necessary to ensure that the filters are working properly, and to provide maintenance if breakthrough of contamination occurs.

Compliance with ARARs:

This alternative would comply with ARARs because the Department's provision of filtration systems prevents the public's ingestion of contaminated drinking water, and eliminates exposure to contaminated water through other household uses.

Feasibility, Effectiveness, Implementability and Permanence:

This alternative would be feasible and could be easily implemented. This alternative would be permanent, as the filters could be expected to operate effectively for an extended period of time if properly maintained. The maintenance of the systems could be lengthy, because of the PCE contamination in groundwater. The Department would conduct an initial monitoring program of sampling and analysis for volatile organic compounds to establish appropriate maintenance schedules, which would thereafter be the responsibility of the property owners. As long as the systems are maintained properly, this alternative would be effective.

Costs and Cost Effectiveness:

The costs associated with this alternative include installation, sampling and maintenance of carbon filtration systems at 11 impacted residences. The cost for the installation of a whole-house dual canister carbon filtration system is estimated at \$3,500, bringing the total for installation of 11 systems to \$38,500. The cost for sampling one home with a carbon filtration system is estimated at \$1,800 per year, assuming semi-annual sampling would be conducted. Sampling 11 homes with filter systems semi-annually would therefore total \$19,800. The total estimated cost of this alternative is \$58,300, making it cost effective.

ALTERNATIVE 4 : Installation of Public Water Supply Waterline with Restrictions on the use of Groundwater

Description of Alternative

Under this alternative the Department would use the Hazardous Sites Cleanup Fund for the construction of a public waterline to the affected and threatened properties. The Department would fund the construction of the waterline main, the lateral connections from the waterline main to the affected properties, the connection of the laterals to the existing buildings' plumbing, the repairs to all road surfaces or properties disturbed by the waterline construction, and the abandonment of private water supply wells. Pursuant to UECA, environmental covenants would also be required for homes with contamination above the MCL in their groundwater. Alternatively, a municipal ordinance could be

enacted to restrict groundwater use by ensuring mandatory hook ups and well abandonments.

Protection of Human Health and Environment

This alternative would be protective of human health and safety by eliminating the threat of exposure to site contaminants through ingestion and inhalation pathways. The future supply of water to the affected properties will be provided by a water utility, which would have mandated monitoring requirements to ensure that the water meets human health standards for drinking water (MCLs).

Compliance with ARARs

This alternative would comply with ARARs. It would eliminate the exposure to the contaminants present in the groundwater. Although the Department does not regulate water quality in private wells, the utility providing the public water would be required to comply with established drinking water regulations. Therefore, this alternative would comply with Pennsylvania Code containing the safe drinking water regulations (25 PA Code Chapter 109). The required private well abandonments would also be funded under this remedy.

Feasibility, Effectiveness, Implementation, and Permanence

This alternative would be a feasible, effective, and permanent solution to the threat of exposure to site related contaminants through ingestion/inhalation of groundwater. It will also be relatively easy to implement, since public water service is currently available in the area.

Costs and Cost Effectiveness

The costs associated with this alternative include the extension of an existing water main and construction of laterals to service homes with existing or potential groundwater contamination. Abandonment of private wells would also be funded. This alternative is cost effective at a total estimated cost of approximately \$300,000.

IV. PROPOSED RESPONSE

The Department proposes the selection of Alternative 4, installation of a public water supply waterline. The Department has determined, based upon the information contained in this document, that an Interim Response action is justified at the Site in accordance with Section 505(b) of the Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108, 35 P.S. § 6020.505(b).

The fourth alternative affords substantially more protection to human health than the other 3 alternatives. It complies with ARARs relating to the Safe Drinking Water Act standards, and is a cost effective method to mitigate threats to public health associated with PCE contaminated groundwater. It would also be implementable due to a nearby waterline and public water supplier.