

April 24, 2018

SPECIAL BULLETIN

**Old Wilmington Road Groundwater Superfund Site
550 Old Wilmington Road
Coatesville, PA 19320**

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I. Issue

The Remedial Program conducted private well sampling near the Old Wilmington Road Groundwater Superfund Site in November 2017. Validated results for two private wells came back with elevated manganese and lead levels, 4,000 ppb and 75 ppb, respectively. EPA toxicologists concluded that based on the levels found immediate intervention to interrupt the exposure pathway is necessary.

The Site is in the Remedial Investigation (RI) Stage. High manganese and lead was found in monitoring wells, but not yet determined to be site related; nonetheless, delivery of bottled water is recommended until results and source are confirmed. Resampling of residential wells will occur week of May 14, 2018. Several houses had carbon filtration systems installed during a previous Removal Action due to high VOCs in their wells.

The impact to the drinking water source to those two houses meets the criteria for conducting a Removal Action under Section 300.415 of the NCP. The OSC has determined that immediate funds are needed to mitigate the threat posed to human health and the environment. The OSC has authorized a budget for the Removal Action not to exceed \$10,000, in accordance with EPA redelegation of authority 14-2.

Under a residential drinking water scenario, the manganese concentration that equates to a Hazard Index (HI) of 1 is 430 µg/l. A Removal Action for a non-carcinogen is typically considered when the HI exceeds 3. For manganese, that trigger would be 1290 µg/l. For lead, the Removal Management Level in drinking water is 15 µg/l.

This Special Bulletin documents the scope of work needed to begin the Removal Action to protect public health and the environment.

II. Background

A. Site Description

The Site is located in the vicinity of Old Wilmington Road in Sadsburyville, West Caln Township, Chester County, Pennsylvania, four miles northwest of Coatesville, Pennsylvania, and about one mile north of the intersection of Old Wilmington Road and US Route 30 (Business) and includes four investigation areas.

Investigation Area 1 is located at 39°59' 44" north latitude and 75°54' 10" west longitude and is on Old Wilmington Road, and includes a junkyard on that property. This area was also observed by many eyewitnesses to be the site of chemical waste disposal and the disposal of many other wastes. Also, this area was found to have high concentrations of volatile organic compounds (VOCs) in groundwater, and was the source of high-concentration VOCs detected in soil gas.

Investigation Area 2 is located at 39°59' 42" north latitude and 75°54' 32" west longitude of Donovan Drive and is an inactive former landfill, known as the Perry Phillips Landfill. The landfill has been the subject of several investigations, including the 1986 Pennsylvania Department of Environmental Resources (PADER) (now Pennsylvania Department of Environmental Protection [PADEP]) Preliminary Assessment and subsequent site inspection. Investigation Area 2 is now the location of a junkyard. The landfill is currently being addressed by the PADEP under a 2008 Consent Order with Perry Phillips. The consent order directs the removal of solid waste material from the site under a PADEP managed framework and schedule.

Investigation Area 3 (Area 3) is located at 39°59' 46" north latitude and 75°54' 13" west longitude on Old Wilmington Road. This property is referred to in previous reports as the former Area 3 Property. Test pits excavated in Area 3 in 1994 revealed two stone-filled trenches present on the northwest edge of the property where eyewitness reports indicated liquid wastes were disposed of. Groundwater in the domestic well on this property is contaminated. Soil gas contamination was also detected on this property.

Investigation Area 4 is located at 39°59'47" north latitude and 75°54'05" west longitude on Old Wilmington Road, and includes the parcel immediately southeast of this address. These properties, including a truck yard located across Old Wilmington Road from Areas 1 and 3. Area 4 was identified as a potential source of groundwater contamination during a hydrogeologic investigation conducted by Weston in 1998 along with Investigation Areas 1 and 3. Eyewitness

reports also describe waste disposal at this property. Soil gas contamination was also detected at Area 4.

B. Site Background

The vicinity of the Site has been the subject of numerous past investigations because of multiple complaints of waste disposal that were investigated by the Chester County Health Department (CCHD) and the Commonwealth of Pennsylvania during the 1970s and 1980s. These investigations resulted in a large body of information that was critical for defining the nature and extent of the Site. Numerous inspections were conducted during the early 1970s by the CCHD investigating reported waste handling violations. Subsequently, PADER conducted numerous inspections, and cited and fined Perry Phillips for many of the violations observed during these inspections. Both CCHD and PADER records indicate that a permit was never applied for the waste disposal. Eyewitness accounts additionally reported that tanker trucks were observed on the landfill site discharging their contents onto the ground behind the home adjacent to the landfill. Aerial photographs show mounded material on the landfill sometime between 1975 and 1980. The Area 1 Landfill site subsequently became the subject of a PADER Preliminary Assessment in December 1986. In 1988, 11 residential wells were sampled by an EPA contractor as part of a Site Inspection (SI) at that site.

Home well groundwater sample data collected during the 1988 Phillips Landfill SI indicated that the Area 1 residential well located on the junkyard site and several other wells in the vicinity, including the well system that provided water to the 60 residents of the mobile home park owned by Area 1, were contaminated with trichloroethylene (TCE) and tetrachloroethene (so referred to as perchloroethylene or PCE) at concentrations exceeding the EPA Maximum Contaminant Level (MCL) for those compounds in drinking water. Several other nearby residential wells were found to contain lower concentrations of the same compounds.

Surface soil samples collected from the Perry Phillips Landfill for the 1988 Phillips Landfill SI contained several semi volatile organic compounds, notably polychlorinated biphenyls (PCBs), pesticides, and polycyclic aromatic hydrocarbons (PAHs). No subsurface soil samples were collected at that time; therefore, a causal relationship between the landfill and the groundwater contaminants could not be established.

Subsequent sampling conducted by PADEP confirmed the presence of VOC contamination in the Area 1 residential well and Mobile Home Park wells. On November 9, 1992, EPA representatives met with PADEP and CCHD personnel to conduct a sampling and inspection of the public water supply system that provided water for the Area 1 mobile home park. Three groundwater samples

were collected from three separate wells. Two of the wells, located in Area 2, provided water to the mobile home park; the third was the Area 1 residential well.

Laboratory results indicated that one of the mobile home park supply wells and the Perry Phillips residential well contained VOCs above corresponding MCLs, and the concentration of PCE in the Phillips private well exceeded the EPA Removal Action Level. Based on these results, EPA initiated a Removal Site Assessment on February 26, 1993. Samples of groundwater were collected from private wells in the vicinity of the Area 1 Landfill site and analyzed for VOCs on four occasions in 1993. The analytical results indicate that the Area 1 residential well and nearby private wells were contaminated with PCE and TCE above EPA Removal Action Levels.

Based on the results of the 1993 removal site assessment, EPA determined that there was an immediate and significant threat to human health due to the presence of elevated concentrations of hazardous substances in the drinking water supplies of residents living in the vicinity of what, at that time, was referred to as the Area 1 Landfill site. On December 21, 1993, a Removal Action was initiated to mitigate the threat to public health, welfare, and the environment at the Area 1 Landfill site.

Initially, the EPA Response Action focused on providing bottled water and later carbon filtration units to the six affected residences along Old Wilmington Road and downgradient along Ash Road. EPA has performed quarterly sampling of drinking water and maintained the treatment systems since 1993 to the present time at the six residences, to ensure that the treatment systems are adequately protecting the residents. In 2002, EPA installed a carbon unit at a seventh residence on Ash Road. In addition, several residential wells in close proximity to those with treatment systems have been targeted for sampling at various times during the course of this RI. In 2007 and 2008 two additional residences on Ash Road and Old Wilmington Road were added to the quarterly sampling program. A treatment system was installed in one of the two newly monitored residences while the second residence along Ash Road is being monitored with no treatment system.

To determine the source of groundwater contamination, the EPA On-Scene Coordinator (OSC) directed that a soil gas survey be performed in February of 1994 to look for areas of high concentration of VOCs in the subsurface soil. The majority of soil gas samples were collected from holes drilled in soil to a depth of 4 feet below the surface, although a few samples were collected from a depth of approximately 109 feet into the soil.

The highest measured soil gas concentrations were 6,000 to 10,000 parts per billion (ppb) of PCE, which were detected in two samples collected from a depth of 10 feet below ground surface from Investigation Area 1. The second highest levels were 1,500 to 2,200 ppb of 1,1-DCE and lesser amounts of TCE and PCE

from the garage area of the adjoining Investigation Area 3 property. The third highest soil gas measurements were 2,200 ppb of TCE and 400 to 800 ppb of 1,1-DCE near the Area 1 residences. The data from the landfill grid (Investigation Area 2) consisted of four detections of PCE with a maximum concentration of 140 ppb, and one detection of TCE at 410 ppb with a coincident detection of 28,500 ppb of other identified VOCs.

Based on the results of the soil gas investigation and the eyewitness reports, EPA separately investigated Investigation Area 3 with test excavations in March 1994 in the areas indicated in the soil gas survey. These test excavations encountered nothing conclusive on the Area 1 residential area, only municipal waste on the Area 1 Landfill property, and two stone-filled trenches in an area of alleged liquid disposal on Investigation Area 3 (the current Area 3 property).

To further investigate the extent of groundwater contamination and to identify its source, six monitoring wells were installed from March 16 through March 23, 1994 where the elevated PCE and 1,1-DEC concentrations were found. Subsequent groundwater investigations confirmed that two distinct types of groundwater contamination were present in separate plumes, like the differences in chemistry between the same contaminants found in soil gas. These investigations identified distinct differences between the chemistry of the contaminant source at Investigation Area 1 from the contaminant source identified at Investigation Area 3.

In late March 1994, continuous subsurface soil samples were collected from 14 soil boring locations (within the soil gas investigation areas) for field screening and laboratory analysis. Field logs from this effort indicated the top of bedrock was as shallow as 12 feet and as deep as 52 feet, which shows the variability in the thickness of the soil and soft weathered bedrock. Field screening using both a photo-ionization detector (PID) and flame-ionization detector (FID) indicated the presence of VOCs at low levels in many of the samples.

These investigations of soil, groundwater and surface soil in March 1994 clearly indicated multiple, distinct and separate source areas, each with distinctive-divisible chemistry, ownership, and history. Because the groundwater contamination near Investigation Areas 1, 3 and 4 was found to be distinct from that found at the Area 1 landfill in Investigation Area 2, EPA filed an ERNS incident notification report on April 20, 1994, identifying a separate site, the OWR site, which included the groundwater contamination plumes. On May 4, 1994, EPA obligated funds to be used for a Removal Action at the OWR site. The removal action investigations conducted at the OWR site at that time could not definitely establish a source of the VOC groundwater contamination. Further investigation was recommended.

Based on this recommendation, a hydrogeologic evaluation was completed by Weston in 1998 to determine the source of VOC contamination in the OWR site.

Groundwater contaminant contour maps were generated using three rounds of historic groundwater sampling data – March 1994, March 1995 and March 1996. The contaminant contour maps indicated that, based on the types and concentrations of contaminants, there were three possible sources in the area. One source was identified as Investigation Area 1; another possible source was identified within Investigation Area 3 (the current Area 3 property on Old Wilmington Road); and a third possible source was identified within Investigation Area 4 located on the east side of Old Wilmington Road, at the current garage properties. The report concluded with a recommendation for additional sampling points to provide a better resolution of the boundaries and characteristics of each of the potential groundwater plumes, including homes on the east side of Ash Road, the south side of Old Wilmington Road, and along Buck Run.

In 1998, an EPA contractor performed a new scoring of the site using the Hazard Ranking System (HRS) based upon the observed release to groundwater. The site score was sufficient for consideration of the site for listing on the National Priorities List (NPL). A full HRS scoring package was assembled and evaluated in July of 1999, which generated a final site score of 50 for the groundwater pathway only, sufficient to recommend the site be listed as a Superfund site.

The concern for potential plume migration to previously unaffected residences, and the increase in contaminant level in some homes, led the EPA to request that the Agency for Toxic Substances and Disease Registry (ASTDR) and the Pennsylvania Department of Health (DOH) perform a Health Consultation in 1999. The consultation recommended the regular sampling of well water from wells located on and downgradient of the three potential sources and north of the power line for at least three more consecutive calendar years, and the provision of carbon treatment systems to residents at two other residences on Ash Road. Only one of the treatment systems was installed however, due to homeowner opposition. Quarterly sampling with periodic maintenance is conducted at the residences with water treatment systems. In 2008 an additional residence along Ash Road was added to the monitoring program and provided bottled water for drinking purposes. The previous homeowner at this address had refused previous requests to conduct quarterly sampling.

The site was proposed for the NPL and formally listed in February of 2000. The studies conducted in the area of the Old Wilmington Road groundwater plume have indicated several potential sources of VOC contamination in the site area. Several properties have been included within the site boundary based upon proximity to the contaminated groundwater plume and the results of field investigations.

The current RI is focused on the four previously identified potential source areas, as well as the groundwater contamination plume itself, using prior investigations as the basis for extensive new data collection, described in this report.

C. Types of Substances Present

Manganese is a naturally occurring substance found in many types of rocks and soil. Pure manganese is a silver-colored metal; however, it does not occur in the environment as a pure metal. Rather, it occurs combined with other substances such as oxygen, sulfur, and chlorine. Manganese is used principally in steel production to improve hardness, stiffness, and strength. It is used in carbon steel, stainless steel, high-temperature steel, and tool steel, along with cast iron and super alloys.

Manganese has been shown to cross the blood-brain barrier and a limited amount of manganese is also able to cross the placenta during pregnancy, enabling it to reach a developing fetus. Nervous system disturbances have been observed in animals after very high oral doses of manganese, including changes in behavior.

Sperm damage and adverse changes in male reproductive performance were observed in laboratory animals fed high levels of manganese. Impairments in fertility were observed in female rodents provided with oral manganese before they became pregnant.

Illnesses involving the kidneys and urinary tract have been observed in laboratory rats fed very high levels of manganese. These illnesses included inflammation of the kidneys and kidney stone formation.

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing. Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

It does not matter if a person breathes-in, swallows, or absorbs lead particles, the health effects are the same. Within our bodies, lead is absorbed and stored in our bones, blood, and tissues. It does not stay there permanently, rather it is stored there as a source of continual internal exposure. As we age, our bones demineralize and the internal exposures may increase because of larger releases of lead from the bone tissue. There is concern that lead may mobilize from the bone among women undergoing menopause. Post-menopausal women have been found to have higher blood lead levels than pre-menopausal women.

Lead poisoning can happen if a person is exposed to very high levels of lead over a short period of time. When this happens, a person may feel:

- Abdominal pain
- Constipated

- Tired
- Headachy
- Irritable
- Loss of appetite
- Memory loss
- Pain or tingling in the hands and/or feet
- Weak

Because these symptoms may occur slowly or may be caused by other things, lead poisoning can be easily overlooked. Exposure to high levels of lead may cause anemia, weakness, and kidney and brain damage. Very high lead exposure can cause death.

Lead can cross the placental barrier, which means pregnant women who are exposed to lead also expose their unborn child. Lead can damage a developing baby's nervous system. Even low-level lead exposures in developing babies have been found to affect behavior and intelligence. Lead exposure can cause miscarriage, stillbirths, and infertility (in both men and women).

Generally, lead affects children more than adults. Children tend to show signs of severe lead toxicity at lower levels than adults. Lead poisoning has occurred in children whose parent(s) accidentally brought home lead dust on their clothing. Neurological effects and mental retardation have also occurred in children whose parent(s) may have job-related lead exposure.

A person who is exposed to lead over time may feel:

- Abdominal pain
- Constipated
- Depressed
- Distracted
- Forgetful
- Irritable
- Nauseous/Sick

People with prolonged exposure to lead may also be at risk for high blood pressure, heart disease, kidney disease, and reduced fertility.

The Department of Health and Human Services (DHHS), Environmental Protection Agency (EPA), and the International Agency for Research on Cancer (IARC) have determined that lead is probably cancer-causing in humans.

D. National Priorities List

The Site was proposed for the NPL and formally listed in February of 2000. The studies conducted in the area of the Old Wilmington Road groundwater plume

have indicated several potential sources of VOC contamination in the area of the Site, and several properties have been included within the boundary of the Site based upon proximity to the contaminated groundwater plume and the results of limited field investigations.

The current RI focused on the four previously identified potential source areas, as well as the groundwater contamination plume itself.

E. State and Local Authorities Roles

The Remedial Program requested Removal Program's assistance to provide bottled water to two houses with elevated manganese and lead levels, respectively. EPA continues to coordinate efforts with PADEP and other Federal, State and local authorities regarding developments at the Site.

III. Threats to Public Health or Welfare or the Environment

Section 300.415 (b) (2) of the NCP, 40 C.F.R. § 300.415 (b) (2), identifies factors to be considered in determining the appropriateness of a removal action. Paragraphs (i) and (vii) of that section directly apply as follows to the conditions at the Site in Blades, DE:

- (i) *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;*

Elevated levels of manganese and lead, respectively, were found at two private wells near the Site. Exposures to manganese and lead are known to have a number of adverse effects in laboratory animals and humans.

- (ii) *Actual or potential contamination of drinking water supplies or sensitive ecosystems;*

Results show elevated levels of manganese and lead, above the Removal Action levels, in the private wells of the two affected houses, respectively.

- (vii) *The availability of other appropriate federal or state response mechanisms to respond to the release;*

The Remedial Program requested assistance from the Removal Program to interrupt the current exposure pathway by providing bottled water to the affected houses.

IV. Endangerment Determination

The OSC determined that a pollutant or contaminant might have been released to the environment and that conditions at the Site presented an imminent and substantial

endangerment to public health, welfare or the environment. For this reason, the OSC initiated an immediate Removal Action.

V. Proposed Actions and Estimated Costs

A. Actions

1. Provide bottled water to affected houses until the source of the contamination is verified.

B. Estimated Costs

	Ceiling
ERRS	\$ 7,500
START	\$0
UNALLOCATED	
	<hr/>
	\$7,500

C. Contribution to Remedial Performance

The Remedial program is currently working on the RI and will resample the affected wells to confirm current results. The bottled water delivery would be to interrupt the current exposure pathway.

D. Compliance with ARARS

The Removal Action will comply with all Applicable or Relevant and Appropriate Requirements (ARARs), to the extent practicable, considering the exigencies of the situation.

VI. Expected Change in the Situation Should No Action be Taken or Action Delayed

If no action is taken, or action is delayed, at the Site, the residents of the two affected houses would continue to be exposed to elevated levels of manganese and lead, respectively.

VII. Outstanding Policy Issues

No outstanding policy issues.

VIII. Enforcement

The primary Potential Reportable Party is the owner, which has no money to pay for the necessary actions.