

Health Consultation

Alliance Landfill Site

Taylor Borough and Ransom Township

Taylor, Lackawanna County, Pennsylvania

EPA FACILITY ID: PAD982366148

January 10, 2005



**Prepared by
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333**

Statement of Issues:

In March 2002, a community activist petitioned the Agency for Toxic Substances and Disease Registry (ATSDR) to perform a public health assessment for the Alliance Landfill site in Taylor Borough, Pennsylvania. The petitioner expressed concerns about “air and particulate emissions” and cancer incidence rates in the community. In response to the petitioner’s request, a representative from ATSDR’s Region 3 Office toured the site in May 2002. In addition, ATSDR’s Petition Screening Committee and the Exposure Investigation Section met to review the petition. The Petition Screening Committee recommended a public health consultation to address the petitioner’s concerns (1). A health consultation was released in August 2003 for public comment. This health consultation contains comments received during the public comment period; the comments have been addressed in Appendix B.

Background

The Alliance Landfill, formerly known as the “Empire Sanitary Landfill” has operated since the 1960's (2). The current owner, Waste Management, Inc., purchased the property in 1996. The landfill is located on the side of a mountain approximately 2.5 miles from Scranton, Pennsylvania (2). Other landfills, including a Superfund site, are located along the same road (2). The Alliance Landfill encompasses 196 acres of a 512.9-acre parcel of land permitted and regulated by the Pennsylvania Department of Environmental Protection (PADEP). The nearest occupied residence is approximately 1,500 feet from the landfill’s permit boundary. The community surrounding the landfill receives public water (2). Site-specific demographic data obtained from 2000 census data are included in the site map, Figure 1, Appendix A.

The landfill received its first operating permit from PADEP in March 1986 (2). Under Waste Management ownership, the landfill does not accept hazardous, liquid, or infectious medical waste (2). Approximately 5,000 tons of wastes are handled per day. Approximately 80% of the waste received is classified as municipal solid waste construction and demolition waste account for approximately 10.5% and incinerator ash and residual waste account for 8.1% and 1.5% of the total waste, respectively (3).

Alliance Landfill accepts ash from Union County, New Jersey. The ash is analyzed for metals including: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. As prescribed by the US Environmental Protection Agency (EPA) Ash Sampling Protocol. This EPA protocol is implemented through a memorandum of understanding (MOU) by the New Jersey Department of Environmental Protection (NJDEP) and PADEP (Mark Messics [mmessics@wm.com], Waste Management, unpublished data, personal communication, February 28, 2003). Testing and statistical analysis of the data verify that the Union County ash is non-hazardous waste.

The landfill cells are double-lined. A leachate collection and treatment system is in place, and a leachate and groundwater monitoring is conducted quarterly (2). The landfill has a National Pollutant Discharge Elimination System (NPDES) permit, and sampling of its discharges occurs at two locations (2). A gas recovery plant draws methane from wells in capped areas of the landfill (3). The gas is

purified, and the methane is captured for residential and commercial use. Any remaining "off-specification" gas is combusted through flares, a process by permitted by PADEP (3). Liquid impurities from the processing are removed and disposed of off site (Mark Messics [mmessics@wm.com], Waste Management, unpublished data, personal communication, April 1, 2003). The permit requires operators to collect and control at least 75% of the landfill gas and ensure that odors do not leave the site. Currently, odor-neutralizing agents are used to mitigate odor problems (3). The landfill operators have a Title V operating permit under the Clean Air Act. Methane collection wells at the landfill are monitored monthly, and methane over the entire surface of the landfill is monitored quarterly. The permit requires that concentrations do not exceed 500 parts per million (ppm) (2). If surface methane concentrations exceed 500 ppm, corrective actions are required. This is in accordance with the New Source Performance Standards for Municipal Solid Waste Landfills. Flare emissions from non-methane organic compound (NMOC) also are regulated. NMOCs must be either 98% destroyed or less than 20 ppm when measured in the exhaust.

Recent Landfill Operations

In January 2000, Waste Management contracted with EMCON/OWT (a subsidiary of The Shaw Group Inc.) to perform a third-party evaluation of the landfill gas management system (4). The report identified "significant deficiencies" in the gas collection and recovery systems. Waste Management contracts Dominion Energy to collect landfill gases; the company is required to comply with all Alliance Landfill air permit conditions. Dominion Energy collected an average of 66.5% of the landfill gases in the 1st and 2nd quarters of 1999. Alliance Landfill's air permit requires that 75% of projected landfill gases be collected; this amount is set by Reasonably Available Control Technology (RACT). In addition, the 500 ppm methane limit for surface emissions was exceeded in the 1st and 2nd quarters of 1999. The EMCON/OWT report recommended installing a separate extraction system near the perimeter and at older areas of the landfill. The report also stated that weekly well-field monitoring was inadequate and should occur at least three times per week.

In June 2000, PADEP conducted a "background odor investigation"; however, levels of individual constituents were not measured. PADEP used an "electronic nose" (a Multi-polymer Array Response Network) and identified a "fingerprint" of volatile organic compounds (VOCs at the landfill (2). Landfill operators visually monitor dust leaving the property. This is logged weekly. When dust is seen, operators are required to take corrective action and log the event as a "deviation." Such an event was noted in an annual report submitted to the PADEP Bureau of Air Quality. According to Waste Management, the company was cited by PADEP on July 23, 2002, for a dust event caused by a thunderstorm that "blew through" during a dry period.

Since March 2002, 60 violations and 176 odor complaints from neighbors have been levied against the landfill. PADEP cited Alliance Landfill for leachate treatment systems failure, blockages in gas collection lines, and ineffective cover material as causes of the odor violations. The landfill closed on April 14, 2003, for approximately 1 month to address PADEP concerns. Since reopening, the landfill has not been cited by PADEP for any violations.

Additional Information

In 2004, PADEP supplied ATSDR with particulate data collected during 1994-1995. PADEP Mobile Analytic Services performed air sampling in various locations surrounding the landfill for total particulate matter (dust), sulfate, and metals. Sampling data indicated that airborne particulates did not reach levels of health concern during sampling.

Gaseous Emissions

If not designed and operated properly, landfills can emit air contaminants at levels that could adversely affect nearby populations. Landfill gas (LFG) consists primarily of 45% to 60% methane and 40% to 60% carbon dioxide. Landfill gas also includes small amounts of ammonia, carbon monoxide, hydrogen, nitrogen, oxygen, sulfides, and non-methane organic compounds (NMOCs) such as benzene, trichloroethylene, and vinyl chloride (6). Microorganisms within the landfill produce methane and carbon dioxide under anaerobic conditions. Carbohydrates from paper, cardboard, and other paper products which form the major components of refuse decompose initially to sugars, then mainly to acetic acid, and finally to methane and carbon dioxide. The rate of landfill gas emissions depends on atmospheric pressure, wind speed, landfill age and composition, current landfill activities, engineering controls, and odor-control practices.

Components needed to control LFG emissions (e.g., liner, leachate, and gas collection systems) are in place at the Alliance Landfill. However, numerous odor complaints, violations, and a recent shutdown suggest inadequate design and operation of the landfill. Poor design and operation can result in elevated VOCs and volatile inorganic compounds emissions. After PADEP temporarily closed the landfill, Waste Management improved the gas-collection system, and the company has stated that the gas collection system is more than sufficient to capture any gases generated by the landfill (Mark Messics [mmessics@wm.com], Waste Management, unpublished data, personal communication, January 2004). No sampling data are currently available to validate the effectiveness of these changes and current air sampling data are insufficient to assess this potential exposure pathway.

Particulate Matter

To control dust emissions landfill operating procedures call for water spraying in high-traffic areas and at soil stockpiles. Rock-crushing equipment used in the soil processing area has dust-suppressor controls. Trucks are required to have their tarps in place until just before tipping, and water is sprayed when the garbage is tipped. These measures were in place during ATSDR's tour of the landfill in May 2002 and should be sufficient to control dust levels. However, periodic episodes of high dust have occurred at the landfill, and the operators have been cited for dust-related events. When high dust events occur, people with preexisting respiratory conditions (e.g., asthma, bronchitis, chronic obstructive pulmonary disease (COPD), etc) could suffer adverse reactions.

Cancer Incidence Review

Community residents petitioned ATSDR in 1992 to conduct a health assessment for Lackawanna County because of the number of area landfills and Superfund sites. The Pennsylvania Department of Health (PADOH), under a cooperative agreement with ATSDR, reviewed relevant health data for Taylor Borough. Cancer mortality for 1980-1991 for cancer incidence for 1985-1989 was reviewed. Statistics for total cancers and eight cancer sites were reviewed. Taylor Borough showed a higher number of anus, rectum, and rectosigmoid cancers than Pennsylvania state cancer numbers. The report suggested that non-environmental factors such as heredity, occupation, and diet could increase a person's risk for such cancers. PADOH continues to monitor cancer mortality and incidence data for Lackawanna County (5).

Child Health Considerations

The data ATSDR has received for Alliance Landfill is insufficient to determine whether conditions at the landfill could adversely affect children's health. ATSDR needs current sampling data to determine the landfill's effects on public health.

Conclusions

No current sampling data exist to identify and quantify landfill related air contaminants in the community. Recent shut downs raise concerns about landfill compliance and emission controls. Because data are lacking, ATSDR has categorized the Alliance Landfill as an *indeterminate public health hazard*.

Recommendations

1. Conduct off-site ambient air sampling for VOCs, hydrogen sulfide, sulfur dioxide, and particulate matter in the community, and evaluate the potential health impact on nearby populations.
2. Management at landfill and PADEP should ensure continued compliance with required landfill gas emission controls and odor-control practices.
3. PADEP should continue monitoring Alliance Landfill to ensure that the impact on the surrounding communities is minimal. PADEP should also continue maintaining a record of all odor complaints to characterize their nature, location, time, and frequency.

Public Health Action Plan:

The public health action plan for the Alliance Landfill describes actions recommended after the completion of this health consultation. This public health action plan is designed eliminate data gaps in environmental sampling and evaluate additional data to determine whether exposure to air contaminants is occurring at levels that could affect health. ATSDR is committed to follow up the plan and ensure it's implemented. Public health actions are as follows:

Actions ongoing: ATSDR has contacted PADEP to determine if an air-sampling plan can be developed to assess exposure of residents living near the Alliance Landfill. ATSDR can help review a sampling plan.

How to Contact Us

People with concerns they want to convey to ATSDR or those who would like more information about ATSDR's public health consultation process and related programs, may write to:

Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
ATTN: Chief, PERIS Branch
1600 Clifton Road
Mail Stop E-60
Atlanta, GA 30333
Re: Alliance Landfill A.K.A. Empire Landfill

Alternatively, you can e-mail us at ATSDRIC@cdc.gov, visit our website at www.atsdr.cdc.gov, or call toll-free at 1-(888)-42ATSDR / 1-888-422-8737. Please reference Alliance Landfill in all correspondence.

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References

1. Agency for Toxic Substances and Disease Registry. Petitioned response letter Atlanta: US Department of Health and Human Services; 2002 August.
2. Agency for Toxic Substances and Disease Registry. Scoping report for Alliance Landfill. Atlanta: US Department of Health and Human Services; 2002 January.
3. Agency for Toxic Substances and Disease Registry. Record of activity for the Alliance Landfill. Atlanta: US Department of Health and Human Services; 2002 May 15.
4. EMCON/OWT Solid Waste Services. Investigation report of Alliance Landfill gas management compliance. Taylor, PA. February 15, 2000.
5. Agency for Toxic Substances and Disease Registry. Site Review and Update, Taylor Borough Dump, Lackawanna County, PA., Atlanta: US Department of Health and Human Services; 1993 September 29.
6. Agency for Toxic Substances and Disease Registry. Landfill gas primer: an overview for environmental health professionals. Atlanta: US Department of Health and Human Services; 2001.

APPENDIX A, Figure 1. Site Introductory Map and demographic information.

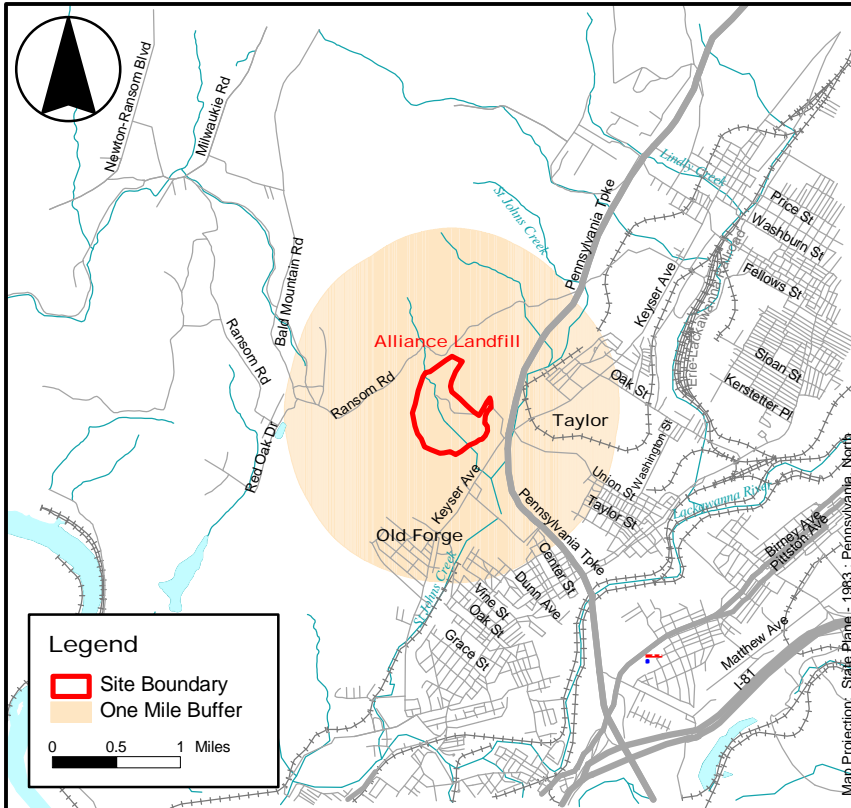
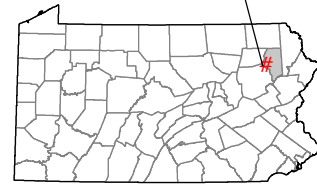
Alliance Landfill

Taylor, Pennsylvania

EPA Facility ID PAD982366148

INTRO MAP

Site Location



Base Map Source: 1995 TIGER/Line Files

Lackawanna County, Pennsylvania

Demographic Statistics

Within Specified Distance*

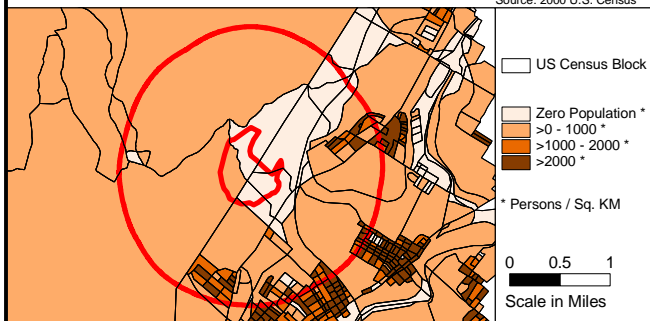
	1 mi	1.5 mi
Total Population	2870	9250
White alone	2846	9136
Black alone	5	18
Am. Indian & Alaska Native alone	0	5
Asian alone	14	50
Native Hawaiian and Other Pacific Islander alone	0	0
Some other race alone	2	20
Two or More races	4	20
Hispanic or Latino	8	43
Children Aged 6 & Younger	227	713
Adults Aged 65 & Older	560	1909
Females Aged 15 - 44	542	1748
Total Housing Units	1155	4051

Demographics Statistics Source: 2000 US Census

*Calculated using an area-proportion spatial analysis technique

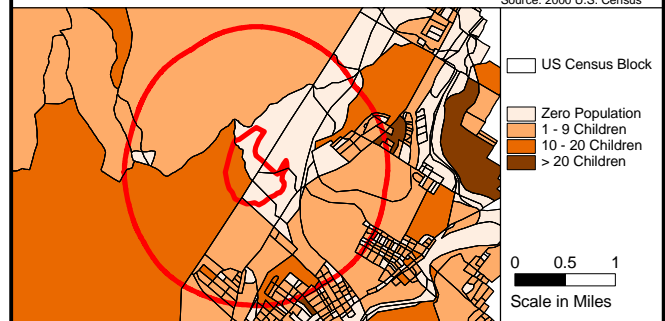
Population Density

Source: 2000 U.S. Census



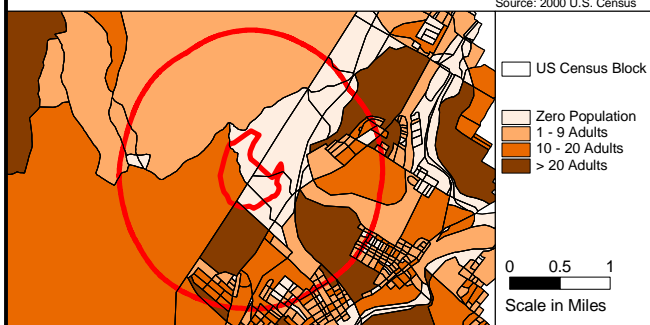
Children 6 Years and Younger

Source: 2000 U.S. Census



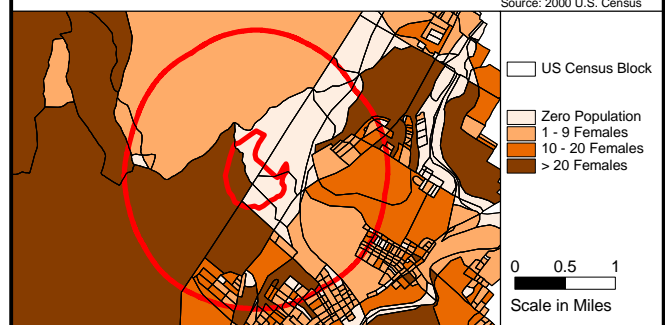
Adults 65 Years and Older

Source: 2000 U.S. Census



Females Aged 15 - 44

Source: 2000 U.S. Census



APPENDIX B, Public comments and questions.

Comment 1: The report did not contain enough information about volatile organic compounds (VOCs), methane gas, dust, and bird feces.

Response: ATSDR studied all available information associated with Alliance Landfill, which identified several data gaps that need to be addressed. Agency for Toxic Substances and Disease Registry (ATSDR) is working with Pennsylvania Department of Environmental Protection (PADEP) to address these data gaps.

- During the public comment period, ATSDR received new data on particulate matter from PADEP. These data showed that, from 1994 through 1995, particulate (dust) levels offsite were not a cause for concern.
- ATSDR asked Alliance Landfill about a possible bird problem. The following is Alliance Landfill's pest-control information (Mark Messics [mmessics@wm.com], Waste Management, unpublished data, personal communication, March 11, 2004).
 - Alliance currently uses on-site electronic sound-deterrent systems. These units emit avian distress sounds of different types and at varying intervals so birds do not get accustomed to them.
 - The attraction of birds during non-operating hours is controlled primarily with the daily placement of cover material on the working face.
 - Alliance has used Animal Wildlife Removal Services, of Moscow, PA, for the last four years to help with bird control. Alliance also has consulted with the United States Department of Agriculture (USDA) (Animal and Plant Health Inspection Services, Wildlife Services) for advice on bird-control activities.

Comment 2: Alliance Landfill, as conditions to its current and future air quality and waste disposal permits, must perform additional on-site and off-site air-quality monitoring. This monitoring must be of the type, frequency, and duration necessary to provide ATSDR and other governmental agencies with sufficient data and information to determine whether air emissions from the landfill currently present or will potentially present a public health hazard (i.e., no data gaps).

Response: ATSDR agrees with these comments and has recommended additional sampling to evaluate exposure to the community.

Comment 3: ATSDR also should work closely with PADEP to see that the appropriate monitoring provisions are included in the applicable permits. Start this monitoring as soon as possible.

Response: Although ATSDR has no regulatory authority, we can advise and make recommendations to local, state, and federal regulatory agencies. ATSDR will continue to work with PADEP.

Comment 4: This report did not answer questions about air quality, water run off, and possible polychlorinated biphenyls (PCBs) from the site.

Response: ATSDR identified several data gaps and made recommendations to PADEP for future sampling. We are all concerned about any contaminants associated with the Alliance Landfill and additionally will continue to work with the state of Pennsylvania to address these concerns. This public health consultation recommends air monitoring.

ATSDR contacted PADEP about any potential problems associated with storm water run-off. PADEP informed us that Alliance Landfill has to comply with the National Pollutant Discharge Elimination System (NPDES), and the landfill must report their findings every six months to show that Alliance Landfill is complying with the NPDES (Joseph Buczynski, PE, Land Recycling and Waste Mgt. Office, PADEP, personal communication, 2004). Alliance Landfill can accept waste with up to 50 ppm per year of PCBs. Suspected materials are tested for PCBs before they can be accepted by the landfill. PADEP is not aware of any PCBs at Alliance Landfill (Paul Jarecki, Chemist, Land Recycling and Waste Mgt. Office, PADEP, personal communication 2004).

Comment 5: Recent health department reports claim that exhausts from diesel engines are harmful to your health. From fall to late spring, frequent air inversions occur at the landfill site. A blue layer of exhaust floats down the mountain into the Sibley section of Old Forge. This section of Old Forge has been flooded by runoff and has a very high rate of cancer.

Response: Landfill management was contacted about possible exposure to diesel exhaust. Waste Management personnel stated, "Alliance Landfill conforms to maintenance service policies and procedures for all its heavy-duty operating equipment in accordance with Waste Management maintenance standards and the minimum maintenance standards of the equipment manufacturers. Waste Management maintenance standards require daily inspection of all heavy-duty operating equipment and include comprehensive preventative maintenance inspections at 125-hour operating intervals. Problem identified with any part or component of any piece of equipment are appropriately documented and repaired in accordance with a priority schedule developed by the Landfill Maintenance Manager. Meeting the requirements of these maintenance policies and procedures ensures that equipment used at Alliance Landfill is being operated efficiently and emission levels do not exceed regulatory limits imposed on original equipment manufacturers (Mark Messics [mmessics@wm.com], Waste Management, unpublished data, personal communication, March 11, 2004). ATSDR has recommended further air testing, for particulates, which are a major component of diesel emissions.

ATSDR contacted PADOH about any changes in the area's cancer rates; PADOH stated that since the initial investigation (1992), cancer rates have not changed. ATSDR was petitioned in 1992 to conduct a health assessment for Lackawanna County. Under a cooperative agreement with ATSDR, PADOH reviewed relevant health data for Taylor Borough, including cancer mortality for 1980-1991 and for cancer incidence for 1985-1989. Statistics for total cancers and eight cancer sites were reviewed. Only cancer of the rectum, anus, and rectosigmoid showed a higher number of cases than Pennsylvania state cancer numbers. The report suggested that non-environmental factors such as heredity, occupation, and diet could increase a person's risk for such cancers. The PADOH continues to monitor cancer mortality and incidence data for Lackawanna County (5).

Comment 6: Citizens of Taylor Borough have expressed concern about the possible landfill expansion plan.

Response: ATSDR spoke with our regional representative and PADEP about landfill expansion plans. PADEP and ATSDR regional personnel stated that a cost benefits plan had to be conducted before the landfill could expand. ATSDR understands that a cost benefits plan is being conducted, and when completed, the results will be released to the public. The most recent landfill information we received discussed dropping the proposed landfill expansion request.

Comment 7: What about the sulfur smell?

Response: Most landfills receive complaints about malodors (bad smells); many of these malodors are caused by decomposing (rotting) landfill material. To decrease odor complaints, landfills are required each day to put dirt caps over the landfill material received. These caps serve several purposes; the main purpose is stopping possible water infiltration into the landfill. The caps also help control smells and pests, (e.g., birds and rats). ATSDR recommends continued logging of malodors, and checking the condition of the cap to ensure continued protection.

Comment 8: ATSDR received concerns about 14 different health-related issues.

Response: ATSDR does not have sufficient data to discuss possible health problems associated with this site. ATSDR has made recommendations for further sampling to fill data gaps. Because of these data gaps, the site has been classified as an indeterminate public health hazard.

Comment 9: The landfill is affecting the quality of life in nearby communities.

Response: The Alliance Landfill and PADEP are aware of these issues; they are both working to address these landfill-associated quality of life issues. The community must stay actively involved in any quality of life issues.

Comment 10: What about ERSI (Old Amity)?

Response: PADEP is investigating the ERSI site, and ATSDR has received a request from a community member to address possible health issues associated with ERSI.