

LETTER HEALTH CONSULTATION

BAREFOOT DISPOSAL SITE
REVIEW OF PRIVATE WELL SAMPLING DATA

BLAIR TOWNSHIP, BLAIR COUNTY, PENNSYLVANIA

May 14, 2013

Prepared by:

Pennsylvania Department of Health
Division of Environmental Health Epidemiology



May 14, 2013

Philip Rotstein
Site Assessment Manager
U.S. EPA Region 3
Mail Code: 3HS12
Philadelphia, PA 19103

Re: Review of EPA 2012 Site Assessment private well water sampling data collected near the Barefoot Disposal site

Dear Mr. Rotstein:

Thank you for your request to the Pennsylvania Department of Health (PADOH) to review the 2012 residential well water data collected near the Barefoot Disposal site ('the site') by the Environmental Protection Agency (EPA) Region 3, as part of the site reassessment. The PADOH has prepared this letter health consultation (LHC) to evaluate potential public health issues related to the private well data you shared with us. PADOH worked on this evaluation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR provides technical assistance and funding to PADOH to help identify and evaluate environmental health threats to communities using the best science, taking responsive public health actions, and providing trusted health information. This LHC was supported by funds from a cooperative agreement with the ATSDR but has not been published by ATSDR. PADOH's top priority is to ensure residents living near the Barefoot Disposal site have the best information to safeguard their health.

Background and Statement of issues

The Barefoot Disposal site is located in Blair Township, Blair County, Pennsylvania. The Barefoot Disposal Site is located within 44 acres of land at the top of Catfish Ridge. The disposal portion of the property is located on 3.3 acres and is contained within the larger 44 acre property. The entire site is surrounded by a locked chain-link security fence maintained by the potentially responsible parties (PRP). Until 1971, the property was used as an unpermitted disposal facility for industrial and metal finishing wastes and untreated domestic wastes. EPA began investigating this site in the late 1980s, and documented extensive surface contamination of onsite soils by lead, mercury, and other metals. Surface and subsurface soils were also found to be contaminated with several volatile organic compounds (VOCs). Sampling of groundwater from residential wells near the site began in the early 1990s (Figure 1). During the historical sampling events, VOCs were detected at levels of public health concern at three residential well locations, and later at a fourth residential well location.

Historical Well Sampling

Since 1990, EPA's removal program has overseen the sampling of three impacted private drinking water wells at least on an annual basis (Table 1). In 1991, three homes (R-01, R02, & R14) with VOC detections were offered bottled water and a granulated-activated carbon filtration system. In 2003, one more additional home (R-01A) also received a treatment system, based on VOC detections. Sampling results from R-01A showed the presence of 1,1,1-Trichloroethane at 17.7 ppb. Since 2003, well R-01A has also been sampled on an annual basis (EPA, 2012). The VOCs detected during the historical sampling were: 1,1 dichloroethene ranging from non-detect to 16 ppb, above the EPA maximum contaminant level (MCL) of 7 ppb, 1,1 dichloroethane from ND to 99 ppb (EPA Regional Screening Value (RSL) of 2.4 ppb) and trichloroethylene detected from non-detect to 26 ppb (MCL of 5 ppb). 1,1,1-Trichloroethane was detected in these wells (ranging from 6-99 ppb) but below the MCL of 200 ppb (Warzyn, 1991). 1,1 dichloroethene was also detected from non-detect to 11 ppb (EPA does not have a MCL for this contaminant). Since these 4 homes have filtration systems and EPA's removal program overseeing the monitoring and maintenance of these systems, these residents are not currently being exposed to these levels in their drinking water. ATSDR provided a public health review of historical information of sampling information from this site in a 1990 Health Consultation document (ATSDR, 1990). More recent sampling results (pre and/or post treatment) for these four private wells were not provided to PADOH at this time for review. EPA's removal program is currently planning a vapor intrusion investigation focusing on these four impacted residences. After these vapor intrusion sampling results are available, PADOH is available to review the combined current information for the air and treated water pathways for these four homes.

2012 Site Reassessment Private Well Data Review

In 2012, EPA Site Assessment decided to conduct a reassessment at the Barefoot Disposal site, and collected samples from 14 private drinking water wells in use near the site. These private drinking water wells were sampled in prior investigations in the past and not found to be contaminated, but these wells had not been sampled recently. Samples were collected either outside or inside the home at a tap or spigot, prior to any water filtration system. In early 2013, EPA Site Assessment provided the sampling results from these 14 private drinking water wells to PADOH for public health review. The purpose of this LHC is to review and discuss these additional private well samples.

PADOH conducted a review of the 2012 residential private drinking water data collected by EPA site assessment near the site. Five of these 14 private drinking water well samples had detections of VOCs or semi-VOCs (Table 2). However, no contaminants were above current EPA's MCL or ATSDR comparison values (CVs), with the exception of di (2-ethylhexyl) phthalate (DEHP) in two wells (Table 2). CVs are chemical and media-specific concentrations in drinking water used to screen environmental contaminants at hazardous waste sites that require further evaluation (ATSDR, 2005).

PADOH screened the well data against ATSDR's Cancer Risk Evaluation Guide (CREG), ATSDR's Minimum Risk Levels (MRLs) and EPA's MCLs. The ATSDR MRL is an estimate of human exposure to a hazardous substance that is unlikely to have an appreciable risk of adverse non-cancer health effects over a specified route and duration of exposure. CREGs are media-specific CVs that are used to identify concentrations of cancer-causing substances that are unlikely to result in an increase of cancer rates in an exposed population. ATSDR develops CREGs using EPA's cancer slope factor, a target risk level (10^{-6}), and default exposure assumptions. The target risk level of 10^{-6} represents a

theoretical risk of 1 excess cancer cases in a population of 1 million. The ATSDR MRL and CREG values are not regulatory levels (ATSDR, 2005).

DEHP was detected in 2 residential samples (7.5 ppb and 17 ppb, based on a “J” lab qualifier indicating an estimated value) above EPA’s MCL, set at 6 ppb. The ATSDR’s CREG CV for DEHP in drinking water is 2.5 ppb. It is important to note that this preliminary review of the 2012 EPA site assessment private well data from the Barefoot Disposal site is based on the current groundwater data provided to PADOH. Other factors could alter this conclusion, including the direction and extent of the groundwater plume, additional historical sampling data, future groundwater sampling data, and additional residential homes not currently sampled.

Discussion

Exposure to contaminants of concern is determined by examining human exposure pathways. An exposure pathway has five parts:

1. A source of contamination (e.g., industrial facilities utilizing hazardous materials),
2. An environmental medium such as water, soil, or air that can hold or move the contamination,
3. A point at which people come in contact with a contaminated medium (e.g., private residential well water),
4. An exposure route, such as drinking well water from the same aquifer that is close to the industrial facility, and
5. A population who could come in contact with the contaminants.

An exposure pathway is eliminated if at least one of the five parts is missing and will not occur in the future. For a completed pathway, all five parts must exist and exposure to a contaminant must have occurred, is occurring, or will occur (ATSDR, 2005). For this LHC, residents using the private well water data for drinking represent a completed exposure pathway.

DEHP was detected in 2 residential samples, as described above, at a maximum value of 17 ppb (in R10). This level of DEHP exceeds the EPA’s MCL, set at 6 ppb, and the ATSDR CREG CV of 2.5 ppb. EPA has established a reference dose (RfD) for DEHP of 0.06 mg/kg/day (EPA, 2002). A RfD is a daily exposure dose to humans (including sensitive subgroups) that is likely to be without an appreciable risk of health effects over a lifetime (EPA, 1993). In order to determine potential residential exposure levels to DEHP, PADOH calculated a residential exposure dose based on a maximum level of DEHP (17 ppb or 0.017 mg/L) using the following equation (ATSDR, 2005):

$$\text{Ingestion Exposure Dose} = \text{Concentration} \times \text{Ingestion Rate} \times \text{Exposure Factor} / \text{Body Weight}$$

Based on an adult ingestion rate of 2 liters per day of tap water and a body weight of 80 kilograms (kgs), an estimated exposure dose to DEHP would be 0.000425 mg/kg/day. For children, an ingestion rate of 1 liter per day and a body weight of 10 kgs, would result in an estimated exposure dose of 0.0017 mg/kg/day. These estimated exposure doses are below EPA’s RfD of 0.06 mg/kg/day. EPA has determined that a drinking water concentration of 30 ppb of DEHP would correspond to a cancer risk level of 1 in 100,000, which is generally considered low risk (EPA, 2002). The Barefoot

residential well data are below this value and would not represent an increased cancer risk, above current background levels. It is important to note that the home with the maximum DEHP concentration has a whole house filtration system and samples were collected before water filtration. The home with the DEHP detection of 7.5 ppb does not have a filtration system, but based on the information discussed above this level is not a public health concern. Filtration would likely cause a reduction in contaminant concentrations. PADOH would not expect exposure to these levels of DEHP to harm people's health. PADOH recommends that any new or future residential drinking water wells installed near the site be tested for VOCs.

DEHP is used in many products that are made from plastic, especially in items made of polyvinyl chloride (PVC) or vinyl. Items made from PVC include many plastic toys, some plastic furniture, car and furniture upholstery, shower curtains, some garden hoses, tablecloths, and some flooring (vinyl flooring). Not all PVC products contain DEHP, but it is found in many products. DEHP is also present at industrial and municipal waste disposal landfills. DEHP has a low volatility, and therefore is not likely to volatilize during showering (ATSDR, 2002). Additional information on DEHP can be found on the PADOH Division of Environmental Health Epidemiology website:

http://www.portal.state.pa.us/portal/server.pt/community/environmental_health/14143/environmental_fact_sheets/557067

Conclusions

PADOH did not identify contaminants above current EPA MCL or ATSDR CVs, with the exception of DEHP, for the 2012 site assessment private well water collected near the Barefoot Disposal site. For this contaminant, the residential well data are below EPA's RfD value for children and adults, and these levels are considered by EPA to be very low risk for increased cancer to those exposed (EPA, 2002). Therefore, based on the residential well water data, **PADOH would not expect exposures to the levels detected during the 2012 sampling event to harm people's health.**

Recommendations

- PADOH recommends that EPA site assessment share the sampling results with residents whose wells were tested, along with the health information in this document.
- PADOH recommends that the Barefoot Disposal PRP group, via EPA, continue to oversee the sampling and maintenance of homes with water filtration systems.
- PADOH recommends that any new or future residential drinking water wells installed near the site be tested for VOCs.
- While there is no state requirement to have private well water tested, PADOH, as a prudent public health measure to all homes using well water, recommends homeowners with private wells have their well water periodically tested for chemical contaminants in addition to bacteria. Regular testing can be helpful for monitoring the effectiveness of a home water treatment unit as well as detecting potential contamination.
 - The Penn State Extension Program offers a program for private well owners to pay to have their well water test. You may contact the Altoona Extension Office for further information at 814-940-5989 or visit the Penn State Extension lab testing website: http://www.aasl.psu.edu/Water_drinking_main.html

- For general information on private wells, visit the PADEP website:
<http://www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/SrceProt/well/default.htm>
- PADOH recommends that EPA removal proceed with plans for the vapor intrusion investigation at private homes over the contaminated groundwater plume at this site.

PADOH appreciates the opportunity to work with your agency in evaluating the data for this site, in order to safeguard potential public health exposures. For questions or concerns about this review, please contact the PADOH, Division of Environmental Health Epidemiology, at (717) 346-3285 or e-mail at chlloyd@pa.gov

Sincerely,

Christine Lloyd
PADOH
Division of Environmental Health Epidemiology

cc: Lora Werner, ATSDR Region 3 Director

References

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<http://www.atsdr.cdc.gov/toxprofiles/tp9.pdf>

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ATSDR (1990). Health Consultation: Barefoot Sanitary Services Site, Hollidaysburg, Blair County, Pennsylvania.

ATSDR (2005). Public Health Guidance Manual.
http://www.atsdr.cdc.gov/hac/PHAManual/PDFs/PHAGM_final1-27-05.pdf

EPA (1993). Integrated Risk Information System: Reference Dose, Description and Use in Health Assessments. <http://www.epa.gov/iris/rfd.htm>

EPA (2002). Integrated Risk Information System: di(2-ethylhexyl) phthalate
<http://www.epa.gov/iris/subst/0420.htm>

Warzyne (1991). CERCLA Investigation Report, Barefoot Landfill. Hollidaysburg, Pennsylvania. November 1991.

Figure 1- Site map showing the location of the Barefoot Disposal site and adjacent residential properties.

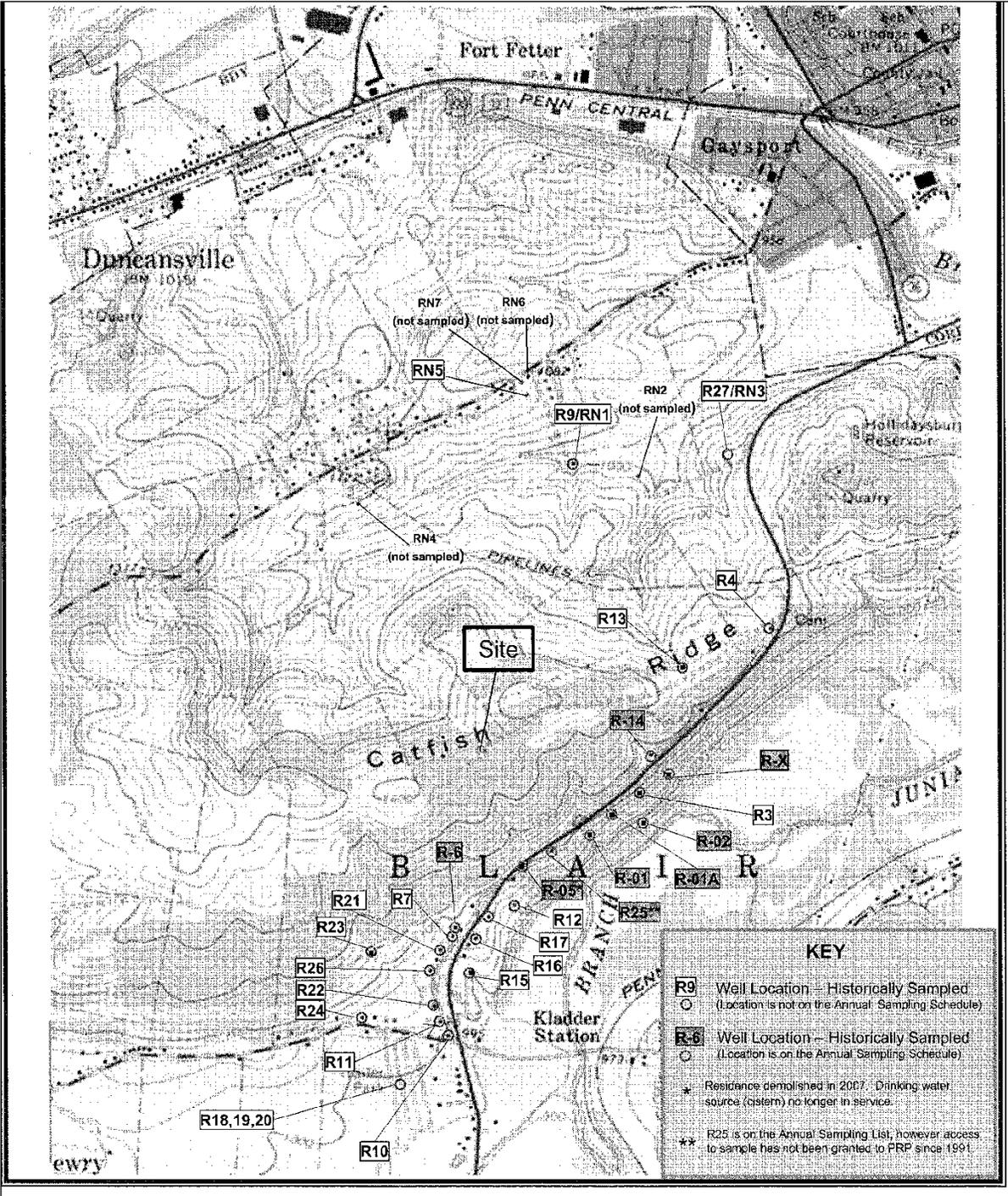


Table 1 – Summary of historical well data collected at homes with water filtration systems

	R-01	R-01A	R-02	R-14	Screening Value
Sample Years	1990-2009	2003-2009	1990-2009	1990-2009	
# of Samples	32	7	31	32	
1,1-Dichloroethene	ND-16.3	ND-7.87	ND-16	ND-7.2	7 - EPA MCL 320 - ATSDR MRL
1,1-Dichloroethane	ND-99	ND-3.59	ND-25	ND-11.3	2.4- EPA RSL
1,2-Dichloroethene (total)	ND-4.4	ND	ND	ND-11	*
1,1,1-Trichloroethane	14.5-99	17.3-30	6-85	10-25.2	200 - EPA MCL
Trichloroethene	ND-26	ND-2.93	8.9-14	ND-10	0.76 - ATSDR CREG 5 - EPA MCL

Exceeds EPA MCL or RSL

* EPA does not have a value for 1,2-Dichloroethene (total) but has set MCL for the cis and trans forms at 70 ppb and 100 ppb, respectively

ND = non-detect

ATSDR MRL = Minimum Risk Level

ATSDR CREG = Cancer Risk Evaluation Guide

EPA MCL =Maximum Contaminant Level

EPA RSL = Regional Screening Level

Table 2 – VOC and SVOC detections in residential wells during 2012 sampling event near the Barefoot Disposal site.

	RN2 (ppb)	R9/ RN1 (ppb)	R10 (ppb)	R13/ R13A (ppb)	R26 (ppb)	Screening Value (ppb)
VOCs						
1,1,1-Trichloroethane	-	-	-	0.35 J, 0.37J	-	200 - EPA MCL
1,1-Dichloroethane	-	0.69	-	-	-	2.4- EPA RSL
Bromomethane	0.32 J	-	-	-	-	7 - EPA RSL, 49 - ATSDR RMEG
SVOCs						
di(2-ethylhexyl) phthalate	-	7.5J	17J	-	2.1J	6 - EPA MCL, 2.5 - ATSDR CREG
Di-n-butylphthalate	-	3.7J	-	-	-	670 -RSL, 3500 - ATSDR RMEG

Exceeds EPA MCL

- = Non-detect

J - lab qualifier indicating an estimated value

EPA MCL =Maximum Contaminant Level

EPA RSL = Regional Screening Level

ATSDR CREG = Cancer Risk Evaluation Guide

ATSDR RMEG = Reference Dose Media Evaluation Guide