

Letter Health Consultation

BORDENTOWN MUNICIPAL DUMP

BORDENTOWN, BURLINGTON COUNTY, NEW JERSEY

EPA FACILITY ID: NJD980769368

JUNE 9, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

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Prepared By:

New Jersey Department of Health and Senior Services
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry



State of New Jersey

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April 30, 2008

Mr. Tom Budroe
On-Scene Coordinator, Removal Action Branch
U.S. Environmental Protection Agency, Region 2
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679

Dear Mr. Budroe:

This Letter Health Consultation (LHC) has been completed for the Bordentown City Municipal Dump site located at Route 206 South in Bordentown, Burlington County, New Jersey. The details of site operations, environmental history and analytical data have been provided by the United States Environmental Protection Agency (USEPA), Region 2. This LHC provides discussion of public health implications, conclusions, and recommendations concerning potential human exposures to soil contaminants in former landfill area for trespassers and for anyone accessing the site from the surrounding community.

Statement of Issues

This LHC was prepared in response to a USEPA Region 2 request that the New Jersey Department of Health and Senior Services (NJDHSS), through a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR), evaluate potential exposures and associated health risks to trespassers and to the surrounding residential community posed by contaminated soil in the municipal dump site.

Background

The Bordentown City Municipal Dump (BCMD) is an inactive site located adjacent to Route 206 south, Bordentown Township, Burlington County, New Jersey. The Bordentown Blacks Creek Wastewater Treatment Plant is also located in the same lot as BCMD. The BCMD site covers approximately 8 to 10 acres and was an unlined landfill that operated from approximately 1930 to 1966. Based on observations made during site visits and sampling activities, the majority of the wastes deposited were solids consisting of glass, metal, industrial and construction debris (USEPA 2002). In 1966, after closure of the dump, the site was acquired by the Bordentown Sewage Authority. The landfill was covered with fill material in 1968. The site is bordered to the north by the National Guard Armory and to the east by Route 206. Blacks Creek flows adjacent to the western and southern borders of the site.

Existing information from the several reports notes that the topography of the site is very irregular with depressions, trenches, mounds and hills (USEPA 1994; 1999; 2002). The heavily wooded site was observed to have several paths and trails. The site is fenced along its north, east and southeast property boundaries. Trespassers can access the site from the west or south by crossing Blacks Creek and from the northeast through the unfenced Armory property. The nearest residences are located at approximately 0.3 mile to the northeast and south of the site. The Bordentown Regional High School is located approximately 0.35 mile to the southwest, separated by natural barriers that include wooded land, Blacks Creek, and a steep topography that drops 80 feet downhill to the site. The population residing within a 4-mile radius of the site is approximately 29,887 persons.

Groundwater in the vicinity generally flows to the west towards Blacks Creek which flows into the Delaware River. The depth to groundwater ranges from 5 to 20 feet in the vicinity of the site. All of the municipal supply wells within 4 miles of the site draw water from the Potomac-Raritan-Magothy (PRM) aquifer. The remainder of the population within 4 miles of the site is serviced either by municipal wells outside the 4 mile distance ring or by private wells. The closest domestic well is located 1.4 miles to the southeast which is upgradient of the site.

On October 11, 2007, a site visit was conducted by Somia Aluwalia and Sharon Kubiak of the NJDHSS along with the USEPA On-Scene Coordinator. It was evident that the site was not being accessed by trespassers routinely. As noted previously, the site was observed to be heavily wooded and fenced along three sides (see Photographs).

Environmental Contamination

According to background information, three preliminary assessments were conducted on the site from March to April 1985. In 1986, the Bordentown Sewerage Authority began the expansion of their Blacks Creek Wastewater Treatment Plant which included the excavation and removal of contaminated soil at the BCMD site. During the excavation of material from the landfill, the groundwater was observed to be in direct contact with the bottom of the landfill. In addition, well records indicated that waste was encountered during drilling of on-site monitoring wells (USEPA 2002). Groundwater sampling was conducted in 1986 using the on-site monitoring wells. The samples indicated the presence of acetone (190 and 14 micrograms per liter [$\mu\text{g/L}$]), chlorobenzene (11 $\mu\text{g/L}$), ammonia (0.11 to 43 milligrams per liter [mg/L]) and the presence of 1,4-dichlorobenzene, cyanide and manganese. The on-site monitoring wells were ordered closed by the NJDEP at the completion of the construction of the expanded facility.

A site inspection prioritization report was conducted in 1994 which indicated that the site posed a hazard to human health due to a suspected release of contaminants to the groundwater and an observed release to Blacks Creek (USEPA 2002). In 2001, the USEPA performed a site visit and observed drums, tires, glass and miscellaneous household items in different areas of the site. In September 2001, the USEPA conducted a site investigation at the BCMD. As part of the investigation test pits were advanced on site property as well as soil borings. Drum, soil and sediment samples were collected in order to characterize the site and identify sources. Analytical results from the drum samples collected on-site in September 2001 by the USEPA indicated the

presence of antimony, arsenic, cadmium, and bis(2-ethylhexyl)phthalate at levels above the NJDEP Non-residential Direct Contact Soil Cleanup Criteria (NRDCSCC). Analytical results from soil samples collected from the same areas where the drums were sampled indicated the presence of antimony, arsenic, lead and bis(2-ethylhexyl)phthalate. These were also present at levels above the NJDEP NRDCSCC.

In the surface (0-4 ft) soil samples, the following were detected: arsenic (69.7 mg/kg), barium (8,820 mg/kg), copper (109,000 mg/kg), lead (28,700 mg/kg) and zinc (1,660 mg/kg). These were detected in concentrations three times greater than those of the background samples and NJDEP NRDCSCC and USEPA clean-up criteria. Organic analyses from the test pit soil samples showed concentration of 2-methylnaphthalene (2.1 mg/kg), phenanthrene (1.6 mg/kg) and bis(2-ethylhexyl)phthalate (110 mg/kg) at three times above background concentrations and the NJDEP NRDCSCC and USEPA cleanup criteria. In order to characterize the site, a total of nine soil borings were advanced on the site property to a maximum depth of 25 feet. The sample analyses indicated the presence of arsenic (156 mg/kg), barium (7,060 mg/kg), lead (1,910 mg/kg), manganese (585 mg/kg), and zinc (2,330 mg/kg) in surface and subsurface soil samples at concentrations three times greater than those of the background samples, NJDEP NRDCSCC, and USEPA cleanup criteria.

A release to groundwater is suspected as analytical results of groundwater samples collected from on-site monitoring wells indicate the presence of organics and metals. The aquifer of concern is the Potomac-Raritan-Magothy (PRM) aquifer which lies approximately 100 feet below ground surface. The water movement within the aquifer is in a south-southwest direction toward the Delaware River. There are approximately 24 public supply wells located within a 4-mile radius, which draw water from this aquifer. These wells are used for domestic purposes and are owned by the Mount Holly Water Company and the Bordentown Water Department. Most of these wells are located geographically to the north and south of the site. There are approximately 29 private wells within 4 miles of the site that are used for industrial, commercial, irrigation, and domestic purposes. The top of the PRM aquifer is at approximately 108 feet below ground surface at the site and the depth of the public supply wells ranges from 100 - 500 feet.

The site is underlain by a clay layer that serves as a confining layer between the site and the PRM aquifer, although this layer is not continuous throughout the 2-mile radius.

Discussion

The method for assessing whether a health hazard exists to a community is to determine whether there is a completed exposure pathway from a contaminant source to a receptor population and whether exposures to contamination are high enough to be of health concern.

There is no completed exposure pathway associated with soil contamination as there is insufficient evidence that individuals come into contact with contaminated soil at the dump site on a routine basis. The site is fenced on three sides and access from the fourth side can be gained only through crossing over a creek and 80-foot steep drop in the terrain. The former

landfill is wooded and has heavy undergrowth; even if access is obtained, there is little opportunity for direct contact with soil.

Based on the information reviewed, there may be a potential exposure pathway to individuals with private wells residing within 4 miles of the site. Groundwater sampling conducted in 1986 indicated the presence of acetone, chlorobenzene, dichlorobenzene, ammonia, iron and manganese. Groundwater samples were not collected during the USEPA's 2001 sampling event because groundwater was not encountered while collecting soil borings to a depth of 25 feet. In addition, the on-site monitoring wells sampled in 1986 were closed following the expansion of Bordentown Blacks Creek Wastewater Treatment Plant.

Public Health Implications

It is noted that due to the lack of sufficient evidence to substantiate completed exposures, only potential exposures can be supported at this time. Soil contaminants are present at levels of concern at the site; if conditions change in the future resulting in exposures to these contaminated soils, this pathway would need to be reevaluated. A release to groundwater is suspected as analytical results of groundwater samples collected from on-site monitoring wells indicate the presence of organics and metals. However, no drinking water public supply wells are expected to be actually contaminated as they are located up-gradient of the site. In addition, the site is underlain by a confining clay layer which is approximately 100 to 108 feet thick in the area of the site.

Conclusions

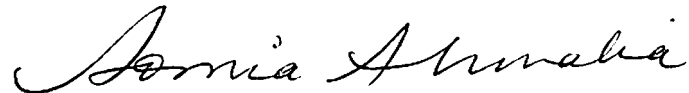
Based on review of available data, there is presently a ***No Public Health Hazard*** from contacting soil at the site. This is because the site is not very accessible to nearby residents and/or trespassers. The site is fenced along its north, east and southeast property boundaries. While on-site soil contamination is documented, the site is now covered by the Blacks Creek Wastewater Treatment Plant and the remainder is largely wooded and hilly. Therefore, the likelihood of direct contact is minimized by limited accessibility to soil contaminants. If site conditions change in the future resulting in exposures to these contaminated soils, the health determination in this health consultation would need to be re-evaluated.

There is presently an ***Indeterminate Public Health Hazard*** from potential exposures to drinking water from contaminated groundwater from the site. The hazard is considered indeterminate because the extent of contamination is unknown as only a limited number of samples from a small number of on-site wells have been taken. It is also unknown if the private wells in the area have been tested and how many are used for drinking water. The public wells within 4 miles of the site appear to be up-gradient of the site and are well characterized (USEPA 2002).

private wells on a statewide basis. It is recommended that this data be examined to see if any of the surrounding private wells may have been impacted by the site. It is recommended that the USEPA removal program research available data on local domestic well water to ensure that the site is not impacting local wells.

The NJDHSS and the ATSDR should be kept informed of new data results so exposure pathways can be re-evaluated to determine if a public health hazard exists.

Yours truly,

A handwritten signature in cursive script that reads "Somia Aluwalia".

Somia Aluwalia, Ph.D.
Health Assessment and Consultation Unit
Hazardous Site Health Evaluation Program

c: Gregory Ulirsch, Technical Project Officer, ATSDR
Arthur Block, Senior Regional Representative, ATSDR Region II
Leah Graziano, Associate Regional Representative, ATSDR Region II
Jerald Fagliano, MPH, PhD, Program Manager, NJDHSS

References

USEPA 1994. Final Site Inspection report, Bordentown City Municipal Dump, Bordentown, New Jersey; prepared for the USEPA by Roy F. Weston, Inc. (WESTON); September 21, 1994.

USEPA 1999. Fact Sheet for the Bordentown City Municipal Dump (EPA ID: 980769369), Bordentown, Burlington County, New Jersey, prepared by the USEPA, April 27, 1999.

USEPA 2002. Integrated Assessment Report for the Bordentown City Municipal Dump Site, Bordentown Township, Burlington County, New Jersey; prepared for the USEPA by Roy F. Weston, Inc. (WESTON); February 2002.

Photographs



Fenced area along the perimeter of the dump site and treatment plant



Heavy undergrowth at the dump site



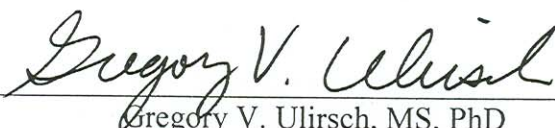
Heavy undergrowth at the dump site



View of the treatment plant from the dump site

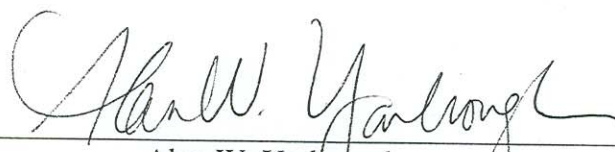
Certification

This health consultation was prepared by the New Jersey Department of Health and Senior Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. This health consultation was conducted in accordance with approved methodology and procedures existing at the time it was initiated.



Gregory V. Ulirsch, MS, PhD
Technical Project Officer, CAT, CAPEB, SHAC
Agency for Toxic Substances and Disease Registry

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.



Alan W. Yarbrough
Team Leader, CAT, CAPEB, SHAC
Agency for Toxic Substances and Disease Registry

