

Health Consultation

Review of Groundwater Data

BRISTOL SANITARY LANDFILL

BRISTOL, HARTFORD COUNTY, CONNECTICUT

CERCLIS NO. CTD000790725

JANUARY 21, 1999

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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HEALTH CONSULTATION

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CERCLIS NO. CTD000790725

Prepared by:

Connecticut Department of Public Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

The conclusions and recommendations in this health consultation are based on the data and information made available to the Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry. The Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry will incorporate additional information if and when received. The incorporation of additional data could change the conclusions and recommendations listed in this document.

Background and Statement of Issues

On August 12, 1991, a Bristol, Connecticut resident petitioned the Agency for Toxic Substances and Disease Registry to examine the health impacts of three sites in Bristol: the Bristol Landfill, the Ogden Martin incinerator, and the Bristol Waste Water Treatment Plant [1]. The petition was reviewed by the ATSDR screening committee. That committee determined that emissions from the Ogden Martin incinerator do not appear to be at levels of public concern, and the Bristol Waste Water Treatment Plant does not meet the ATSDR criteria for conducting public health assessment activities. The impact of the Bristol Landfill on ground water contamination was recommended for further review. This Health Consultation will review the available groundwater data to determine the public health impacts of off-site contamination from the Bristol Landfill.

The Bristol Landfill was purchased by the City of Bristol in the 1940's. It was used as an open burning dump. Prior to 1940, the site was privately owned and used for open refuse burning and pig farming [2]. Gravel was mined from the site by the City of Bristol. The excavations were later filled with refuse. The open burning dump section was converted in 1966 to a sanitary landfill which is now permitted by the CT Department of Environmental Protection (CT DEP) for ash disposal, but not regular waste [2].

The Bristol Landfill is in the southern border region of Bristol near the Town of Southington, Connecticut (see Appendix A). This landfill which is also known as the solid waste management unit (SWMU), contains four sections (see Appendix B). These sections include a closed metal hydroxide sludge landfill (MHSL), mixed solid waste landfill (MSW), closed bulky waste landfill, and an ash landfill [2]. The MHSL section is located in the central area of the mixed solid waste landfill. The MHSL consists of a 1.2 acre section specifically designed as a disposal area for hazardous metal hydroxide sludge waste. In 1986 an impermeable membrane cap was installed in this area of the landfill. This section received waste from 1979 until 1983. Approximately 10,000 cubic yards of sludge were disposed in the MHSL. The MHSL is inspected on a monthly basis to ascertain if any breach in the containment has occurred. In 1996, an inspector noticed animal holes, an exposed edge of the liner, and missing sign posts which were corrected by the City of Bristol [2].

Incinerator ash from the Ogden-Martin Resource Recovery facility is disposed of in the MSW section of the landfill. This section is located east of the MHSL [2].

The population living within one mile of the Bristol Landfill is approximately 2,800. There are approximately 40 private drinking water wells in Bristol located within a one mile radius of the Bristol

Landfill. These private wells are located on the following streets: Birch Street, Ebert Road, Glen Street, Lake Avenue, Poitras Road, Redstone Hill Road, and Town Line Road.

There are approximately 110 private wells in Southington that are located within a one mile radius of the Bristol Landfill. These private wells are located on the following streets: Cloverdale Road, DePaolo Drive, Elizabeth Drive, Mt. Vernon Road, Norwood Drive, Welch Road, West Queen Street, West Street, Westover Lane, and Westwood Road.

Available Data and Information

In the early 1980's a groundwater monitoring program was initiated. This program has been monitored by the CT DEP and has been most recently revised in 1995. Under this program, groundwater has been monitored in the vicinity of the metal hydroxide sludge section. Upgradient and down gradient groundwater samples have been obtained from the MSW landfill. Surface water samples were also taken. The data examined in this health consultation were surface water and monitoring well samples for which data was reported on a quarterly basis from 1996 through 1997.

In addition to the ground water monitoring program, all private wells in Bristol located within a one mile radius of the Bristol Landfill were examined for potential impacts from landfill-related contaminants (see Appendix C). The ground water flow is southeast away from Bristol and towards Southington. Private drinking water wells in the City of Bristol are upgradient of the Bristol Landfill. Contaminants dissolved in ground water generally flow in the same direction that groundwater flows. Since there are no private wells located in Bristol that are down gradient from the site, no Bristol drinking water wells are likely to be impacted by the landfill.

There are approximately 110 private wells in Southington located within a one mile radius of and down gradient from the Bristol Landfill. These wells may be impacted by landfill-related contaminants. In order to assess the potential impact on these private wells, the CT DEP selected wells which were potentially at risk of contamination. Three wells sampled were from Welch Road and West Street. The nearest well was about 1/2 mile from the Bristol Landfill. If any of these wells were contaminated, then the CT DEP sampling protocol would have expanded to include additional wells in the sampling area.

Results of Private Well Data

Contamination from the landfill include compounds known as volatile organic compounds (VOCs), and inorganic compounds. The three private drinking water wells were sampled by the CT DEP on May 12, 1998, and analyzed for VOCs and inorganic compounds. No VOCs were detected in the three private wells. One inorganic compound, barium, was detected at a low concentration in each well [3]. Table 1 lists the range of concentration of barium detected in private drinking water wells. Barium is a naturally occurring mineral in ground water.

Table 1. Inorganic Compound Analytical Results from Private Drinking Water Wells Located in Southington, CT and Within One Mile of the Bristol Landfill

Contaminant	Concentration Range (ppm)		Comparison Value	Source
	Minimum	Maximum		
Barium	0.11	0.28	0.7	RMEG-C

ppm parts per million

RMEG-C Reference Dose Media Evaluation Guide for Children

Results of Monitoring Well Data and Surface Water Samples

The data from surface water samples as well as from each monitoring well were examined over the two year study period. This analysis included eight quarterly reports. The concentrations of VOCs and inorganic compounds were examined for changes in the concentration over time at wells located down gradient of the landfill and in surface water samples (located both upgradient and down gradient). There was no consistent increase in either the inorganic or VOC contaminant concentrations over the entire study period in either the monitoring wells or the surface water samples.

Discussion

To evaluate the potential health effects of exposure to contaminant, the ATSDR has developed comparison values (CVs) for contaminants commonly detected at hazardous waste sites. The CV is used to screen environmental contaminant data. If the concentrations of contaminants in environment exceed a CV, then the data will be further evaluated to determine if it is likely that health effects will result from exposure.

The CV for barium in drinking water is 0.7 ppm. The CV is higher than the maximum barium concentration detected in the private wells sampled in Southington. Consequently, the concentration of barium in the private wells sampled is below a level of health concern.

This Health Consultation was prepared in response to the petition screening committee's recommendation to determine the impact the Bristol Landfill on adjacent private wells. This investigation has examined the potential impact by analyzing surface water and ground water monitoring wells located both upgradient and down gradient of the site. Since the wells located upgradient were not impacted by the landfill, all private wells which were located upgradient were concluded to not be at risk of contamination by the Bristol Landfill. Private wells located down gradient were potentially at risk. Consequently, the CT DPH coordinated with the CT DEP to conduct sampling from private wells potentially at risk of contamination. These three wells were all located within a one mile radius of the site, and down gradient of the contamination. None of the private drinking water wells that were down gradient and within one mile of the landfill were in the City of Bristol. There were private drinking water wells matching this criteria in Southington. No

site-related VOC contaminants were detected in these wells. These wells contained barium at levels acceptable for drinking water.

Barium is frequently detected in most surface waters and public drinking water supplies [4]. The concentrations of barium range from 2 to 380 ppm with the average concentrations in the range from 10 to 60 ppm. Some community water supplies that obtain water from deep rock and drift wells in northeastern Illinois have detected barium at concentrations ranging from 1,100 to 10,000 ppm. Barium has also been found in the ocean water at concentrations ranging from 2 to 63 ppm [4].

CONCLUSIONS

1. Private drinking water wells in Bristol that are within one mile of the Bristol Landfill are not at risk for contamination by the Bristol Landfill (no apparent health hazard). These wells are upgradient from any Bristol Landfill-related contaminants.
2. Three private drinking water wells located in Southington which are down gradient and within a mile of the Bristol Landfill, have been sampled and analyzed and are not affected by the Bristol Landfill. These wells were selected because they were potentially at risk of contamination from the Bristol Landfill. All three wells contained low levels of barium.

RECOMMENDATIONS

1. Inform residents of Bristol and Southington of the results of this Health Consultation.
2. No further public health activities are expected regarding this petitioned site, unless site conditions change.

ATSDR Child Health Initiative

Children were considered as the most sensitive population that maybe impacted by the groundwater contaminants in this health evaluation.

Preparer of Health Consultation

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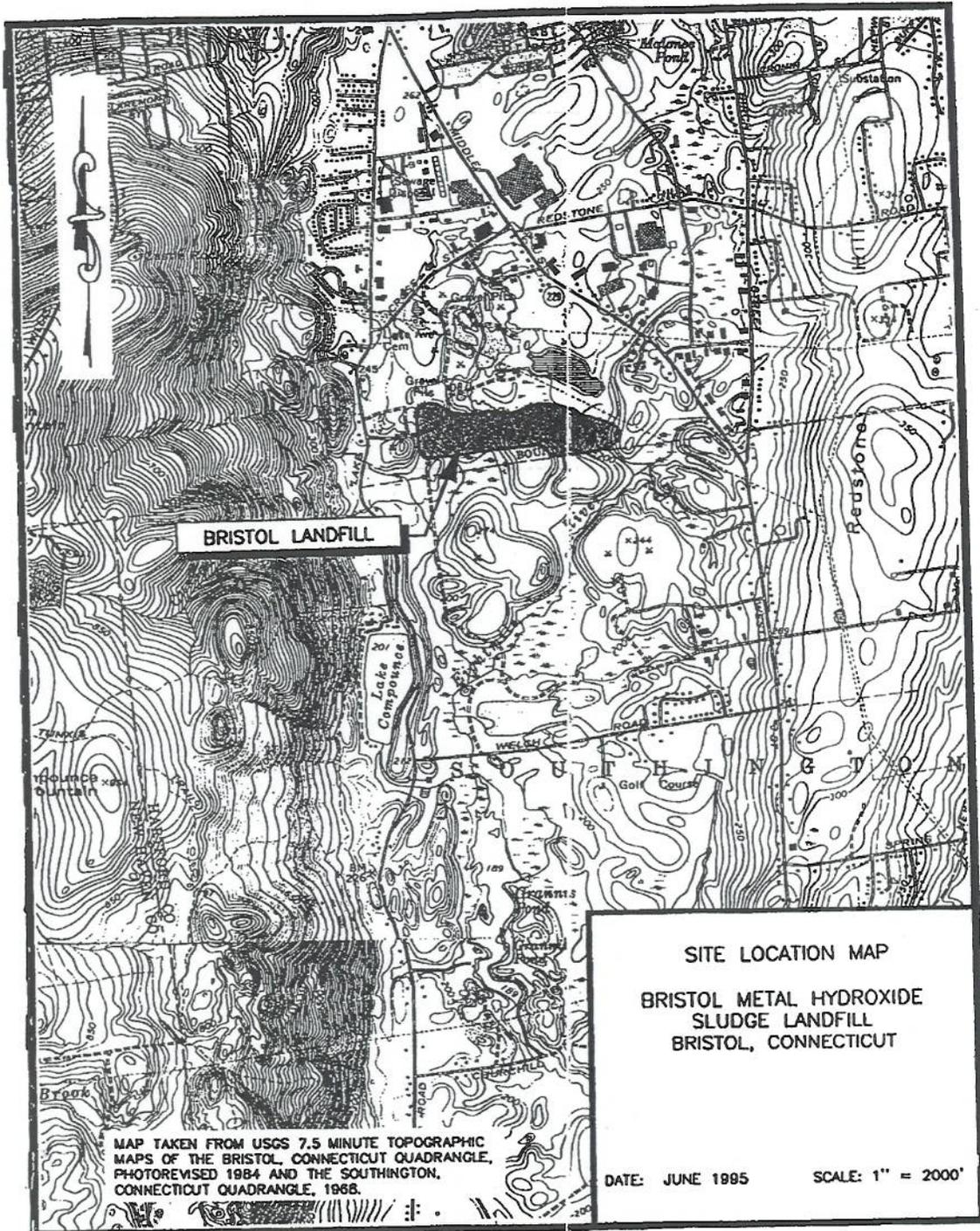
ATSDR Regional Representative

Louise House, RN, MA
Agency for Toxic Substances and Disease Registry - Region 1: Boston.

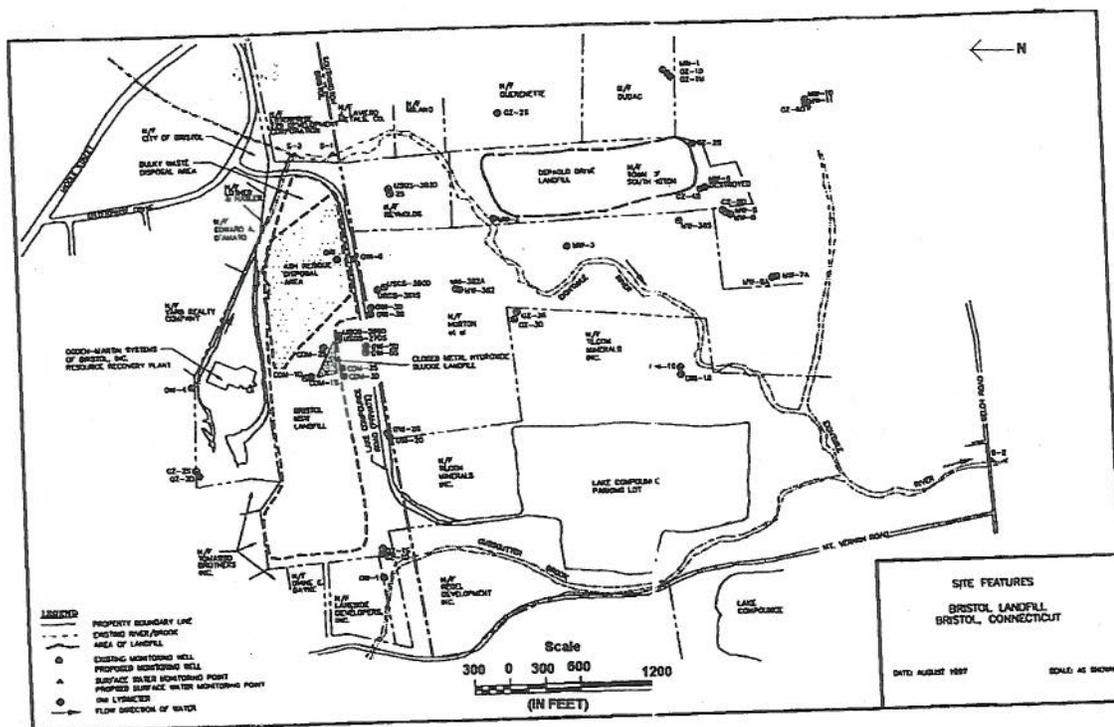
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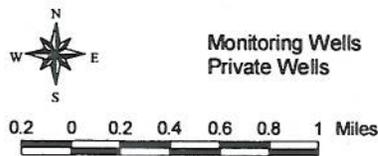
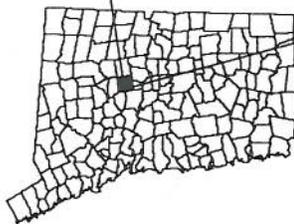
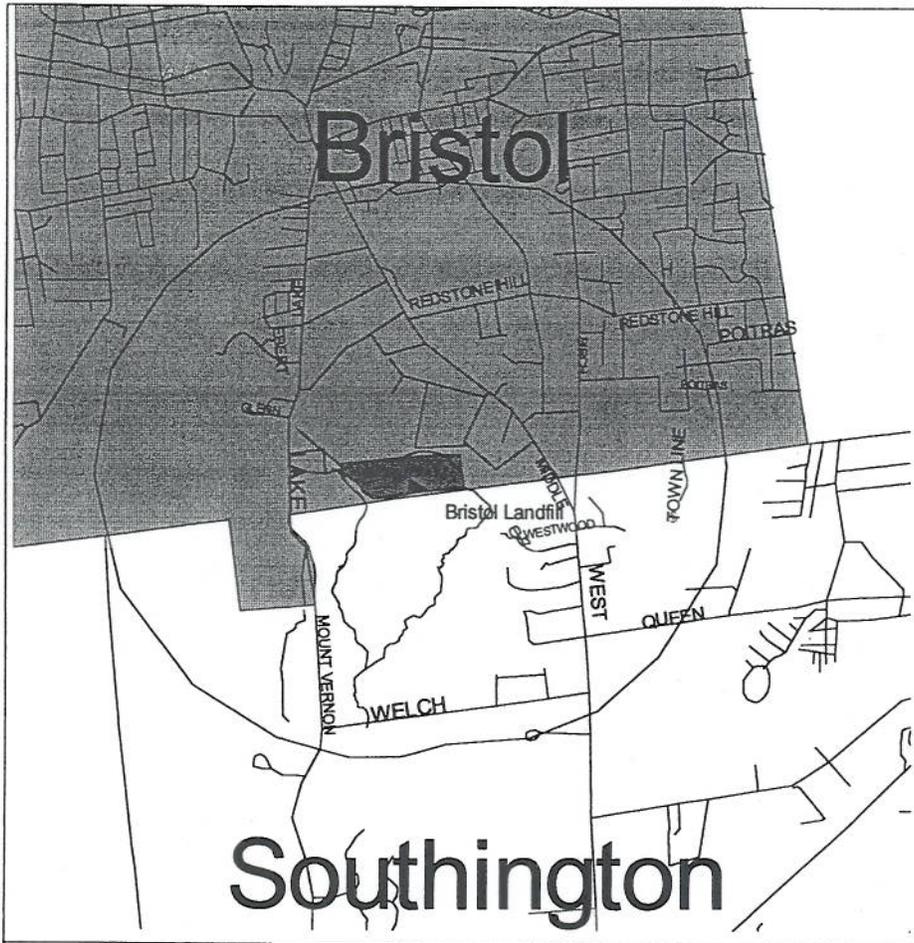
Appendix A - Site Location Map (source [2])



Appendix B - Site Features (source [2])



Appendix C. Private Wells Located within One mile From the Bristol Landfill



Connecticut Department of
Public Health
Division of Environmental
Epidemiology and
Occupational Health

July 20, 1998

REFERENCES

1. Correspondence from: A Bristol resident to: Dr. Barry Johnson, (Agency for Toxic Substances and Disease Registry). August 12, 1991.
2. Marin Environmental. 1996 Annual Monitoring Report Bristol Solid Waste Management Unit, Bristol Connecticut, February 1997.
3. Correspondence from: William Warzecha (CT DEP) to: Various residents located in Southington, CT on Welch Road, and West Street. June 22, 1998.
4. Agency for Toxic Substances and Disease Registry, "Toxicological Profile for Barium," July 1992.

Certification

The Health Consultation for the Bristol Landfill was prepared by the Connecticut Department of Health under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.



Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR has reviewed this Health Consultation and Concurs with it's findings.



Chief, SSAB, DHAC, ATSDR