

Letter Health Consultation

Determine Potential Sources of Environmental Contamination

ZAVALLA, ANGELINA COUNTY, TEXAS

FEBRUARY 4, 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

Determine Potential Sources of Environmental Contamination

ZAVALLA, ANGELINA COUNTY, TEXAS

Prepared By:

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



TEXAS DEPARTMENT OF STATE HEALTH SERVICES

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December 17, 2007

Karen Reed, RN
Zavalla ISD
P.O. Box 45
Zavalla, TX 75980

Dear Nurse Reed:

On November 13, 2007, the Department of State Health Services (DSHS) Texas Cancer Registry (TCR) requested that the DSHS Health Assessment and Toxicology team review available environmental databases to determine potential sources of environmental contamination in Zavalla, Angelina County, Texas, zip code 75980. The TCR request was motivated by a reported cancer cluster involving students in your school district and local concerns about the safety of the city drinking water.

After our conversation with you, which was initiated by the database review results, we reviewed inorganic drinking water results, including radionuclide data, from the Texas Commission on Environmental Quality (TCEQ) for the City of Zavalla Public Water System (PWS), PWS #0030030. The results of our database and drinking water data review, as well as information provided by the TCEQ, are included in this letter report.

Background and Statement of Issues

To address the reported concern about the incidence of cancer in this zip code, TCR examined the incidence of childhood brain/Central Nervous System (CNS) cancer subtypes, overall brain/CNS, colon and rectum, bladder, liver and intrahepatic bile duct, and anal cancers in an April 2007 report. The incidence of all cancers was within expected ranges in both males and females [1].

As per our November 15, 2007 telephone conversation, you reported that there are two students in the 9th grade and one student in the 1st grade with brain cancer. One of the 2nd/3rd graders had cancer (type unspecified) and has since passed away. One 1st grader has leukemia, and the child's uncle also has leukemia. Of the brain cancers, all were 4th ventricle, and two of the cancers are in the brain stem and in the bone. You reported that all of the affected students live north-northwest of the school, and all residents and the school are on the city PWS [2].

The TCR cancer registry data does not include all of the individuals that you reported as having brain cancer at Zavalla Independent School District (ISD). The TCR is interested in verifying the unreported cases, and it is our understanding that you are working with TCR to insure that all cancers are documented [2, 3].

Discussion

Environmental Risks for Brain Cancer

Exposure to radiation is the only known risk for brain cancer. Historically, children with ringworm of the scalp were treated with low-dose radiation therapy [4]. There are no other confirmed environmental causes of brain cancer, although exposure to vinyl chloride, aspartame, electromagnetic fields, and previous head injuries have been suggested as factors. A Swedish study has suggested a correlation between mothers who smoke and their child's likelihood of developing a brain tumor, but this remains unproven [4]. There are some family tumor disorders that result in multiple tumors when children are young [4].

Environmental Database and Records Review

No known environmental concerns were documented in the following databases or in our Health Assessment investigation files for Zavalla, Texas, zip code 75980.

US Environmental Protection Agency (EPA) databases:

National Priority List (NPL) sites [5]

Resource Conservation and Recovery Act Information Systems (RCRIS) [6]

On Scene Coordinator (OSC) sites for federal emergency cleanup [7]

TCEQ databases:

State Superfund Sites [8]

Voluntary Cleanup Program (VCP) sites [9]

Clerk's Office/Public Notice [10]

Water System Consumer Confidence Reports [11]

Central Registry Query [12]

Environmental Data Evaluation

Because exposure to radiation is associated with brain cancers, as well as other forms of cancer, we obtained the radionuclide data for the PWS from the TCEQ and reviewed it for compliance with the MCLs. There are no other Health Assessment Comparison (HAC) values for radionuclides.

Drinking water data for inorganic parameters, which includes radionuclides, were available for the years 1997, 2001, 2004, and 2006. This is a typical reporting schedule for a city PWS [13]. None of the radionuclide values were above their respective MCL [14].

Several of the inorganic parameters may not have an MCL based on human consumption, but they may have secondary MCLs, which are based on aesthetics and palatability. The secondary

MCLs are lower than any health-based screening level, if available. For example, aluminum exceeded the secondary MCL of 50 ppb, but the most stringent health based screening value is 10,000 ppb. Chlorides and dissolved solids also exceeded their respective secondary MCLs, but there are no health-based screening levels for either chloride or dissolved solids. No adverse health effects are likely due to the aluminum, chloride or dissolved solids levels. No inorganic contaminants (metals, nitrates, and sulfate) were identified at levels of concern in the drinking water data.

The TCEQ Water Utility Database documented total trihalomethanes (TTHM) above the Maximum Contaminant Level (MCL) of 0.08 mg/L for the sampling quarters from July 2004 through December 2005 [15]. TTHM were below the MCL¹ in 2006. TTHM compliance is based on a running annual average (RAA) of quarterly sample results [16].

The following compounds are included as TTHM: chloroform, bromodichloromethane, dibromochloromethane, and bromoform. Based on a review of the Agency for Toxic Substances and Disease Registry Toxicological Profiles for these contaminants, these contaminants may be associated with liver damage, as well as some effects on the kidneys. Limited preliminary evidence suggests a possible link between TTHM and bladder, colorectal, or pancreatic cancers [17].

The PWS is currently in compliance for TTHM based on the RAA, although the November 2007 sampling data indicates some sample locations have elevated TTHM. TCEQ is waiting on additional data to evaluate haloacetic acid concentrations in the drinking water supply. The TCEQ's evaluation of the highest TTHM result (0.237 mg/L) indicates that the TTHMs in the city water are unlikely to cause adverse health effects during the short exposure period [16].

Conclusions

Based on a review of federal and state environmental databases, as of November 19, 2007, there are no known sites with environmental concerns within the Zavalla, Texas zip code 75980.

Based on drinking water data from 1997, 2001, 2004, and 2006, radionuclides do not exceed the current drinking water standards.

Based on the information we have reviewed, there is **no apparent public health hazard** in Zavalla, Angelina County, Texas.

Recommendations

Although there is no apparent public health hazard in Zavalla and there are no known environmental exposures proven to cause brain cancer, this does not mean that there is not an environmental exposure resulting in childhood cancers. If additional data become available, DSHS will review the information.

¹ MCLs are contaminant concentrations determined by the US EPA to be a safe level for human consumption. They are enforceable standards used to insure safe drinking water in water systems.

Please contact me if you have questions or additional information pertinent to these findings.

Sincerely,

Michelle N. Bost, MS, CHMM
Environmental Specialist

References

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3. Texas Department of State Health Services. Record of Communication. Phone conversation with Brenda Mokry. Texas Cancer Registry, Department of State Health Services. November 15, 2007.
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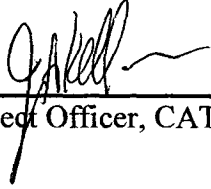
15. Texas Commission on Environmental Quality. Search the Water Utility Database. Available at: <http://www3.tceq.state.tx.us/iwud/index.cfm?fuseaction=showusermenu>

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17. Integrated Risk information Systems. Available at: <http://cfpub.epa.gov/ncea/iris/index.cfm>

Certification

This health consultation for the town of Zavalla, Texas was prepared by the Texas Department of State Health Services (DSHS) under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) in accordance with approved methodologies and procedures existing at the time this health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.



Technical Project Officer, CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health assessment and concurs with its findings.



Team Lead, CAT, CAPEB, ATSDR