

Health Consultation
Hebbronville Arsenic Exposure Investigation
Hebbronville, Jim Hogg County, Texas
PWS ID NO. TX1240001
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Prepared by:
The Texas Department of Health
Under Cooperative Agreement with
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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Summary and Statement of Issues

This report provides results of the biological indicators of exposure investigation for arsenic in Hebronville, Jim Hogg County, Texas. The Texas Department of Health (TDH) carried out this investigation with support from the Agency for Toxic Substances and Disease Registry (ATSDR). The purpose of this investigation, which was conducted from August 4, 2003 through August 8, 2003, was to assess current individual exposure to arsenic of people living in Hebronville. Total inorganic urine arsenic levels were measured in 140 individuals (14 children and 126 adults). The people tested were residents of homes that received utility bills from the Jim Hogg Water Control and Improvement District (WCID) #2.

The primary objectives of this testing program were to:

- Provide residents of Hebronville with the opportunity to have an assessment of their current exposure to arsenic through confidential, independent laboratory testing of their urine.
- If required, provide individuals with scientifically based advice on how to reduce their exposure.
- Provide summary results (not linked to any one individual) to help with the broader efforts in the community to reduce potential health risks.

Background

Site Description and History

Hebronville, located in Jim Hogg County, Texas, has a population of 5,097 persons living in 1,654 households. Ninety-one percent of the people living in Hebronville describe themselves as being of Hispanic origin [1]. Historically, the water system in Hebronville (Jim Hogg County WCID#2) has reported arsenic in the public drinking water supply¹. According to a 1989 TDH report, arsenic concentrations in the drinking water supply for WCID#2 ranged from less than 10 micrograms per liter ($\mu\text{g/L}$) to 52 $\mu\text{g/L}$ between November 1979 and December 1988. Over this ten-year period, 21 water samples had an average arsenic concentration of 37 $\mu\text{g/L}$ [2, 3], a level below the current Maximum Contaminant Level (MCL) but higher than the new MCL that will take effect in 2006 [4].

¹ The source of the water is groundwater from water wells.

Over the years, new water wells have been drilled to replace older wells (Table 1). From March 1995 to October 2001, the concentration of arsenic in water from Well #5 ranged from 47 µg/L to 96 µg/L, with an average concentration of 73 µg/L (n=11) [5]. Well #5 has not been used since the fourth quarter of 2001. From March 1993 to February 2003, the concentration of arsenic in water from Well #6 ranged from 12 µg/L to 22 µg/L, with an average concentration of 16 µg/L (n=9). From July 1995 to February 2003, arsenic concentrations in water from Well #7 ranged from 42 µg/L to 66 µg/L, with an average concentration of 55 µg/L (n=5). Because some mixing of water from the wells can occur in the distribution system, at times the arsenic level in water being delivered to the residents has been below the MCL. On February 24, 2003, the concentration of arsenic in a distribution sample was 57µg/L; however, the water system has been attempting to make more use of the well with lower arsenic concentrations to reduce arsenic levels in the water [6]. During the week that the exposure investigation was being conducted, arsenic levels in the drinking water ranged from 43.7 to 52.1 µg/L [7].

In January 2003, a resident of Hebbronville contacted the Texas Department of Health (TDH) to report concerns of high arsenic in the water. TDH personnel visited Hebbronville in February 2003 to meet with the WCID and other involved agencies. TDH and ATSDR have been working with the following agencies and groups to address community concerns:

- Texas Commission on Environmental Quality
- The Texas Department of Health Region 11 Harlingen
- The Laredo City-Webb County Health Department
- Jim Hogg WCID#2

Residents expressed concern over possible health effects from exposure to the arsenic in the water. In response to community concerns and with support from ATSDR, TDH conducted the exposure investigation to evaluate current exposure to arsenic through confidential laboratory testing of urine. From August 4, 2003 to August 8, 2003, urine samples were collected from 140 people (14 children and 126 adults) living in 99 households.

Rationale for an Exposure Investigation

Assessment of exposure is usually accomplished by looking at contaminant concentrations and pathways of exposure to construct exposure scenarios. These scenarios are used to calculate the amount of the contaminant that gets into the body. The resulting exposure estimates often are made with considerable scientific uncertainty. A more direct way to assess whether exposure is occurring is to measure directly the level of the substance of concern in tissues or body fluids. The purpose of this exposure investigation was to assess individual exposure to arsenic among people who live in Hebronville, Texas and drink water from Jim Hogg WCID#2. Arsenic has been found in the public water supply system at levels near or slightly above the current MCL (50 µg/L) and significantly above the MCL that will take effect in 2006 (10 µg/L) [4]. Because ingested arsenic is primarily excreted from the body into the urine, generally within a few days following exposure [8], the TDH/ATSDR tested for arsenic in urine as an indicator of recent exposure.

Methods

Investigation Participants

TDH/ATSDR solicited participants to the exposure investigation by sending 1,368 letters to Hebronville households that received a utility bill from the public water system. To assess exposure to arsenic, TDH/ATSDR tested urine from Hebronville residents who responded that they used the tap water for drinking and/or cooking and with whom we were able to schedule an appointment. Urine samples were collected from 140 individuals (14 children and 126 adults)² representing 7.4 percent³ of the households on the public water system.

The urine samples were analyzed for speciated arsenic (inorganic arsenic, dimethyl arsenic acid, and methylarsonic acid). In this health consultation, the term *inorganic arsenic* is used interchangeably with *speciated arsenic* to refer collectively to all inorganic forms of arsenic, including the metabolites dimethyl arsenic acid and methylarsonic acid. Conducting speciated analysis permitted differentiation of exposure to inorganic arsenic from exposure to less toxic forms of arsenic found in food such as fish and shellfish [8].

In addition to the urine analysis, a “Brief Arsenic Exposure Questionnaire” (Attachment A1) was reviewed with each participant at the time he/she came in to pick up the urine-sampling bottle and instructions. The questionnaire asked participants questions pertaining to 1) their source of tap water, 2) their primary drinking water source, and 3) other possible routes of exposure to arsenic (smoking, gardening, use of pesticides, and other sources).

² Prior to the collection of the urine specimen, each participant—or a parent or guardian of each child participant—was asked to sign an informed consent form. Sample copies of these forms are in Attachment A2.

³ 102 households

Test Procedures

TDH/ATSDR staff distributed clean specimen containers and instructions to all participants. Participants were advised not to eat fish or shellfish for the three days before a first-morning void urine sample. In an attempt to collect urine at a time of high likelihood of exposure, samples were collected in August, one of the hottest months in Texas. During August, water use is high; because of the high water demand, more water is drawn from water well #7—a well that has higher levels of arsenic than the water from the only other available well, #6—than would be drawn in other months.

The urine samples were sent to the National Medical Services laboratory in Willow Grove, Pennsylvania. The samples were speciated for total inorganic arsenic, so that inorganic arsenic and its metabolites are separated from marine organic arsenic interferences. The inorganic arsenic was analyzed by use of an inductively coupled argon plasma instrument with a mass spectrometer as the detection system (ICP-MS). Urine creatinine also was analyzed. Test results were reported as micrograms of arsenic per liter of urine ($\mu\text{g/L}$) and as micrograms of arsenic per gram of creatinine ($\mu\text{g/g creatinine}$) [9]. The creatinine correction adjusts for differences in urine output and the state of hydration (the concentration or dilution of the subject's urine).

Results

Individual test results and an explanation of their meaning were provided to each of the participants in writing. A TDH physician and a toxicologist were available to discuss individual results by telephone. Recommendations for follow-up actions were made as appropriate. In accordance with state confidentiality law, individual test results were not made available to the general public.

Total inorganic arsenic levels for the 140 participants ranged from <2.5 micrograms per liter ($\mu\text{g/L}$) to $340 \mu\text{g/L}$. The mean and median total inorganic arsenic levels were $26.0 \mu\text{g/L}$ and $15.0 \mu\text{g/L}$, respectively. Creatinine-corrected concentrations ranged from <1.1 micrograms per gram ($\mu\text{g/g}$) creatinine to $103 \mu\text{g/g creatinine}$, with mean and median concentrations of $19.8 \mu\text{g/g creatinine}$ and $13.6 \mu\text{g/g creatinine}$, respectively. Both the non-creatinine-corrected and the creatinine-corrected inorganic arsenic concentrations for this population followed lognormal distributions (Figures 1 and 2). A summary of the urinary inorganic arsenic results can be found in Table 2.

Approximately 66 percent of the participants had urinary inorganic arsenic concentrations greater than $10 \mu\text{g/L}$ (Figure 1)—the reference concentration for non-occupationally exposed individuals [10]. After correction for creatinine, approximately 64 percent of the participants had inorganic arsenic levels above the reference concentration (Figure 2). Thirteen of the 14 children who were tested had inorganic arsenic levels above $10 \mu\text{g/L}$. Ten of the children had corrected inorganic arsenic levels above $10 \mu\text{g/g creatinine}$.

Thirty-two participants (23%) had inorganic arsenic levels above 35µg/L—a Biological Exposure Index[®] (BEI[®]) established by the American Conference of Governmental Industrial Hygienists (ACGIH) as guidance for assessing exposure in occupational settings [11]. Twenty-two individuals (16%) had inorganic arsenic levels above 35µg/g creatinine.

Of the 140 people who were tested, 137 (97%) reported that the WCID water was the source of their tap water; the remaining 3 residents reported a private well as their source of tap water. One hundred and sixteen people (83%) reported using the WCID water as their primary source of drinking water, 59 people (42%) reported drinking bottled water, and 19 people (14%) reported using water from other sources. With respect to other possible routes of exposure to arsenic, 24 people (17%) reported that they smoked during the 3 days prior to the testing, 133 people (95%) reported that they cook with the tap water, 86 (61%) reported that they garden, 13 (9%) reported that they eat vegetables from their garden, 21 (15%) reported using pesticides, 5 (3%) reported eating Chinese food the 3 days prior to the urine test, 17 (12%) reported eating seafood the 3 days prior to the urine test, and 10 (7%) reported using chemically treated wood.

Ninety percent of the participants with urine inorganic arsenic levels above 10 µg/g creatinine reported WCID as their primary source of water (Chi-square=8.5, $p=0.0035$). Ninety percent of the participants with urine inorganic arsenic levels above 10 µg/g creatinine reported that they drank water from the faucet (Chi-square=11.3, $p=0.0008$). Seventy percent of the participants with urine inorganic arsenic levels above 10µg/g creatinine reported that they did not use bottled water as a source of drinking water (Chi-square= 14, $p=0.0002$). All other sources of exposure surveyed were not found to be associated with urine inorganic arsenic levels greater than 10µg/g creatinine.

Discussion

Arsenic is a naturally occurring element in the earth's crust; it is usually found in combination with other elements. Arsenic compounds can be classified into three main groups: 1) inorganic arsenic compounds, 2) organic compounds, and 3) arsine gas. In the environment, arsenic is most often found as inorganic arsenic, which is formed when arsenic combines with other elements such as oxygen, sulfur, and chlorine. Organic forms of arsenic, which result when arsenic combines with carbon and hydrogen, generally are considered less toxic than the inorganic forms.

For the purpose of exposure evaluation, arsenic can be measured in blood, hair, fingernails, and urine. Measurement of arsenic in blood is not considered to be a reliable indicator of chronic exposure to low levels of arsenic because arsenic is cleared from the blood within a few hours. Because of large inter-individual variability and potential contamination from other sources, nail and hair samples also are not considered to be reliable indicators. Urine arsenic is considered to be the most reliable method for measuring exposure to arsenic—particularly exposures occurring within a few days of the specimen collection. Fluctuations in urine excretion rates make a 24-

hour collection the optimal sample; however, the difficulties associated with collecting a 24-hour sample have resulted in the use of a first-morning void or a random spot sample in most exposure studies. First-morning void urine results have correlated well with 24-hour results [12].

Speciated urinary arsenic is preferable to total urinary arsenic as a measurement option because the speciated forms can distinguish between exposure to inorganic arsenic and the relatively nontoxic forms of organic arsenic commonly found in seafood and other foods [9, 12]. Individuals in this exposure investigation had their urine tested for speciated arsenic (inorganic arsenic, methylarsonic acid, and dimethyl arsenic acid).

Public Health Implications

Clear guidelines for interpreting urinary inorganic arsenic levels do not exist; however, the results do show that the urinary inorganic arsenic levels measured in this community were higher than those reported for other communities (Table 3; Figure 3) [13–20]. Approximately two-thirds of the participants had urinary inorganic arsenic levels above the level considered to be background for non-occupationally exposed individuals, and 16 percent of the participants had creatinine-corrected urinary arsenic levels above the level used in occupational settings to determine if excess exposure is occurring.

According to the Chi-square analyses, participants who indicated that they drink WCID water were more likely to have urinary inorganic arsenic levels greater than the reference value for non-exposed populations. Participants who indicated that they drink bottled water were more likely to have urinary inorganic arsenic levels less than the reference value for non-exposed populations. In Hebronville, exposure to arsenic through other sources is possible. Ninety-one percent of the people living in Hebronville describe themselves as being of Hispanic origin [1]. The Hispanic diet, which often includes beans and rice, may provide an additional source of exposure to arsenic. Beans and rice absorb water, and the manner in which they are cooked—an open pot with added water—could result in a significant uptake of arsenic. We estimated that cooking beans and rice with water containing arsenic at a concentration of 50 µg/L could result in the consumption of 8–9 µg of arsenic per serving of rice and 20–24 µg of arsenic per serving of beans⁴.

While the tests used in this investigation represent exposure and not the likelihood for adverse health effects, published reports and the concentrations of arsenic commonly found in the water do not result in an expectation that the arsenic in the water poses an immediate public health hazard. Therefore, TDH/ATSDR have classified exposure to the levels of arsenic in this public water system as posing no apparent public health hazard. The greatest concern associated with long-term ingestion of low levels of arsenic is an increase in the long-term risk of various cancers. EPA classifies arsenic as a known human carcinogen on the basis of sufficient evidence

⁴ TDH assumed that a resident cooked 1 cup of dried beans with a minimum of 6 cups of water and 1 cup of rice with 2–3 cups of water. A serving size is assumed to be approximately ½–2/3 cup of cooked rice and ¾–1 cups of cooked beans.

from human exposure. An increase in lung cancer mortality has been observed in multiple human populations exposed primarily through inhalation. Also, increased mortality from multiple internal organ cancers (liver, kidney, lung, and bladder) and an increased incidence of non-malignant skin cancers were observed in populations consuming water high in inorganic arsenic [8].

The TDH Cancer Registry Division analyzed available cancer incidence and mortality data for Jim Hogg County. The analysis of incidence data from January 1, 1995–December 31, 1999 and mortality data from January 1, 1992–December 31, 2001 showed that incidence and mortality data for cancers of the lung and bronchus, prostate, kidney and renal pelvis, bladder, and liver and intrahepatic bile duct were within the ranges expected for the State of Texas as a whole [21].

Conclusions

According to the information collected during this investigation,

1. The urinary inorganic arsenic levels measured in the exposure investigation participants were higher than those found in other non-occupationally exposed populations.
2. Approximately one-fifth of the people tested had urinary inorganic arsenic levels higher than the Biological Exposure Index[®] recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) for assessing occupational exposure to arsenic.
3. Participants who indicated that they drank WCID water were more likely to have urinary inorganic arsenic levels greater than the reference value for non-occupationally exposed populations.
4. While the tests used in this investigation represent exposure and not the likelihood of adverse health effects, on the basis of published reports and the concentrations of arsenic commonly found in the water, TDH/ATSDR would not expect the levels of arsenic in the water to pose an immediate public health hazard.
5. The greatest concern associated with long-term ingestion of low levels of arsenic is an increase in the long-term risk for various cancers. A review of available cancer incidence and mortality data for Jim Hogg County did not find any differences between the observed and the expected rates of the cancer types of interest.

Recommendations

1. Individuals with inorganic arsenic levels greater than 20 $\mu\text{g/g}$ of creatinine should be retested to confirm previous results.
2. All the individuals should be encouraged to discuss their results with a personal health care provider. Exposure investigation participants or their health care providers may discuss their results with a TDH physician/toxicologist if they choose to do so.
3. The relative contribution of other sources of exposure, particularly dietary contributions, should be explored, and recommendations to reduce these exposures should be provided.
4. The WCID should continue its efforts to reduce the arsenic levels in the public water system.

Public Health Action Plan

Actions Completed

N/A

Actions Recommended

1. Individuals with inorganic arsenic levels greater than 20 µg/g of creatinine should be retested to confirm previous results.
2. All the individuals should be encouraged to discuss their results with a personal health care provider; individuals or their health care providers can discuss the results with a TDH physician/toxicologist if they choose to do so.
3. The relative contribution of other sources of exposure, particularly dietary contributions, should be explored, and recommendations to reduce these exposures should be provided.
4. The WCID should continue its efforts to reduce the arsenic levels in the public water system.

Actions Planned

1. TDH plans to offer retesting to individuals with urinary arsenic levels above 20 µg/g creatinine.
2. TDH plans to provide summary information, answer questions, and encourage concerned individuals to discuss their results and concerns with their personal health care providers (either through a community meeting or through other means).
3. The public water system plans to increase water production capacity and to install an electro dialysis reversal (EDR) water treatment system to reduce arsenic concentrations in the water system.

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CERTIFICATION

This Hebbbronville Arsenic Exposure Investigation/Health Consultation was prepared by the Texas 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, ATSDR

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

Chief, State Programs Section, SSAB, DHAC, ATSDR

Appendices

APPENDIX A: Figures

APPENDIX B: Tables

APPENDIX A: Figures

Figure 1

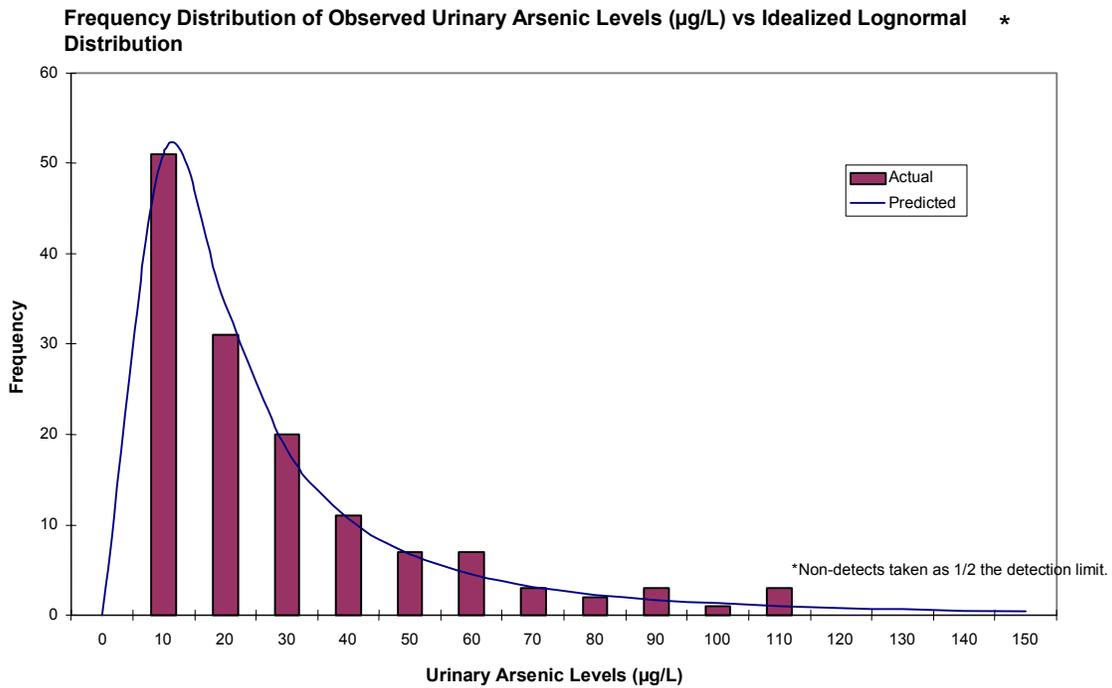


Figure 2

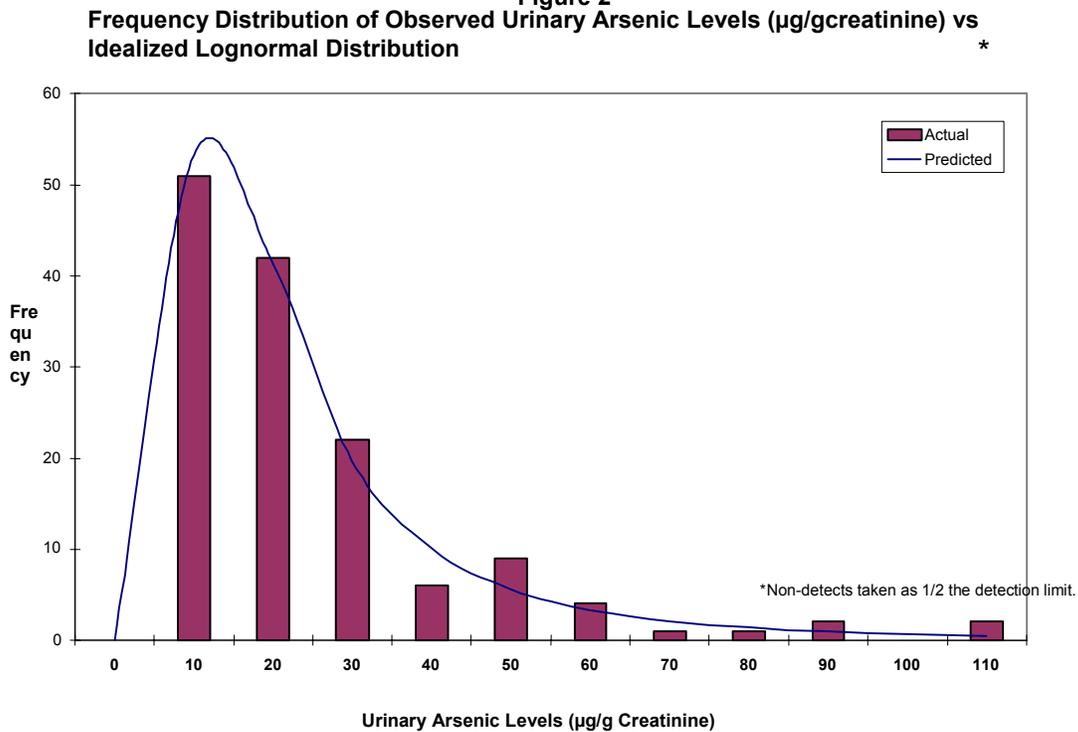
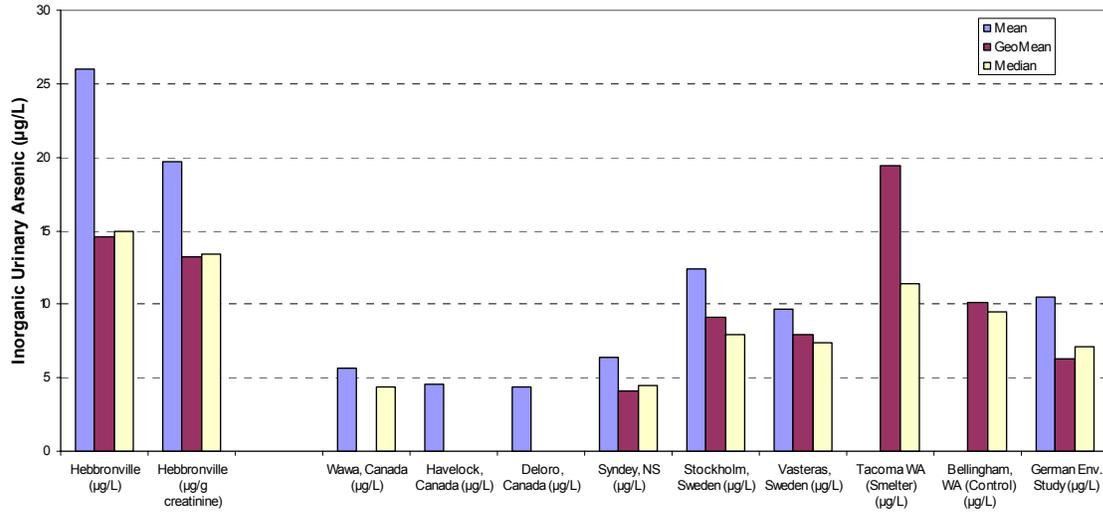


Figure 3
Comparison between Urinary Arsenic Levels among Different Communities



Appendix B: Tables

Table 1. Range of Arsenic Concentrations Measured in Well Water from Jim Hogg WCID#2

Well	Date Sampled	Arsenic Concentration (mg/L)	Health-based Screening (HAC) Values (mg/L)
Arsenic Range	1979–1988	<0.010–0.052 n=21 Avg=0.037	0.010 MCL in 2006; 0.050 current MCL; 0.003/0.010 chrEMEG, 0.00002 CREG
Well #4 (plugged and dismantled)	10/16/96 03/19/97 08/21/97 11/19/97 (10/96–11/97)	0.0632 0.0584 0.0540 0.0548 (0.0540–0.0632) n=4 Avg=0.0576	
Well #5*	During use	03/14/95 07/05/95 03/21/96 01/05/99 09/02/99 11/22/99 05/15/00 08/01/00 05/07/01 08/13/01 10/10/01 03/95–10/01	0.0834 0.0885 0.0681 0.0488 0.0466 0.0585 0.0708 0.0779 0.0731 0.0959 0.0956 (0.0466–0.0956) n=11 Avg= 0.0734
Not used	10/10/00 01/25/01 02/25/02 06/13/02 09/18/02 12/05/02 10/00–12/02	0.0864 0.0813 0.0894 0.0985 0.0863 0.1010 (0.0813–0.1010) n=6 Avg=0.0905	
Well #6**	03/14/95 11/02/95 03/21/96 10/16/96 08/21/97 11/19/97 01/05/99 02/25/02 02/24/03 3/95–2/03	0.0135 0.0169 0.0131 0.0180 0.0215 0.0171 0.0172 0.0119 0.0154 (0.0119–0.0215) n=9 Avg=0.0160	
Well #7	0705/95 05/25/99 08/19/99 02/25/02 02/24/03 7/95–2/03	0.0415 0.0656 0.0524 0.0541 0.0603 (0.0415–0.656) n=5 Avg=0.0548	
Distribution Sample	02/24/03	0.0574	

*Well #5 depth 1415 feet below ground surface (Gulf Coast Aquifer-Goliad Sand [TWDB data 3/29/99].

** Well #6 drilled 1982 depth 1463 feet below ground surface (screened 1245–1310)

chrEMEG—chronic Environmental Media Evaluation Guide; CREG—Cancer Risk Evaluation Guide

Table 2: Summary of Hebbroville Urinary Inorganic Arsenic Results for All Ages and for Children Ages 4 to 17

		N	Mean	Geometric Mean	Median	Min	Max	% >10	% >35
All Ages	µg/L	140	26.0	14.6	15	<2.5	340.0	65.7	22.9
	µg/g-c	140	19.7	13.2	13.4	<1.1	103.8	63.6	15.7
Children 4 to 17	µg/L	14	40.0	23.7	20.5	<8.3	110.0	92.9	21.4
	µg/g-c	14	18.2	13.4	13.6	<4.5	83.4	71.4	7.1

N = Number of individuals

µg/L = micrograms arsenic per liter urine

µg/g-c = micrograms inorganic arsenic per gram creatinine

Table 3: Summary of Inorganic Arsenic Results for Different Populations [13]

		N	Mean	Geometric Mean	Median	Min	Max
Wawa, Canada	µg/L	184	5.62		4.37	0.28	25.22
Havelock, Canada	µg/L	53	4.57			3.0	19.99
Deloro, Canada	µg/L	121	4.36			3.0	23.44
Sydney, Nova Scotia	µg/L	372	6.40	4.11	4.49	0.75	71.16
Stockholm, Sweden	µg/L	49	12.4	9.1	7.9	2.3	53.4
Vasteras, Sweden	µg/L	50	9.7	7.9	7.4	1.7	40.3
Tacoma, WA (0.3 mi from smelter)	µg/L	649		19.4	11.4		
Bellingham, WA Control Community	µg/L	61		10.1	9.5		
German Environmental Survey	µg/L	4001	10.52	6.29	7.1		206

N = Number of individuals

µg/L = micrograms arsenic per liter urine

Attachments

Attachment A1—TDH Exposure Investigation Questionnaire

Attachment A2—TDH Hebbroville consent form (English and Spanish versions)

Attachment A1—TDH Exposure Investigation Questionnaire

SCREENING QUESTIONNAIRE (ARSENIC)

If you would like to participate, please let us know by:

- **completing this form and**
- **returning it to our office in the enclosed postage paid envelope**
- **before July 23, 2003**

(please print)

I would like to participate in the Texas Department of Health arsenic exposure investigation	
Name:	Mailing Address:
Telephone No.:	Number of people living in your household:

Survey Questions:

	Yes	No	Don't Know
1. Do you drink faucet water?			
2. Do you cook with faucet water?			
3. Have you eaten seafood in the past 3 days?			
4. Have you eaten Chinese food in the past 3 days?			
5. Have you smoked in the last 3 days?			
6. Do you garden or work in your yard?			
7. Have you recently used any pesticides or garden sprays?			
8. Have you eaten any vegetables grown in your garden?			
9. Have you worked with chemically treated (Wolmanized) wood?			

10. Is most of the water you drink from: (Please circle all that apply)

- a. Jim Hogg WCID#2
- b. Your own well
- c. Bottled water
- d. Don't Know
- e. Other water source. If so, what is the source? _____

How long have you lived in the Hebbbronville area? _____

What is your current occupation? _____

**Attachment A2—TDH Hebronville Consent Form
(English and Spanish versions)**



English Participant Consent for Urine Specimen Testing
Exposure Investigation for Arsenic in Water

The Texas Department of Health Environmental Epidemiology and Toxicology Division (TDH) and the Agency for Toxic Substance and Disease Registry (ATSDR) are investigating arsenic exposure for people who drink water from the Hebronville area.

- We are offering **free, voluntary urine arsenic testing** for residents who drink tap water from the Hebronville area.
- Along with the free testing, **exposure information will be collected** with a questionnaire.

This investigation will let you know your own levels of arsenic and will help the local agencies to identify if public health actions are needed to reduce exposure

Participation

I understand that I will benefit from participating by learning if I (or my child/ward) have recently had elevated exposure to arsenic. If arsenic is detected outside acceptable levels, I will receive information about arsenic exposure and how to reduce current and future exposures.

I understand that my **participation is voluntary**. Furnishing any information is voluntary and even if I agree to participate and sign this form, I can stop my participation or my child's/ward's participation at any time. I understand and agree that there is no provision for compensation or medical treatment offered by TDH/ATSDR based upon the test results or in the event of injury from participation. I understand that I must sign this form to participate.

Procedure/Tests:

I understand that:

- I am providing a **urine sample to test for arsenic only**.
- A representative of the Texas Department of Health will provide urine specimen cups and instructions to me.
- I understand that I will collect the first urine of the morning in the specimen container.
- I understand that I should deliver the sample to the TDH staff at the exposure investigation site.

Results

I understand that every effort will be made to provide the results of my tests in writing to me within approximately 2 months. I will receive an actual test result in addition to laboratory reference values with an explanation of their significance. Results that are of immediate health concern will be reported to me as soon as they are known. If my results reveal an elevated value of arsenic, I understand that I should notify my personal physician.

Confidentiality

I understand that confidentiality will be protected to the fullest extent possible according to state and federal laws. Forms containing my name or address will be kept in locked cabinets at the Texas Department of Health. Any reports produced from this investigation will give only group information and not identify specific individuals.

Contact

If I have any additional questions about this investigation or the test, I may contact TDH at 1(800)588-1248.

Consent

The risks and benefits of this exposure investigation have been explained to me. All of my questions have been satisfactorily answered. I hereby freely and voluntarily give my signed consent for participating in the testing described above.

I, (please print) _____, the undersigned, agree to urine sampling and completing questionnaires for:

() Myself.

() My child/ward, _____, age - _____

Signature: _____ Date: _____

Address: _____ Hebbroville, TX 78361

Phone # (361) 527-_____

Witness: _____
(print name) (signature)



Consentimiento del participante para la prueba de una muestra de orina

Investigación de la exposición al arsénico en el agua

La División de Toxicología y Epidemiología del Medio Ambiente del Departamento de Salud de Texas (TDH) y la Agencia para el Registro de Sustancias y Enfermedades Tóxicas (ATSDR) están investigando la exposición al arsénico de personas que toman el agua del área de Hebbroville.

- Estamos ofreciendo **pruebas de la orina gratis y voluntarias** a los residentes que toman agua de la llave del área de Hebbroville.
- Además de las pruebas gratis, **se reunirá información sobre la exposición** por medio de un cuestionario.

Esta investigación le informará sobre su propio nivel de arsénico y ayudará a los departamentos locales a determinar si deben tomar alguna acción de salud pública para reducir la exposición.

Participación

Entiendo que beneficiaré de la participación aprendiendo si he tenido (o si mi hijo o mi pupilo ha tenido) recientemente una exposición elevada al arsénico. Si se detectan niveles no aceptables de arsénico, recibiré información sobre la exposición al arsénico y cómo disminuir la exposición actual y futura.

Entiendo que mi **participación es voluntaria**. Cualquier información que proporcione lo hago de manera voluntaria y aun si estoy de acuerdo en participar y firmo este formulario, puedo detener en cualquier momento mi participación o la participación de mi hijo o pupilo. Entiendo y estoy de acuerdo en que ni el TDH ni la ATSDR ofrezca ninguna provisión para compensación ni tratamiento médico basado en los resultados de las pruebas o en el evento de una lesión ocasionada durante la participación. Entiendo que tengo que firmar este formulario para participar.

Procedimiento y pruebas:

Entiendo que:

- voy a dar una muestra de **orina para que se haga la prueba de detección del arsénico solamente**.
- un representante del Departamento de Salud de Texas me dará instrucciones y recipientes con los cuales tomar las muestras de orina.
- voy a usar el recipiente para tomar una muestra de la primera orina de la mañana.
- tengo que entregar la muestra al personal del TDH en el sitio de la investigación de la exposición.

Resultados

Entiendo que se hará cada esfuerzo para entregarme por escrito los resultados de las pruebas dentro de los dos meses aproximadamente. Recibiré el resultado de las pruebas además de los valores de referencia de laboratorio con una explicación de su significado. Los resultados que indican un problema de salud inmediato se me reportarán tan pronto se den a conocer. Entiendo que debo notificar a mi médico personal si los resultados demuestran un valor elevado de arsénico.

Confidencialidad

Edited 10/15/03, ATSDR

Entiendo que se protegerá la confidencialidad al máximo punto posible de acuerdo con las leyes estatales y federales. Los formularios que contienen mi nombre o dirección se guardarán en archiveros cerrados con llave en el Departamento de Salud de Texas. Cualquier informe producido de esta investigación tendrá sólo la información del grupo y no identificará a ninguna persona en particular.

Contacto

Si tengo alguna pregunta adicional sobre esta investigación o sobre la prueba, puedo comunicarme con el TDH al 1(800)588-1248.

Consentimiento

Alguien me ha explicado los riesgos y beneficios de esta investigación de exposición. Todas mis preguntas han sido contestadas a mi satisfacción. Por el presente, doy, libremente y de manera voluntaria, mi consentimiento para participar en la prueba mencionada anteriormente.

Yo, (favor de escribir en letra de molde) _____, el suscrito, estoy de acuerdo en dar una muestra de orina y de llenar un cuestionario para:

() Mi mismo.

() Mi hijo o pupilo, _____, de _____ años de edad.

() Mi hijo o pupilo, _____, de _____ años de edad.

() Mi hijo o pupilo, _____, de _____ años de edad.

() Mi hijo o pupilo, _____, de _____ años de edad.

() Mi hijo o pupilo, _____, de _____ años de edad.

Firma: _____ Fecha: _____

Dirección: _____ Hebbroville, TX 78361

Número de teléfono: (361) 527- _____

Testigo: _____
(Nombre en letra de molde) (Firma)