



WATER QUALITY REPORT

2024



KUB: 865-524-2911 (Español oprima el numero 2)
www.kub.org

As one of the largest public utility providers in the nation, Knoxville Utilities Board plays a critical role in our customers' lives. Throughout every facet of our operations, our highly skilled and dedicated employees work together to serve our community with industry-leading utility services.

This is exemplified at every stage of our water treatment process beginning at the Mark B. Whitaker (MBW) Water Treatment Plant. Here, water from the Tennessee River enters our state of the art plant, which we're constantly improving. I'm excited that we're currently adding operational flexibility and resiliency at the plant through a \$67 million filters project. This project is a cornerstone of our Water Supply Master Plan, which is designed with series of capital investments to ensure KUB continues to serve the community with high-quality water for decades to come.

At our Water Quality Laboratory, employees perform approximately 100,000 tests per year checking for more than 150 contaminants. Our professional staff at the plant and in the field test water at various points in our water treatment process.

Our commitment to high water quality is also clear in our emergency response efforts, for which we recently received a Water Heroes Award from the Water Environment Federation. This and other accolades are outlined on the next page.

KUB exists to serve its customers with reliable, safe and affordable utilities. I'm proud of the work our employees do every day to achieve that mission.

If you have questions, please call KUB at 865-524-2911.

Gabriel J. Bolas II, *KUB President & CEO*



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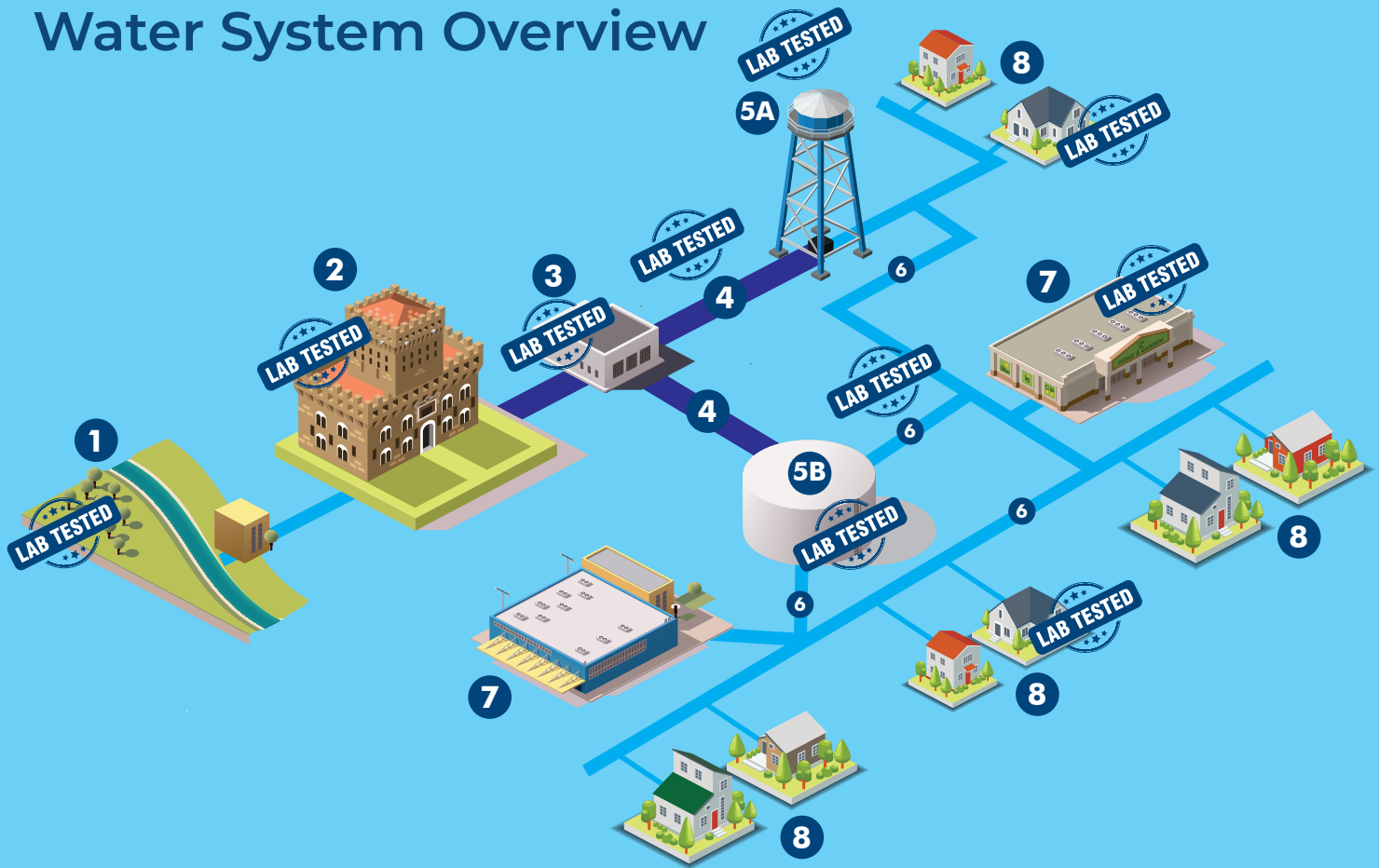
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Water System Overview



- 1 River Intake
- 2 Treatment Plant
- 3 Finished Water Pump Station
- 4 Transmission Mains

- 5 Storage Facilities
(A: Elevated Tank B: Ground Reservoir)
- 6 Distribution Mains
- 7 Commercial Service
- 8 Residential Service

Award-Winning Service

KUB is recognized by various national organizations for its work to provide high-quality water to its customers. KUB is designated as a Utility of the Future Today, which celebrates the achievements of water utilities that are leaders in sustainability and resilience of the communities they serve. KUB was the sole recipient of the Association of Metropolitan Water Agencies (AMWA) 2024 Environmental Justice & Equity Utility Management Award.

Additionally, KUB recently received the WEF's Water Heroes Award for its exceptional response to simultaneous water and wastewater main breaks with zero customer interruptions.



Utility of the Future Today
Recognition from the Water Environment Federation (WEF), the National Association of Clean Water Agencies (NACWA), the Water Research Foundation, the WaterReuse Association, and the U.S. Water Alliance



AMWA Environmental Justice & Equity Utility Management Award



AMWA Sustainable Water Utility Management Award



WEF Water Heroes Award



Drinking Water Sources

Sources of drinking water (tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. KUB's source is surface water from the Tennessee River, which supplies the Mark B. Whitaker Water Plant.

As water travels over land or through the ground, it dissolves naturally occurring minerals and, sometimes, radioactive material. It can pick up substances resulting from human activity or the presence of animals.

Contaminants that may be in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

KUB's water source is rated reasonably susceptible to potential contamination. To ensure safe drinking water, all public water systems treat and routinely test their water under the guidance of the Source Water Assessment program. Summaries, susceptibility scorings and the full TDEC report to EPA can be viewed online at <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/source-water-assessment.html>, or you may contact KUB for copies of specific assessments.

Protecting Our Source Water

Each of us could be adding to source water pollution without even knowing it. Even the smallest streams typically lead to the Tennessee River, so although it might seem too far away to matter, most streams (and storm drains) lead to our source. Reducing pollution at all levels and locations is important! Here are ways you can help protect our source water and the environment.

Recycle



In addition to household recycling, be sure to recycle:

- Unwanted automotive products
- Cleaning products
- Pesticides
- Lawn chemicals

Take waste to:

Household Hazardous Waste Facility, 1033 Elm Street

Please note: Latex paint is no longer accepted.

Medication Disposal



Never flush unused medicine down drains or toilets.

Take medication to:

- Collection sites
- Collection events
- Permanent drop box:

Knoxville Police Dept. Safety Building,
1650 Huron Street, Knoxville, TN 37917

Reducing PFAS



Poly- and Perfluoroalkyl Substances (PFAS) are man-made chemicals that are resistant to breaking down in the environment and some may have adverse health effects. KUB has partnered with TDEC and participated in a source water monitoring study. We are pleased to share there were no detections of PFAS compounds at levels of concern. To learn more about the many sources of PFAS and how to reduce the risk of exposure, please visit www.epa.gov/pfas.

Water Quality Summary

INORGANIC MONITORING				
Parameter	Range or Level Detected	MCLG	MCL	Likely Source in Drinking Water
Barium	25 ppb	N/A	2000 ppb	Discharge of drilling wastes and metal refineries; erosion of natural deposits
Nitrate	0.42 ppm	10 ppm	10 ppm	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Fluoride	0.41 - 0.66 ppm (average 0.58 ppm)	4 ppm	4 ppm	Erosion of natural deposits; water additive, which promotes strong teeth; discharge from fertilizer and aluminum factories
Sodium	11 ppm	N/A	N/A	Used in treatment process
ORGANIC AND DISINFECTION BYPRODUCT MONITORING				
Parameter	Range or Level Detected	MCLG or MRDLG	MCL or MRDL	Likely Source in Drinking Water
Total Organic Carbon (Source) ¹	1.9 - 3.2 ppm (average 2.4 ppm)	N/A	TT	Naturally present in the environment
Total Organic Carbon (Tap) ¹	1.2 - 2.0 ppm (average 1.5 ppm)	N/A	TT	Naturally present in the environment
Total Trihalo-methanes (THM)	Maximum LRAA: 45 ppb ² Individual site range: 16 to 65 ppb	N/A	80 ppb	Byproduct of drinking water chlorination
Haloacetic Acids (HAA)	Maximum LRAA: 33 ppb ² Individual site range: 16 to 40 ppb	N/A	60 ppb	Byproduct of drinking water chlorination
Chlorine Dioxide	0.10 - 0.14 ppm (average 0.10 ppm)	MRDLG = 0.8 ppm	MRDL = 0.8 ppm	Water additive used to control microbes
Chlorine	Maximum Running Annual Average: 1.7 ppm (range: 0.1 – 2.5 ppm)	MRDLG = 4 ppm	MRDL = 4 ppm	Water additive used to control microbes
Chlorite	0.02 - 0.08 ppm (average 0.02 ppm)	0.8 ppm	1 ppm	Byproduct of drinking water disinfection
TURBIDITY MONITORING				
Parameter	Range or Level Detected	MCLG	MCL	Likely Source in Drinking Water
Turbidity ³	0.02 - 0.09 NTU	N/A	TT	Soil Runoff
LEAD AND COPPER MONITORING				
Parameter	90th Percentile Level (Range Detected)	MCLG	MCL	Likely Source in Drinking Water
Copper	0.158 ppm (0.0024 - 0.251 ppm)	1.3 ppm	AL=1.3 ppm	Corrosion of household plumbing systems
Lead ⁴	1.0 ppb (0.5 - 2.3 ppb)	0 ppb	AL=15 ppb	Corrosion of household plumbing systems
ADDITIONAL MONITORING ⁵		<div>PFAS and Lithium Monitoring</div> <div>EPA periodically requires utilities to monitor for some specific unregulated contaminants that do not have established drinking water standards. KUB monitored for 30 chemical contaminants including 29 PFAS compounds, as well as Lithium. Only one reportable PFAS compound was detected during 2024 and was well below the EPA proposed Health Advisory level. Health advisories are non-regulatory and reflect EPA's assessment of the best available peer-reviewed science at levels where adverse health effects are not anticipated to occur. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.</div>		
Parameter	Average Level Detected			
Alkalinity	74 ppm			
Aluminum	31 ppb			
Calcium	24 ppm			
Chloride	18 ppm			
Conductivity	218 µmhos/cm			
Hardness	91 ppm			
Iron	5 ppb			
Orthophosphate	0.93 ppm			
pH	7.3 Standard Units			
Sulfate	14 ppm			
Total Dissolved Solids	150 ppm			
Zinc	87 ppb			
UNREGULATED MONITORING DATA				
Parameter	Level Detected	EPA Proposed Health Advisory		
Perfluorobutanesulfonic acid (PFBS)	0.0037 ppb	2.0 ppb		

TERMS AND DEFINITIONS	
Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Maximum Contaminant Level (MCL)	The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum Residual Disinfectant Level (MRDL)	The highest level of a disinfectant allowed in drinking water. There is convincing evidence that adding a disinfectant is necessary for the control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG)	Below this level of a drinking water disinfectant, there is no known or expected risk to health. MRDLGs do not reflect the benefits of using disinfectants to control microbial contaminants.
Nephelometric Turbidity Unit (NTU)	A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
Treatment Technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Note: To make the following common scientific measures of substances in water easier to understand, we have related them to examples.	
Parts per million (ppm) or milligrams per liter (mg/l)	One part per million is equivalent to one minute in two years or a single penny in \$10,000.
Parts per billion (ppb) or micrograms per liter (ug/l)	One part per billion corresponds to one minute in 2,000 years or a single penny in \$10,000,000.

¹ KUB met the Treatment Technique requirement for Total Organic Carbon in 2024.

² Compliance is determined by calculating a quarterly Locational Running Annual Averages (LRAAs) at all the required sampling sites. The range includes the highest and lowest results obtained from monitoring sites across our distribution system in 2024.

³ No Turbidity violations were incurred during 2024. We met the treatment technique for turbidity with 100% of monthly samples below the turbidity limit of 0.3 NTU. Turbidity is a measure of the cloudiness of the water. KUB monitors turbidity because it is a good indicator of the effectiveness of our filtration system.

⁴ None of the households out of the 61 sampled contained concentrations that exceeded the lead action level in 2022. **Lead:** If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. KUB is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the EPA Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

⁵ KUB's drinking water meets all existing standards for safe water. In addition to the required testing, KUB tests for over 80 additional parameters. Most of the substances tested for were not found in our water. This table includes the results for additional parameters that were detectable.

State-of-the-Art Water Quality Laboratory

KUB is proud to serve our customers with one of the **largest water quality labs certified by the State of Tennessee**. The lab supports KUB's daily operations and allows us to quickly respond to customer concerns.



Protecting Our Drinking Water

State and federal regulations require KUB to operate a Cross-Connection Control Program to protect the community's drinking water from possible contamination. Anything customers attach to plumbing that may introduce contaminants is a potential cross-connection. If water pipes lose pressure, water from homes or businesses with cross-connections may contaminate the drinking water. To prevent that, all customers with potential cross-connections must install, test, and maintain backflow prevention assemblies. Customers may need an assembly if they use chemicals or processing equipment, have an alternative water source, or have irrigation systems or fire protection systems. Unprotected cross-connections can introduce public health risks. Therefore, KUB must ensure properties with risks have properly working backflow assemblies to ensure water quality and compliance. For more information, visit www.kub.org/crossconnection. If you have questions or think that you may have a cross-connection, please call KUB at 865-524-2911.

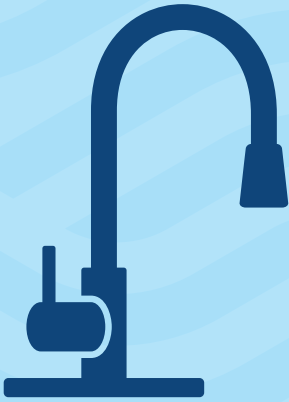
Did you know

When filling pools, hot tubs, or water troughs, keeping the hose above the waterline creates an air gap, which prevents a potential cross-connection. The gap should be at least twice the diameter of the hose, but not less than 1 inch.



Backflow assemblies prevent contamination of drinking water.

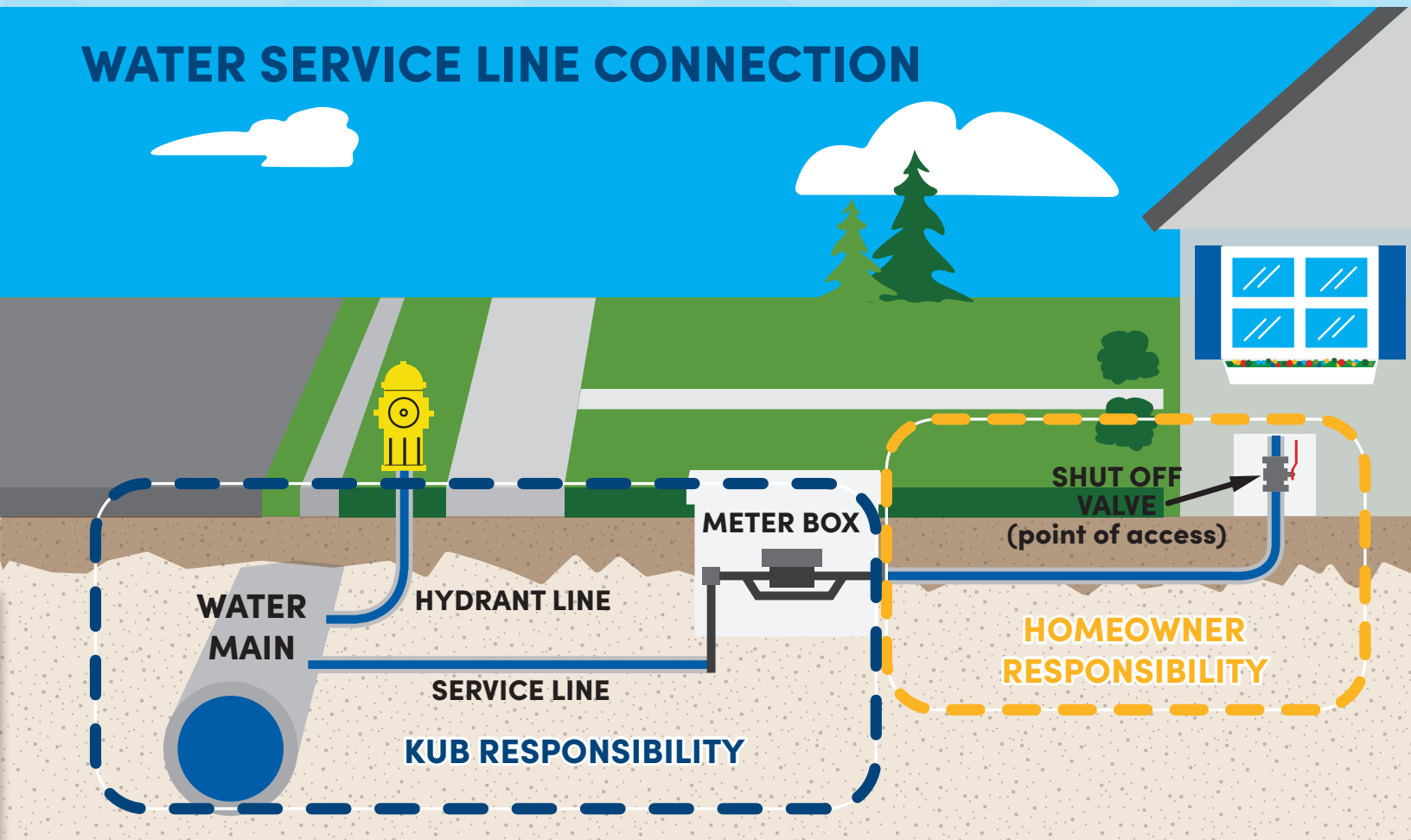
Keeping the Lead Out



Although KUB has determined that our customers have no lead service lines, your home's plumbing may still affect the quality of water coming from your tap. Concerns about lead in drinking water primarily come from the corrosion, or wearing away, of materials in household plumbing or fixtures that may contain traces of lead. To control corrosion and reduce the risk of lead from customers' plumbing, KUB continues to use a safe corrosion inhibitor that meets strict standards for use in drinking water. KUB also routinely monitors water quality to ensure effective corrosion control. Those efforts greatly reduce corrosion and ensure that KUB's water will continue to comply with all regulatory standards for lead.

KUB has an exceptional water quality record and takes the responsibility of providing safe and reliable water seriously. KUB recently completed its water service line inventory as required by the EPA and is **proud to share there was no evidence of lead lines found throughout the water distribution system.** KUB worked with a consultant to review historical records that reflected the type of material used during installations. Additional methods used in the inventory included statistical analysis, customer surveys, in-home inspections, and service excavations to appropriately determine water service line material types. If customers have questions about their water service line (between the meter and their home or business), they can visit www.kub.org/serviceinventory for more information or call us at 865-524-2911.

WATER SERVICE LINE CONNECTION





Water Safety Regulations

To ensure tap water is safe to drink, EPA and the Tennessee Department of Environment and Conservation (TDEC) prescribe regulations that limit the amount of certain contaminants in water from public water systems. The U.S. Food and Drug Administration (FDA) establishes regulations and limits for contaminants in bottled water, which must provide the same level of protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk.

For more information about contaminants and potential health effects, call EPA's Safe Drinking Water Hotline at 1-800-426-4791.



Information for Consumers at Risk

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised people, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from EPA's Safe Drinking Water Hotline, 1-800-426-4791.



Learn more:
www.kub.org/water



Contact Information

For more information about water contaminants and potential health effects, call the EPA Safe Drinking Water Hotline at 1-800-426-4791. If you have questions about KUB's water or this report, contact KUB at 865-524-2911 or visit our website at www.kub.org/water. KUB's Board meets monthly in open public session. Please feel free to participate in the meetings. Information on regularly scheduled meetings can be obtained on our website or by calling KUB.

Información en Español: Esta información es muy importante. Por favor tradúscalo o hable con alguien que lo entienda bien. Para mas información en español, llame a KUB al numero de teléfono 865-524-2911 y oprima el numero 2.



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