Diamond Bell Water System 10-159

2003 Annual *Water Quality* Report

Water QualityManagement Division

TUCSON WATER

City of Tucson
Tucson Water
P.O.Box 27210
Tucson, AZ 85726-7210

Contaminants Detected in Our Drinking Water

Tucson Water regularly samples the drinking water that is delivered to you. Much of this testing is required by drinking water regulations. In addition to this required monitoring, we perform a great deal of discretionary monitoring in order to provide both Tucson Water staff and customers with additional information.

The Detected Contaminants Table below lists all contaminants that were detected in both the required and discretionary drinking water monitoring. Two inorganic contaminants of special interest are arsenic and fluoride, which are naturally occurring. For more information, please see the table and the specific explanations, which follow the table.

It is important to remember that the detection of a contaminant in drinking water does not necessarily represent a threat to public health. Current technology allows water utilities to detect extremely low levels of contaminants in drinking water. A detected result means a concentration that is above the minimum value that can be measured by the laboratory.
In most cases, the minimum detectable level of a contaminant is well below the USEPA regulatory limit for that contaminant. To compare the detected amount with the amount allowed by the USEPA, refer to the Maximum Contaminant Level (MCL) column in the table. The vast majority of regulated contaminants were not detectable in drinking water delivered by Tucson Water. The non-detected results were not included in the table. For a complete list of all USEPA regulated contaminants contact the USEPA at 1-800-426-4791 or visit the USEPA website at www.epa.gov/safewater/mcl.html#mcls.

Detected Contaminants Table

Contaminant	*Analysis Date*	*Maximum Result*	*Range*	*MCL*	*MCLG*	*Major Sources*
Inorganics						
Arsenic, Total	2001	5.2 ppb	3.7 - 5.2 ppb	50 ppb	None	Natural deposits
Barium	2001	0.024 ppm	0.023 - 0.024 ppm	2 ppm	2 ppm	Natural deposits
Chromium	2001	< 20 ppb	1.6 - < 20 ppb	100 ppb	100 ppb	Discharge from steel mills; natural deposits
Fluoride	2001	0.36 ppm	0.31 - 0.36 ppm	4 ppm	4 ppm	Natural deposits
Nitrate (as N)	2003	1.6 ppm	1.6 - 1.6 ppm	10 ppm	10 ppm	Natural deposits; septic tanks; agriculture; sewage
Radiochemical						
Adjusted Gross Alpha	2001	2.1 pCi/L	2.1 - 2.1 pCi/L	15 pCi/L	0 pCi/L	Natural deposits
Radon Activity	2000	864 pCi/L	784 - 864 pCi/L	No MCL	None	Natural deposits
Uranium	2001	3 pCi/L	3 - 3 ppb	30 ppb	None	Natural deposits
Volatile Organics						
Total Xylenes	2001	0.0014 ppm	< 0.0005 - 0.0014 ppm	10 ppm	10 ppm	Solvent used in paint coatings, adhesives, and fuel
Trihalomethanes						
Total Trihalomethanes (TTHMs)	2001	14.4 ppb	< 0.5 - 14.4 ppb	80 ppb	0 ppb	By-product of chlorination

Contaminant	*Analysis Date*	*# of Samples Above the Action Level*	*90th Percentile Value*	*Action Level*	*MCLG*	*Major Sources*
Lead and Copper in Standing Water Samples						
Lead	2001	one	<2 ppb	15 ppb	0	Corrosion of household plumbing systems
Copper	2001	none	0.145 ppm	1.3 ppm	1.3 ppm	Corrosion of household plumbing systems

Definitions of Technical and Regulatory Terms

Action Level. The concentration of a contaminant that if exceeded, triggers a treatment or other requirement which 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. If a contaminant is believed to cause health concerns in humans, then the MCL is set as close as practical to zero and at an acceptable level of risk. Generally, the maximum acceptable risk of cancer is 1 in 10,000 with 70 years of exposure.

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.

Parts Per Billion (ppb). Some constituents in water are measured in very small units. Organic compounds such as trihalomethanes are monitored by Tucson Water in terms of parts per billion (or micrograms per liter). To help you visualize how very small this unit is, we offer the following illustrations. One part per billion equals: One second of time in 31.7 years or the first 16 inches of a trip to the moon.

Parts Per Million (ppm). Many dissolved minerals such as sodium and calcium are monitored by Tucson Water in terms of parts per million (or milligrams per liter). To help you visualize how very small this unit is, we offer the following illustrations. One part per million equals: 2 ounces of water in a typical 15,000 gallon backyard swimming pool or one second of time in 11.6 days.

Picocurie Per Liter (pCi/L). The quantity of radioactive material in one liter which produces 2.22 nuclear disintegrations per minute.

Expected Drinking Water Contaminants

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Tucson's groundwater contains dissolved minerals and organic compounds, which have been leached from rocks, sediments, and plant minerals through which the water traveled. One would expect to find beneficial minerals such as calcium and magnesium, harmless minerals such as chloride, bicarbonate, and sulfate, and metals such as iron, copper, arsenic, and lead, which may be either beneficial or harmless at low concentrations, but harmful at high concentrations. In addition to these naturally occurring contaminants, groundwater may contain contaminants resulting from human, industrial, or domestic activities. For this reason, water utilities must currently monitor for approximately 90 regulated and 12 unregulated contaminants.

The following language is required by the USEPA to appear in this report, some of which may not be applicable to deep groundwater wells, the source of the this Water supply:
Contaminants that may be present in a source water can include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage, agricultural livestock, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring 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.

In order to ensure that tap water is safe to drink, USEPA regulations limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Bottled water may come from either a surface water source or groundwater source, and may be treated minimally or extensively. For information on the quality of your bottled water, contact the water bottling company.

Detail Information on Detected Contaminants

Arsenic USEPA recently finalized a reduction in the arsenic drinking water standard from 50 ppb to 10 ppb. All water utilities must meet this new standard beginning January 2006. While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. USEPA's new standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. USEPA continues to research the health effect of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damages and circulatory problems. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Barium occurs naturally at very low concentrations in our groundwater.

Chromium is a trace metal and an essential nutrient; however, it can be toxic at high concentrations greater than the MCL especially in the hexavalent form, which is more common when the source is industrial waste.

Fluoride is an important naturally-occurring mineral that helps to form healthy teeth and bones. A concentration of 1 ppm is considered optimum. At concentrations above 2 ppm, fluoride can cause mild discoloration of teeth, and exposure at above the MCL of 4 ppm can cause both severe discoloration of teeth and over many years of exposure, bone disease.

Nitrate is a form of nitrogen and an important plant nutrient. Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Tucson water performs extra monitoring on wells high in nitrate for extra assurance that action can be taken when approaching the MCL.

Adjusted Gross Alpha is a measure of radioactivity due to naturally occurring minerals in groundwater. The MCL for gross alpha radioactivity is set at 15 picocuries per liter (pCi/L). This excludes the radioactivity contributed by either radon or uranium.

Radon is a naturally occurring radioactive gas that may cause cancer, and may be found in drinking water and indoor air. While ingesting radon in drinking water has a small risk, inhaling radon is a primary health concern, particularly for smokers or ex-smokers. Radon diffusing up from the soil into homes and buildings is usually the main source of radon in indoor air. Only about 1-2 percent of radon in indoor air comes from drinking water. If you are concerned about radon in your home, you should test your house and install controls if you find a level of 4 pCi/L or higher in your indoor air. For more information, call USEPA's Radon Hotline (800-SOS-RADON) or visit the web site http://www.epa.gov/iaq/radon/. The USEPA does not currently have a final regulation for radon in drinking water. Extra radon monitoring was performed on Tucson Water wells in two quarters in 2000. Test results indicate that when compared with other communities across the country, Tucson has fairly typical concentrations for radon in the water supply.

Uranium is a heavy metal, which is highly toxic and radioactive. The USEPA has set a new standard of 30 ppb for uranium, which water systems must have met by December 2003.

Xylenes are residual solvents, typically associated with the coatings used to protect new or refurbished water pressure tanks. The highest concentrations detected for Xylenes are less than 1% of the MCL. These low concentration releases from pressure tank coatings rapidly decrease as the tank ages.

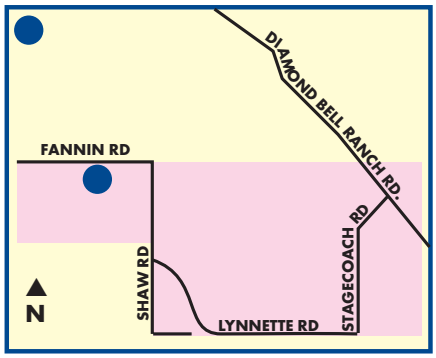
TTHMs are formed when chlorine combines with naturally-occurring material in water. Because the level of organic matter in our groundwater is extremely low, these compounds are found at very low concentrations.

Lead and Copper are naturally occurring metals, which are generally found at very low levels in some waters. However, these levels can increase when water contacts plumbing materials containing lead pipe, lead soldered copper tubing, or brass. Infants and young children are typically more vulnerable to lead in drinking water than the general population. While Tucson Water is well within standards, concerned customers can take an extra precaution to protect children from lead leached from new brass faucets by running the water for a few seconds and using the water for something other than drinking. This is especially important if the water has been sitting in the pipes for a few hours or more. These same precautions also help to give you a better-tasting water.

During 2003, Tucson Water ensured that your drinking water met all drinking water standards.

Tucson Water is pleased to provide you with this Annual Water Quality Report. The publishing of this report is required annually by the Safe Drinking Water Act and State of Arizona regulations. This report will also serve as a reference with important information on the quality of water we deliver and will provide you with contacts and phone numbers you may need from time to time.

Diamond Bell



Diamond Bell is a community located south and east of Sasabe Road and Diamond Bell Ranch Road, with about 180 services supplying about 530 persons with water from two wells F-002a and E-030a. The system was upgraded in the late 1990s by replacing gas chlorinators with hypochlorite units.The new well, E-030, was placed in service in September 2003. It is used as a back-up source.

How is Our Drinking Water Treated?

The groundwater delivered by Tucson Water meets all drinking water standards without treatment. However, approximately 0.8 parts per million (ppm) of chlorine is added to the drinking water supply to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap.

Source Water Assessment Program (SWAP):

Arizona Department of Environmental Quality has completed a source water assessment of this Isolated System, which evaluates the risk of contamination from human activities. The water sources for this system are categorized as "low risk of contamination from human activities".

A Special Note to At-Risk Populations

While the Safe Drinking Water Act regulations are intended to protect consumers throughout their lifetime, some people may be more vulnerable to infections from drinking water than the general population. These "at-risk" populations include: immuno-compromised persons such as persons with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, and in some cases, elderly people and infants. These people should seek advice about drinking water from their health care providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water hotline.

Whom Do I Contact for More Information?

For more information on this Tucson Water report contact Tom Jefferson or Mohsen Belyani with the Water Quality Management Division. Call 791-5252 or e-mail your questions to: tom.jefferson@tucsonaz.gov or mohsen.belyani@tucsonaz.gov.

Telephone Numbers:

Tucson Water Quality automated phone line	791-4227
Tucson Water Public Information Office	791-4331
Tucson Water Quality Management Division	791-5252
Tucson Water Customer Advocate	791-5945
Tucson Water Customer Service/Billing	791-3242
Tucson Water 24-Hour Emergency	791-4133

Additional information is also available from the Tucson Water Website: www.cityoftucson.org/water/

United States Environmental Protection Agency Safe Drinking Water Hotline: 1-800-426-4791

USEPA Website: www.epa.gov/safewater/

City of Tucson TTY#: 791-2639

Si usted desea este documento escrito en español, por favor, llame al 791-4331.