



# ARSENIC IN DOMESTIC WELL WATER

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## Description of the Problem

About 42 million people in the U.S. obtain their drinking water from private domestic wells. There are around 200,000 permits for ground water wells in Colorado. Unlike community water systems, there is no requirement that private wells be tested regularly. Private wells also are not regulated by the state and do not have to meet the health-related standards developed under the Safe Drinking Water Act.

Community water systems are regularly tested. In certain areas of Colorado, arsenic in some community drinking water systems exceeds the standard of 10 parts per billion (ppb) that will become effective in 2006. In three community water systems, arsenic levels exceed the current standard of 50 ppb. The Colorado Department of Public Health and Environment (CDPHE) is working with water suppliers to reduce the levels of arsenic in these systems.

High levels of arsenic in community water systems may indicate that arsenic levels in nearby private wells also may exceed the standard. Public health officials, both locally and at the state level, are concerned that some households in Colorado may have wells containing arsenic above the recommended drinking water level.

## What is arsenic?

Arsenic is a naturally occurring chemical that is found in soil and rock. It can be released into the environment through volcanic action, rock erosion and through human activities such as mining or smelting of arsenic-containing ores and the use or disposal of arsenic-containing pesticides. These sources can raise arsenic levels in groundwater. Many areas, particularly in the western United States, have naturally high arsenic levels in soil and groundwater.

## How can arsenic affect my health?

In some locations, domestic wells tap into arsenic-containing groundwater. People may also be exposed to low levels of arsenic in their diet. On average, eighty percent or more of dietary arsenic comes from meat, fish, poultry and grains.

The health effects caused by ingesting arsenic can vary greatly. Factors that influence the degree of harmful effects are:

- The level of arsenic in your water
- The amount of arsenic you ingested
- How long you have been exposed
- How your body responds to arsenic, which is related to age, diet, general health and other traits.

In Colorado, arsenic concentrations in drinking water are generally too low to be an immediate or severe health concern. Drinking water with levels of arsenic above the new standard may, however, cause health problems in the future. Consumers should also know that infants and children might have greater exposure than adults. Health effects caused by repeated long-term arsenic exposure include:

- Skin changes, such as “corns” on the palms of the hands or soles of the feet, changes in skin color, particularly around the head, neck or groin, and a thickening of the skin,
- Various forms of cancer, such as of the skin, bladder and lung and possibly kidney, liver and prostate cancer.
- Other health problems, such as diabetes, hypertension, cardiovascular disease and nervous system damage, have been reported in some studies. However, scientists don’t know how much exposure is necessary to cause these health effects.

Consult your physician if you have any health problems that you think may be caused by arsenic exposure.

## What is the health risk associated with levels exceeding the drinking water standard?

The federal drinking water standard for arsenic in public water supplies was lowered in January 2001 from 50 ppb to 10 ppb, to better protect against long-term exposure. Parts per billion (ppb) are the number of ‘parts’ by weight of arsenic per billion parts of water. This standard is used to measure extremely small concentrations. The new standard must be met by 2006. Community water suppliers may need to lower the arsenic level in the water they produce to meet the new standard.

Although private drinking water wells are not required to meet the new federal standard, the Colorado Department of Public Health and Environment recommends taking action as described in the table on the following page.

Below 10 parts per billion (ppb)	Your drinking water currently meets EPA's and Colorado's drinking water standard for arsenic. You may want to consider periodic retesting if your arsenic level is close to the new standard, because levels can change over time.
Above 10 parts per billion (ppb)	<p>Your drinking water exceeds the new drinking water standard for arsenic. Some people, who drink water with arsenic above this level, over many years, could experience arsenic-related health effects.</p> <p>Levels close to the new standard (10-20 ppb) correspond to an exposure of 20 to 40 micrograms of arsenic per day. The typical daily U.S. diet contains 10-15 micrograms of inorganic arsenic, the form also found in water. As the concentration of arsenic in drinking water increases, the total exposure and the corresponding health risk will increase.</p> <p>The Colorado Department of Public Health and Environment recommends that you retest your well if the initial test exceeds the new arsenic standard. If levels continue to exceed 10 ppb, you may wish to seek an alternate source of drinking water, such as bottled water, or consider installing a home treatment system.</p>

### **How can I test for arsenic in my drinking water supply?**

Arsenic has been reported as a potential drinking water contaminant in the following Colorado counties: Alamosa, Boulder, Conejos, Costilla, El Paso, Gunnison, Jefferson, Logan, Phillips, Routt, San Miguel, Sedgwick, Washington and Yuma.

Many laboratories are available to test water quality. A list of state certified water-testing labs is available on the Internet at [www.cdphe.state.co.us/lr/certification/SDWlist.pdf](http://www.cdphe.state.co.us/lr/certification/SDWlist.pdf), or from your county health agency. If a contaminant is found through testing, the results will include the concentration of the contaminant and an indication of whether this concentration exceeds the drinking water quality standard. If the standard is exceeded, you should retest your well and then decide whether the concentration level of the contaminant warrants considering options for treatment or using an alternative source of drinking water. Your local health department or the Colorado Department of Public Health and Environment Water Quality Control Division, at 303-692-3500, can help you identify these options. You may also contact the department's environmental toxicologists at 303-692-2700 for additional health information and assistance interpreting your test results.

### **What else should I do to maintain my well?**

You should have your private well water tested at least once for all regulated contaminants, and then annually for coliform bacteria, nitrates and other contaminants of concern specific to the area where you live.

You can maintain your water supply by carefully managing activities near your well.

- Occasionally inspect exposed parts of your well for problems.
- Install a well cap or sanitary seal to prevent unauthorized use of your well.
- Hire a certified well driller for any new well construction or modification.

### **If you have additional questions, contact one of the following agencies or visit these websites:**

Your County Public Health Agency

Colorado Department of Public Health and Environment, Environmental Epidemiology Section (303-692-2700) and Water Quality Control Division (303-692-3500).

- Household Wells [http://www.cdphe.state.co.us/wq/Drinking\\_Water/Private\\_wells.htm](http://www.cdphe.state.co.us/wq/Drinking_Water/Private_wells.htm)
- Colorado Source Water Assessment and Protection: [www.cdphe.state.co.us/wq/sw/swaphom.html](http://www.cdphe.state.co.us/wq/sw/swaphom.html)

Environmental Protection Agency (800-426-4791)

- Safe Drinking Water Hotline: [www.epa.gov/safewater/drinklink.html](http://www.epa.gov/safewater/drinklink.html)
- Arsenic in Drinking Water: [www.epa.gov/safewater/arsenic.html](http://www.epa.gov/safewater/arsenic.html)
- Private Drinking Water Wells: [www.epa.gov/safewater/pwells1.html](http://www.epa.gov/safewater/pwells1.html)
- Drinking Water From Household Wells: [http://www.epa.gov/safewater/privatewells/pdfs/household\\_wells.pdf](http://www.epa.gov/safewater/privatewells/pdfs/household_wells.pdf)

The Water Systems Council (888-395-1033): [www.wellcarehotline.org](http://www.wellcarehotline.org)