

# **Arsenic in Central New Mexico: What Every Home Owner Should Know**

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## **What is Arsenic?**

Arsenic (chemical symbol As) is a naturally occurring Primary (health related) Contaminant present in both ground and surface waters. It is common in igneous geological formations, but also enters drinking water through agricultural pesticide runoff and industrial runoff. Arsenic is present in natural waters in both organic and inorganic forms. Soluble inorganic arsenic is found in ground water in an ionic (dissolved) form. It occurs in two species or valences: trivalent arsenic (As+3 or arsenite) and pentavalent arsenic (As+5 or arsenate). The more toxic trivalent arsenic must be converted to pentavalent arsenic through use of a strong oxidizer such as free chlorine (not chloramines), then removed by one of the EPA “Best Available Technologies.” Ask your public utility if it uses a disinfectant that converts As+3 to As+5.

## **Is Arsenic a Health Risk?**

Arsenic is a toxic metal that is a known carcinogen. Long term exposure is known to cause cancers of the skin, bladder, prostate, lung, kidney and liver. Arsenic increases risk of cardiovascular disease, peripheral neuropathy, skin hyper-pigmentation and keratosis (“Blackfoot Disease”) and diabetes. The major exposure pathway for arsenic is oral—drinking and cooking with untreated water. Arsenic is absorbed dermally in bathing, but the evidence for toxicity is at levels above 100 ppb, rarely seen in New Mexico.

## **How Do I Know If There Is Arsenic In My Water?**

As arsenic is colorless, tasteless and odorless, it can be detected only by testing. Use only a state certified analytical laboratory. Public water utilities are required by law to treat and monitor their water supplies for Total Arsenic (combined As+3 and As+5) and to publish the results. Private water sources and homeowners with private wells have the sole responsibility for their water quality and safety. The EPA recommends these sources be tested annually.

## **What Is the EPA National Drinking Water Standard for Arsenic?**

Effective January, 2006, the United States Environmental Protection Agency reduced the arsenic **Maximum Contaminant Level** (MCL) allowable for public water utilities from 50 parts per billion (ppb) to 10 ppb. Some states have adopted the even stricter standard of 5 ppb. Most New Mexico public utilities have been unable to comply with this new EPA Arsenic Rule. It is important to remember that the **EPA Maximum Contaminant Level Goal** (MCLG) for arsenic is zero. While this goal is not attainable by public utilities, certain in-home point-of-use (POU) drinking water systems offer arsenic reductions that approach 99%.

## **What Are the EPA Best Available Technologies (BATs) for Arsenic ?**

The EPA lists seven BATs for arsenic. However only three of them are practical for homeowners. These treatment methods include reverse osmosis (RO), activated alumina (AA) and oxidation/filtration (iron oxide media). Arsenic can be abated at point-of-entry (POE) by a whole house iron oxide system, or more economically, at point-of-use (POU)—at the kitchen sink—with a five stage reverse osmosis drinking water system. If coliform bacteria are present, EPA/WQA recommends an ultraviolet (UV) sixth stage. The Water Quality Association (WQA) Gold Seal Certification includes, yet exceeds the NSF/ANSI Standards 53 and 59 and is the recommended RO for well water with high hardness, total dissolved solids (TDS), iron or manganese. This RO treatment technology not only offers arsenic reductions approaching 99% (with a TFC membrane), but also offers the benefit of similar reductions for all bacteria and viruses, radiological contaminants including waterborne radon, manganese, nitrate, sodium, industrial and agricultural chemicals (VOCs/SOCs), disinfection byproducts (DBPs) and all other EPA Primary (health related) Contaminants.

For more information about arsenic, its toxicity and treatment visit the EPA website at [www.epa.gov/safewater/arsenic.html](http://www.epa.gov/safewater/arsenic.html) and the HydraTech website at [hydratechnm.org](http://hydratechnm.org). For testing call Assaigai Analytical Laboratory, 505-345-8964.