



1,4-Dioxane: What It Is and What It Means for Tucson Water Customers

Tucson Water is committed to providing safe, high-quality water to its customers. We are also committed to keeping our customers informed and answering questions about water issues. The following information on 1,4-dioxane is also available in Spanish upon request.

What 1,4-dioxane is and Where it is Found

1,4-Dioxane was used as a stabilizer in industrial solvents in aircraft manufacturing facilities from the 1940s to the 1970s and has been found in groundwater at the Tucson Airport Remediation Project (TARP) well field in southwest Tucson. The TARP treatment plant removes trichloroethylene (TCE) from the water pumped from the well field, but does not have the capability to remove 1,4-dioxane.

Sampling and Testing Your Water

Tucson Water collects about 12,000 water samples each year from across its water service area. The utility's professional staff performs tens of thousands of tests on these samples at Tucson Water's water quality laboratory at the Hayden-Udall Treatment Facility in Avra Valley. Some samples are also tested at independent labs. The utility reports the results of these tests regularly to the Arizona Department of Environmental Quality (ADEQ).

The Water is Safe

Water produced from the TARP treatment facility meets all federal drinking water standards and is safe for drinking, cooking and bathing. Tucson Water regularly takes samples at a number of sites in the area where water from the TARP facility is delivered to ensure safety.

No 1,4-dioxane in Water Delivered to the Area of the TARP Well Field

The water delivered to the southern part of Tucson Water's service area – the area at and near the TARP well field – comes from the Santa Cruz and South Side Well Fields and from the Clearwater Facility in Avra Valley and contains no 1,4-dioxane.

Monitoring 1,4-dioxane in the Water Delivery Area

Water from the TARP facility is delivered to the west-central and northwest portions of Tucson Water's service area. Tucson Water regularly collects samples and tests for 1,4-dioxane at numerous locations throughout the service delivery area.

EPA Risk Assessment and New Advisory Level

The EPA does not regulate 1,4-dioxane and there is no enforceable Maximum Contaminant Level (MCL) for this constituent. However, the agency issues advisories as guidelines for water utilities. In 2010, the EPA completed a new risk assessment that shows 1,4-dioxane to be more likely to cause cancer than was previously estimated. This past January, the EPA issued a new drinking water health advisory for 1,4-dioxane of 0.35 parts per billion – one that is significantly lower than the most recent advisory level of 3 parts per billion.

Current Method to Reduce 1,4-dioxane

Tucson Water blends water treated at the TARP plant with water from other sources to reduce 1,4-dioxane levels in drinking water. A home treatment system will not remove 1,4-dioxane from water.

Where the Water is Delivered

Water from the TARP plant is put into the water distribution system and delivered to west-central and northwest portions of Tucson Water's service areas. [Click here](#) to view the map showing approximately where this water is delivered.

Building a Treatment Facility to Remove 1,4-dioxane

With the EPA issuing a new, lower advisory level for 1,4-dioxane of 0.35 parts per billion, Tucson Water must move beyond its current method of blending TARP water with water from other sources to reduce 1,4-dioxane levels in drinking water. Tucson Water believes it is in the best interests of its customers to build a new treatment facility that will remove 1,4-dioxane from the water.

The New Process to Remove 1,4-dioxane

The new facility will employ advanced oxidation technology that uses ultraviolet light and hydrogen peroxide to remove 1,4-dioxane from water. Ultraviolet light activates hydrogen peroxide, which oxidizes 1,4-dioxane to its base elements of water and carbon dioxide. 1,4-Dioxane is removed and the water is then quenched to remove residual hydrogen peroxide by running it through a granular activated carbon filter before it enters the water distribution system. This advanced oxidation process offers the most cost-effective and viable treatment option available.

Location of the New Facility

The facility to remove 1,4-dioxane from this water will be built at the existing TARP facility near Irvington Road, west of Interstate 19. It will be located inside the current perimeter of the TARP. Air-stripping to remove TCE from the water, the current function of the TARP facility, will continue.

Timeline for Construction and Operation

Tucson Water has conducted pilot testing of advanced oxidation processes and is designing a facility that will efficiently remove all 1,4-dioxane from water. Completion of the new facility is expected by the spring of 2013.

Will Customers See a Rate Increase to Pay for the Facility?

Tucson Water is working to gain reimbursement for facility expenditures with those parties responsible for the presence of 1,4-dioxane in our drinking water. Preliminary estimates for a facility using advanced oxidation technology to remove 1,4-dioxane are about \$10 million in capital costs and approximately \$225,000 per year for operation and maintenance. Tucson Water has been aware of the need for this expense and funding is already allocated in the utility's capital budget plan. The responsible parties (not Tucson Water) currently pay for the operation of the TARP facility; Tucson Water will be seeking a similar funding arrangement for the 1, 4-dioxane facility.

Regular Communication with Mayor and Council

Tucson Water provides ongoing updates to the Mayor and Council about the EPA's guidelines, the technology to remove 1,4-dioxane, and the construction of the new treatment facility.

Reporting to the Unified Community Action Board (UCAB) and to ADEQ

Tucson Water reports regularly to UCAB, the citizens group charged with monitoring the TCE remediation process and 1,4-dioxane levels. Tucson Water also reports the results of all water testing across its service area to the ADEQ on a regular basis. ADEQ is responsible for overseeing and enforcing all EPA water quality regulations in Arizona.

Customer Outreach about 1,4-dioxane

Tucson Water will continue to provide information about 1,4-dioxane and the construction of the 1,4-dioxane treatment facility as it progresses. Tucson Water also offers speakers for your organization, guided tours, brochures, streaming video, fact sheets, and information in Spanish upon request.

Putting one part per billion into perspective

To give you an idea of how small one part per billion is, it's like 1 drop of water in 22,000 gallons of water or a single inch in 16 miles.

For more information:

Call the Tucson Water Public Information Office at (520) 791-4331

E-mail [Fernando Molina, Public Information Officer](mailto:Fernando.Molina@tucsonwater.com)

Visit the [Tucson Water web site](http://www.tucsonwater.com)