

Arsenic Master Plan

Introduction

In October 2001, the U.S. Environmental Protection Agency announced its decision to require public water systems to lower the allowable arsenic content in drinking water from 50 parts per billion to 10 ppb by January 23, 2006 (five years from the date that EPA promulgated the arsenic rule).

Arizona is among a handful of Western states whose soil contains naturally high levels of arsenic, which can increase risks for some types of cancer. Although drinking water systems around the state are able to meet the current 50 ppb standard, roughly one-third of the systems subject to the new standard presently exceed the 10 ppb standard. There are 287 small water systems (serving fewer than 10,000 people) in Arizona affected by the new arsenic standard. Of these, 60 percent serve between 25 and 500 customers.

As part of an effort to help Arizona communities comply with the new, stricter federal standard for arsenic in drinking water, the Arizona Department of Environmental Quality focused resources and expertise on the challenge by forming a coalition representing business, academia, municipal government agencies and the scientific community. The

result of the coalition's work is a targeted compliance strategy for Arizona water systems called the Arsenic Master Plan.

The Arsenic Master Plan helps communities identify effective, low-cost methods to comply with the new standard. Though intended for small water systems, information contained in the plan may be useful to larger systems as well. Components of the plan include:

- An overview section outlining in simple terms the compliance requirements;
- A section on compliance options for various types of systems and contaminant levels;
- A funding resource section to help system operators identify potential funding sources; and
- A technical assistance section identifying technical experts in each area available to assist with compliance or funding issues.

Highlights from each of these sections follow.

Compliance Requirements

Applicability. The arsenic regulation applies to all *community water systems* (i.e., public water systems that serve 15 or more service connections used by year-round residents or that serve 25 or more



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year-round residents) and all *non-transient, non-community water systems* (i.e., public water systems that serve 15 or more service connections used by the same people for at least six months a year or serve the same 25 or more people for at least six months a year). These systems must ensure by January 23, 2006, that their drinking water does not exceed the new 10 ppb standard. Until that date, the current 50 ppb standard remains in effect, and water systems are to continue monitoring for arsenic under their current monitoring frequency.

Monitoring. Water systems must collect compliance samples annually from each existing surface water point of entry into a distribution system and once every three years from existing groundwater points of entry into the distribution system. Quarterly monitoring may be required at points of entry if sampling detects an exceedance of the 10 ppb standard. ADEQ may reduce monitoring frequency to once every nine years if sampling results over time warrant this reduction.

Violation. A system will not be considered in violation of the standard until it has completed one year of quarterly sampling unless any quarterly sample causes the running annual average to exceed the 10 ppb standard at any sampling point.

Public Notification and Consumer Confidence Reporting Requirements. The arsenic rule specifies numerous public notification and CCR requirements and mandatory language that water systems must use. These requirements depend on the level of arsenic detected at a point of entry or if a water system fails to comply with the rule's monitoring and reporting requirements.

Exemptions from the January 23, 2006 Compliance Date. Water systems may apply to ADEQ for a time extension to come into compliance with the new 10 ppb arsenic standard if they are unable to meet the January 23, 2006 compliance date. Several conditions must be met to qualify for an exemption. An exemption can initially be granted for up to three years. Additionally, ADEQ may grant up to two three-year extensions to the exemption provided the water system continues to demonstrate it qualifies for an exemption.

Treatment and Non-treatment Options. Water systems may choose from treatment and non-treatment options to comply with the new arsenic standard. *Non-treatment options*, such as blending a high arsenic water source with another source that is lower in arsenic, replacing water sources with new sources or becoming consecutive to another water system, tend to be more economical and easier to implement and manage than treatment options. *Treatment options* may include reverse osmosis, activated alumina, ion exchange and lime softening. Some may be placed in the household or prior to the distribution system. They tend to be more expensive to implement and complicated to manage than the non-treatment options.

Compliance Options

This section of the Arsenic Master Plan provides water systems with a comprehensive analysis and information needed to implement treatment as a solution to elevated arsenic levels. The effort characterized the water quality and infrastructure of the affected water systems, identified cost-effective technologies that small water systems could implement and developed an Arizona-specific

ic cost model for these favorable technologies. It also determined capital and annual operating and maintenance costs for each system's points of entry.

ADEQ and the Arizona Water Infrastructure Finance Authority (WIFA) jointly funded the development of a Web-based decision analysis tool to assist water systems in evaluating and selecting technology for arsenic removal. The Web tool will help identify planning-level installation and operation costs for feasible treatment technologies.

Funding Sources

As a result of the arsenic rule, some water systems will be installing and operating treatment facilities for the first time. There are several methods a water system may use to finance construction and operation expenses, such as issuing bonds or obtaining grants or loans. Regardless of the funding mechanism selected, the system will need to ensure its user rates are adequate to allow debt service repayment.

Rate Structure Worksheet. Water system rate structures vary. Regardless of the method of user fee employed, the water system should be collecting for the true cost of water. Included in the Arsenic Master Plan is a worksheet developed by the Missouri Department of Natural Resources (MDNR) that will help water systems determine the true cost of water for their system. Water systems will use the worksheet to determine the true cost of water for their system as it currently exists, and then compare the results with their current user rates to see if they are charging customers appropriately. Next, they will use the worksheet to determine the rate structure that will be needed to finance the

arsenic treatment costs as well as maintain the system's day-to-day operations.

The worksheet offers a series of charts and graphs that show how rates need to be adjusted and the total revenue that is used to support each component of the water system's operation. These charts and graphs are excellent visual tools to use with customers and regulating authorities to explain the need for higher user rates. ADEQ is currently developing a manual to help systems understand and use this powerful financial analysis tool. ADEQ also will be conducting workshops in 2003 to help systems determine the accuracy of their current rates and to see how those rates will need to be adjusted to pay for arsenic treatment.

Begin Now to Adjust Rates. Water systems will need to begin the process of adjusting rates for arsenic compliance costs as soon as possible to ensure their rate case will be processed in time to complete necessary capital improvements before the January 23, 2006 compliance deadline. Water systems regulated by the Arizona Corporation Commission should be aware of the process used for adjusting rate structures. Others likely have a rate structure that operates off a monthly or annual assessment, or they rely on user donations as expenses rise. Water systems will need to have a consistent, steady flow of revenue to qualify for any financial assistance from lenders.

Financial Assistance Organizations. There are a few financial assistance organizations that specialize in financing water system infrastructure projects. The Arsenic Master Plan describes these organizations with the types of water systems eligible for assistance.

The organizations include:

- Arizona Water Infrastructure Financing Authority (www.wifa.state.az.us)
- U.S. Department of Agriculture Rural Utilities Service, Arizona Rural Development (www.usda.gov/rus/water)
- Border Environmental Cooperation Commission, North American Development Bank (www.cocof.org/englishbecc.html)

Technical Assistance

The Arsenic Master Plan recognizes that many water systems lack the expertise or resources needed to comply with the new arsenic standard. This section of the plan is designed to help individual water systems determine what type of assistance is needed and to provide a list of people and organiza-

tions that can help. By following a simple step-by-step process, water system owners and operators should be able to identify their needs and find appropriate contractors and vendors to help in meeting those needs.

The plan also establishes a *mentoring program* that builds on water systems' professional commitment to raise the industry's knowledge base and coordinates putting mentoring utilities in touch with others in need of support and direction. An element of the mentoring program is the Rapid Information Provider Team, which will consist of 10 members that ADEQ selects for one-year terms. The team's expertise will range from operations to regulatory compliance and will be available to water systems facing emergency situations.

Questions about the arsenic regulation or the Arsenic Master Plan can be directed to ADEQ at (602) 771-4644 or, toll free in Arizona, (800) 234-5677.