



If you do not have a copy of materials for *Capacity Building Tools for Small Systems*, a copy can be downloaded from the Encounter Collaborative meeting page:

https://e1.e2c.com/enc/enc_pc_pmtg?emgid=11327788020657

Encounter Customer Care

- General Technical Support at Encounter
 - 800-290-5900, Option 1
- Or press *0 on your telephone when dialed into your Express, Priority, or Broadcast
- Number to be transferred directly to Customer Care



How many people are attending at your location?

- 1 Person
- 2 - 4 People
- 5 - 10 People
- 11 - 20 People
- More than 20 People





Disclaimer

The examples included in this presentation are intended for discussion purposes only. Throughout this presentation, the terms “state” or “states” are used to refer to all types of primacy agencies including U.S. territories, Indian tribes, and EPA Regions. The statutory provisions and EPA regulations described in this document contain legally binding requirements. This presentation is not a regulation itself, nor does it change or substitute for those provisions and regulations. Thus, it does not impose legally binding requirements on EPA, states, or public water systems. This guidance does not confer legal rights or impose legal obligations upon any member of the public. While EPA has made every effort to ensure the accuracy of the discussion in this presentation, the obligations of the regulated community are determined by statutes, regulations, or other legally binding requirements. In the event of a conflict between the discussion in this presentation and any statute or regulation, this presentation would not be controlling.

Questions?



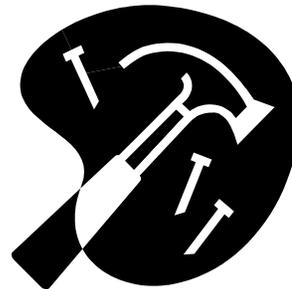
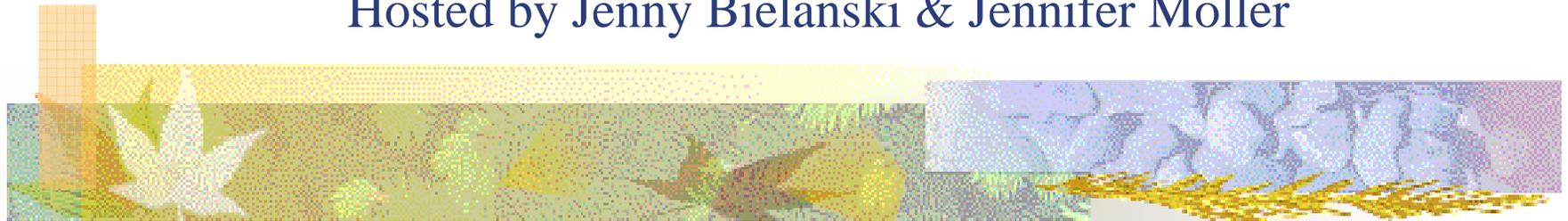
Please send your questions & comments via the Web console located on the bottom right of your screen.



Capacity Building Tools for Small Systems

January 10th & 11th, 2006

Hosted by Jenny Bielanski & Jennifer Moller



What is your affiliation

- State Regulatory Staff
- Technical Assistance Provider
- Water System Owner or Operator
- USEPA
- Other





Agenda for the Web cast

- Arsenic Compliance Tools for Systems
 - Questions
- Setting Small Drinking Water System Rates for a Sustainable Future
 - Questions
- Highlights & Previews
 - Questions & Open Discussion

Arsenic Compliance Tools for Systems



Five new educational, multimedia products about arsenic treatment



Arsenic Rule Basics

- MCL of 10 ppb promulgated 1/22/01
- January 23, 2006 compliance deadline
- Systems given 5 years to comply
- ~4100 systems had a sample above 10 ppb

What is your level of expertise with arsenic treatment?

- None
- Beginner
- Moderate
- Expert





Arsenic Virtual Trade Show

- Standalone website at <http://www.arsenictradeshow.org>
- Allows users to:
 - **LEARN** about arsenic treatment technologies
 - **DECIDE** on mitigation strategy
 - **PREPARE** to work with treatment vendors
 - **FIND** treatment vendors who meet your needs

web

print

CD

DVD

web



Screenshot from the Arsenic Virtual Trade Show

Arsenic Trade Show - Microsoft Internet Explorer

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Address <http://www.arsenictradeshow.org/>

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Arsenic Virtual Trade Show

Home Learn Decide Prepare Find



The **Arsenic Virtual Trade Show** is a learning portal designed to help water systems comply with EPA's [Arsenic Rule](#).

 **LEARN** about arsenic treatment technologies by reading in-depth [descriptions](#).

Learn

 **DECIDE** on mitigation strategy that's right for you by working through [decision trees](#).

Decide

 **PREPARE** to work with treatment vendors by reading a [brochure](#) which will help you better understand their claims.

Prepare

 **FIND** treatment vendors who meet your needs by conducting a search of our [database](#).

Find

Would you like to sign up to be notified about website updates? Please enter your email to be added to the list:

Are you looking for information on the regulatory requirements?

Previous training materials?

Just curious about arsenic in drinking water?

Visit EPA's [Arsenic in Drinking Water](#) homepage for this information and more!



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Arsenic Virtual Trade Show

[Home](#) [Learn](#) [Decide](#) [Prepare](#) [Find](#)



Technology

- Non Treatment
- Treatment
 - Adsorption
 - Ion Exchange
 - Coagulation



Compliance Options: Treatment Technology Descriptions

Learn

In accordance with the Arsenic Rule, systems must demonstrate compliance with the revised arsenic maximum contaminant level (MCL) (10 ppb) at each entry point to the distribution system. Systems utilizing multiple sources will need to consider a mitigation strategy for each entry point to the distribution system that exceeds the revised MCL.

A system will need to optimize existing treatment or install new treatment if it has high arsenic sources and cannot achieve compliance through a non treatment options such as blending, seasonal use of sources, or development of an alternative source. The system should first determine whether any of its existing treatment technology is capable of removing arsenic even though it may not be doing so currently.



Screenshot from the Arsenic Virtual Trade Show "Decide" Section

Tree 2 Treatment Selection

Are the problematic source(s) pre-oxidized with either chlorine, potassium permanganate, or ozone?

Yes
No

[Back](#)

[Start Over](#)

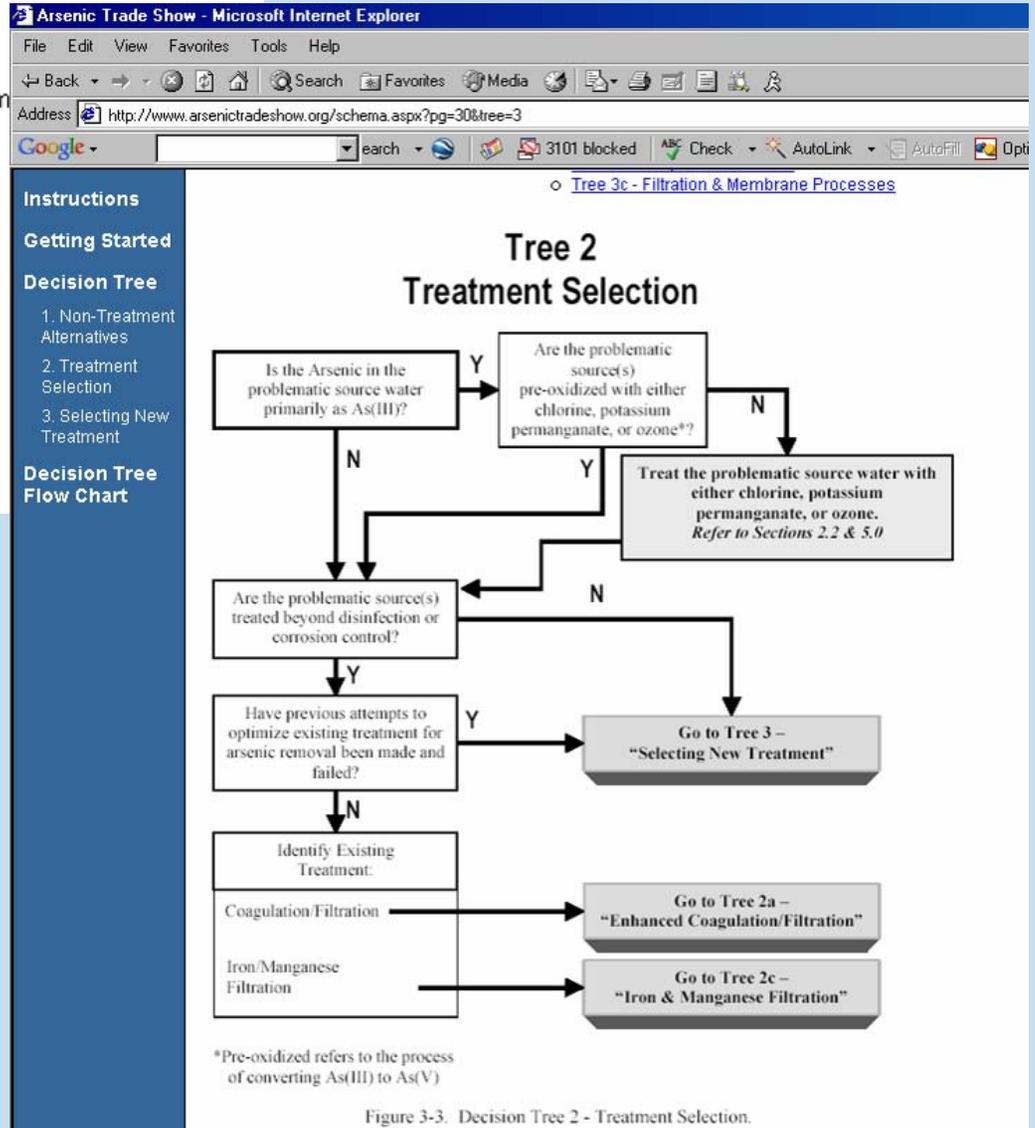


Figure 3-3. Decision Tree 2 - Treatment Selection.



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Arsenic Virtual Trade Show

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Preparing for a Vendor

There are a number of technologies to choose from, and numerous engineering firms and treatment vendors who can help you with treatment selection, installation, and operation.

Choosing the right technology and firm for your system can be a confusing and time consuming process. EPA has developed handouts and a series of questions and answers, to help you navigate through the process of selecting the most appropriate treatment for your system.

By working through the handouts and by reading the questions and answers, you will be able to more confidently choose an engineer or a vendor that you trust to help you make the best choices for your system.

Click this link to view the complete guide to [Evaluating Arsenic Treatment Providers](#) (EPA-816-G-03-001).

- Before you initiate contact with a treatment vendor or engineer, you will need to gather basic information about your system. Fill out the [Water System Information Summary Form](#) and have it on hand for engineers and vendors who you could potentially work with.
- Have prospective engineering firms fill out the [Engineering Firm Information Summary](#) and use it to review each firm's experience with installing arsenic technologies at systems like yours.
- Have prospective vendors fill out the [Vendor Information Form](#) and use it to review the each firm's experience and the types of treatment technology it offers.
- For a list of suggested questions to ask prospective Engineering Firms or Treatment Technology Vendors, click on one of the links below.
 - [Questions for Selecting an Engineering Firm](#)
 - [Questions for Selecting a Vendor](#)

[Home](#) | [Learn](#) | [Decide](#) | [Prepare](#) | [Find](#) | [Contact Us](#)

The Arsenic Virtual Trade Show is a collaboration between EPA's [Office of Ground Water & Drinking Water](#) and the [National Risk Management Research Laboratory](#)

Click here to
download brochure



Screenshot from the Arsenic Virtual Trade Show Brochure "Evaluating Arsenic Treatment Providers"

http://www.arsenictradeshow.org/documents/Arsenic_Treatment_Vendor_Guide.pdf - Microsoft Internet Explorer

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EPA
United States
Environmental Protection
Agency

Evaluating Arsenic Treatment Providers



An iron-based adsorptive media arsenic removal system in Rimrock, Arizona.

A Guide for Public Water Systems



Screenshot from the Arsenic Virtual Trade Show "Find" Section

Arsenic Trade Show - Microsoft Internet Explorer

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Address <http://www.arsenictradeshow.org/VendorSearch.aspx>

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Arsenic Virtual Trade Show

Home Learn Decide Prepare Find



Find a Vendor
Vendor Sign-Up

 **Find a Vendor**
You can find a vendor by the technology/service they provide or by the area they serve. To do that follow the four steps listed below and select one or more of each of the options. When you are finished click the button labeled "Find".

Find

**No attempt was made to examine, screen or verify company information. The inclusion of companies and their products in this database does not constitute or imply endorsement or recommendation by the EPA.*

Specify Search Criteria

Step 1. Specify Treatment Technologies

- Adsorption media
- Ion exchange
- Coagulation/Filtration
- Iron removal
- POU/POE



Screenshot from the Arsenic Virtual Trade Show Vendor Profile in the "Find" Section

Find a Vendor
Vendor Sign-Up

Find

Follow the four steps listed below and select one or more of each of the options. When you are finished click the button labeled "Find".

**No attempt was made to examine, screen or verify company information. The inclusion of companies and their products in this database does not constitute or imply endorsement or recommendation by the EPA.*

There are 3 vendors that meet your search criteria. To perform another search scroll down to the search criteria, make any desired changes, and click, "Find" button.

ADI International inc.

Contact Person: Eric Winchester

Address 1: 180 Main Street

Address 2: Unit 6

City: Salem

State: NH

Zip Code: 03079

Telephone:

E-Mail: elw@adi.ca

Web Site: www.adi.ca

Program Participation

This vendor participates in the following EPA programs. Click the links for more information about these programs

[Environmental Technology Verification Program](#)



[Treatment Technology Research Demonstrations](#)





Brochure for Systems

- *Evaluating Arsenic Treatment Providers*
- Treatment strategy summary chart
- Fill-in forms to improve communication
- Questions to ask vendors & engineers
- EPA #816-R-05-008

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Screenshot from the Arsenic Virtual Trade Show Brochure "Evaluating Arsenic Treatment Providers"

http://www.arsenictradeshow.org/documents/Water_System_Information_Summary.pdf - Microsoft Internet Explorer

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Water System Information Summary Form

Contact Information			
Utility Name		Phone Number	
Site Location		E-mail	
Operator Name		Address	
Main Contact			
Other Key Information			
Site Location Parameters			
System Type (e.g., municipal, school, etc.)			
Population Served			
Service Connections			
Design Flow ¹ (max. design flow rate, in GPM)			
Average Flow (typical demand, in GPM)			
Average Gallons Per Day			
Estimated Usage (gallons per year)			
Disinfection, Storage, and Discharge			
Describe Existing Pretreatment			
Describe Existing Disinfection			
Disinfection Injection Point			
Pump Operation and Pressure (in psi)			



Screenshot from the Arsenic Virtual Trade Show Brochure "Evaluating Arsenic Treatment Providers"

http://www.arsenictradeshow.org/documents/Arsenic_Treatment_Vendor_Guide.pdf - Microsoft Internet Explorer

Address: http://www.arsenictradeshow.org/documents/Arsenic_Treatment_Vendor_Guide.pdf

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Treatment Technology Briefs

These brief descriptions of the available treatment and non-treatment options provide an overview of process characteristics as well as key considerations for selecting the option. They are designed to function as a basic reference for beginners and a quick guide to supplement additional investigation.

Non-Treatment Options	Brief Description	Considerations
Develop a New Source	The installation or procurement of a new low arsenic source of supply.	<ul style="list-style-type: none"> ▶ Simple. ▶ Most realistic with multiple water sources where at least one source can be relied upon to produce water with arsenic below the MCL. ▶ Constraints include inadequate capacity or water rights.
Seasonal or Peaking Use	System switches high arsenic source to seasonal or peaking use only.	<ul style="list-style-type: none"> ▶ Not an option for systems with only one source. ▶ State requirements may preclude this option.
Blending	Operating low arsenic source in conjunction with the high arsenic sources.	<ul style="list-style-type: none"> ▶ Must have more than one source. ▶ Wells with low arsenic levels must be continuously reliable and have a common header to allow for mixing with high arsenic source water.

Treatment Options	Brief Description	Considerations
Iron-based sorbents	Iron-based granular materials are placed in a pressure vessel and water is passed through the vessel. Dissolved As(V) is adsorbed onto the iron medium. After the medium is exhausted, it must be disposed of and replaced.	<ul style="list-style-type: none"> ▶ Optimal performance is obtained at lower pH values. ▶ Recommend an empty bed contact time (EBCT) of 5 minutes and a hydraulic loading rate of 5 gpm/sft. ▶ Phosphate and silica have been shown to compete aggressively with As(V) for adsorption sites. ▶ Has not exceeded Resource Conservation and Recovery Act (RCRA) toxicity characteristics.

11 x 8.5 in



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Vendor Information Form

Company Name		Key Contact Name	
Phone Number		Key Contact E-mail	
E-mail		Key Contact Phone	
Address			

Arsenic Treatment Technologies

In the space provided, describe the arsenic treatment technologies that your firm provides. List NSF certifications, expertise required to operate the unit, and the type of residual produced.

Treatment Description	NSF Certification	Operator Expertise Required	Residuals Generated

Units Currently in Place

In the space below, provide examples of arsenic treatment units that you have installed, if any. Briefly describe the type and size of the unit and the size and type of system at which the unit was installed. Please also provide system contact information.

Water System	Contact Info (Name/Phone)	System Size (pop., service connections, design flow)	Describe Treatment Installed (including dates of installation)

Do you pilot test units prior to installation?

Do you provide start-up services and technical assistance?

11 x 8.5 in



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Operations

Questions	Reason for Question or What to Look for in the Answer
<i>What is the ease of operation? What level of operator expertise is necessary?</i>	Get a detailed description of how the system operates and a list of existing plants in operation that you can contact for more information.
<i>Can the facility be automated? Will I have to provide special monitoring and communication equipment? How much time will operation and maintenance require?</i>	Some treatment technologies can be easily automated. Ask whether you can add automation in the future at a reasonable cost.
<i>Will there be headlosses through the system that are likely to require a change-out or modification of the well's pump? If so, how much?</i>	Some systems have significant head loss through the treatment plant. Determine if the source water pump is capable of meeting the head loss and providing adequate system pressure and flow.
<i>Can the technology be easily updated to increase capacity or to use another media? Can it remove other contaminants?</i>	If the equipment is adaptable you will not be tied to one supplier. For example, if the vessel has a typical EBCT, then the replacement media can be from any supplier that can provide the treatment with the same EBCT. Also, with some modification, adsorptive media treatment systems could be adapted to coagulation/filtration.
<i>Will you pilot your technology at my site? How much will that cost?</i>	Some suppliers have a database available such that they do not need to pilot test their technology at your site. Some vendors will pilot test their technology if you provide their research center with enough water. If they will not conduct a pilot test, ask for performance certifications and guarantees.



Interactive Arsenic Workshop

- CD-ROM version of 11 training workshops
- Individualized learned experience
- Audio commentary from arsenic experts
- Arsenic A&Q game
- EPA #625-C-05-004

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Jewel case cover of the Interactive Arsenic Workshop



Interactive Workshop on Arsenic Removal From Drinking Water





Screenshot from the Interactive Arsenic Workshop

Macromedia Flash Player 7

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EPA ARSENIC REMOVAL FROM DRINKING WATER TRAINING CD

☰ ? X

MAIN MENU

- ◆ INTRODUCTION
- ◆ WORKSHOP ACTIVITIES
- ◆ PRESENTATIONS
 - ◆ Introduction
 - ◆ Treatment Technology
 - ◆ Other Treatment Issues
 - ◆ Treatment Costs
 - ◆ Arsenic Programs
- ◆ WORKSHOP EXERCISES
- ◆ WORKSHOP Q&A
- ◆ TEST YOUR KNOWLEDGE
- ◆ CURRENT ACTIVITIES
- ◆ ADDITIONAL RESOURCES
- ◆ FULL TEXT VERSION



DENNIS CLIFFORD

Contact Information
placeholder text

OXIDATION, SPECIATION, & OCCURRENCE

**Arsenic Chemistry, Occurrence,
Speciation, and Oxidation**

by
Dennis Clifford and Gautam Samanta
University of Houston
Houston, TX

*USEPA Workshop on Arsenic Removal from
Drinking Water, Aug 2005, Cincinnati, OH*

◀ Previous ▶ Next 1 of 39 slides ▶ Play Audio



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EPA ARSENIC REMOVAL FROM DRINKING WATER TRAINING CD

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MAIN MENU

- INTRODUCTION
- WORKSHOP ACTIVITIES
- TEST YOUR KNOWLEDGE**
- ARSENIC RULES A&Q!
- CURRENT ACTIVITIES
- ADDITIONAL RESOURCES
- FULL TEXT VERSION

By the Book	Go With the Flow	Extra, Extra	Red Light, Green Light	Ballyhoo
100	100	100	100	EPA
200	200	200	200	200
300	300	EPA	300	300
400	400	400	400	400
EPA	500	500	500	500



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EPA ARSENIC REMOVAL FROM DRINKING WATER TRAINING CD

MAIN MENU

- INTRODUCTION
- WORKSHOP ACTIVITIES
- TEST YOUR KNOWLEDGE
- CURRENT ACTIVITIES**
- BACKGROUND
- SITE LOCATIONS
- ADDITIONAL RESOURCES
- FULL TEXT VERSION

CURRENT ACTIVITIES: SITE LOCATIONS

The map below shows the locations of the U.S. EPA demonstration sites as well as the specific EPA regions in which they are found. The map also indicates which sites have begun sampling and which have not.
Mouse over a site number to view details for that location.

20

Demo Site	Population	Technology
Desert Sands MDWCA, NM	1886	US Filter/GFH



Arsenic Treatment Showcase

- Treatment technology videos on DVD
- Arsenic mitigation checklist
- 5 videos featuring demo program sites
- EPA #816-C-05-005

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web



Screenshot of the Arsenic Treatment Showcase DVD





Arsenic Safewater Site

- Development of Topics Lite sidebar items
- Reorganization of existing content
- Portal page with clear directions for consumers and PWS
- <http://www.epa.gov/safewater/arsenic>

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Arsenic in Drinking Water

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- [Funding Sources](#)
- [Publications](#)
- [Research](#)

Arsenic is a semi-metal element in the periodic table. It is odorless and tasteless. It enters drinking water supplies from natural deposits in the earth or from agricultural and industrial practices.

Non-cancer effects can include thickening and discoloration of the skin, stomach pain, nausea, vomiting; diarrhea; numbness in hands and feet; partial paralysis; and blindness. Arsenic has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate.

EPA has set the arsenic standard for drinking water at 10 parts per billion to protect consumers served by public water systems from the effects of long-term, chronic exposure to arsenic. Water systems must comply with this standard by January 23, 2006, providing additional protection to an estimated 13 million Americans.

This web site is designed to provide you with information about arsenic in drinking water and provide guidance materials to help the states and water systems comply with the standard.

[Basic Information](#) - Learn more about the sources of arsenic, health effects and our frequently asked questions.
[Arsenic Rule](#) - Get updated information on the arsenic rule, including quick reference guides. The history of the rule-making is also featured.
[Compliance Help](#) - If you need to comply with the arsenic rule, visit this page to get available tools and training information.
[State Guidance](#) - If you are with a state agency, visit this page to get available guidance information about arsenic implementation.
[Funding Sources](#) - This page gives you the information you will need to seek funding to help you comply with the arsenic rule.
[Publications](#) - Visit a list of all the publications offered by EPA on arsenic. Many are on-line for your use.
[Research](#) - Find out about EPA's research program on arsenic.

Arsenic Rule at a Glance

Maximum Contaminant Level
in parts per million (ppm)
MCL = 0.010 ppm

Maximum Contaminant Level Goal
MCLG = 0 ppm

Health Effects
Skin damage or problems with circulatory systems, and may have increased risk of getting cancer

Sources of contamination
Erosion of natural deposits; runoff from orchards, runoff from glass & electronic production wastes

For other contaminants and their MCLs, [visit this page](#).

[Safewater Home](#) | [About Our Office](#) | [Publications](#) | [Questions & Answers](#) | [Links](#) | [Office of Water](#) | [En Español](#)

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Last updated on Wednesday, December 14th, 2005
URL: <http://www.epa.gov/safewater/arsenic/>



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[State Guidance](#) - If you are with a state agency, visit this page to get available guidance information about arsenic implementation.
[Funding Sources](#) - This page gives you the information you will need to seek funding to help you comply with the arsenic rule.
[Publications](#) - Visit a list of all the publications offered by EPA on arsenic. Many are on-line for your use.
[Research](#) - Find out about EPA's research program on arsenic.

Arsenic Rule at a Glance

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For other contaminants and their MCLs, [visit this page](#).

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Last updated on Wednesday, December 14th, 2005
URL: <http://www.epa.gov/safewater/arsenic/>



Distribution

- Postcards to systems
- Direct mailing to Regulators, TA Providers
 - Kits in the mail now!
 - Brochure delayed until week of 22nd
- By request, call 1-800-490-9198

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For More Information!

Jennifer Moller
moller.jennifer@epa.gov

202-564-3891





Questions?



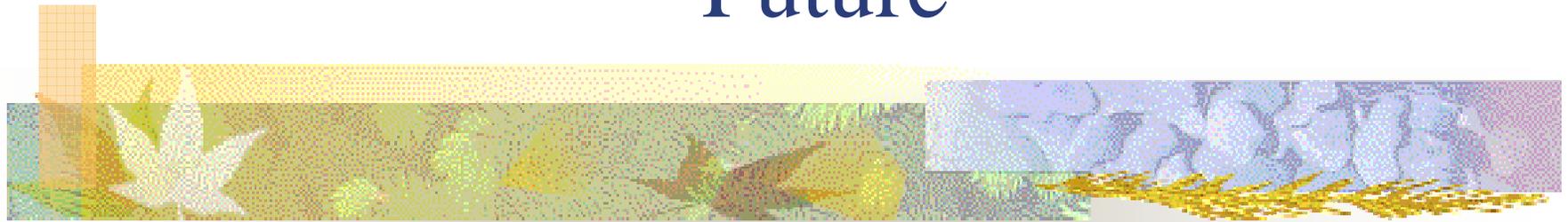
Press *8 to ask a question or make a comment over the phone or you may ask a question via the web console

How likely are you to use these tools to help a system comply?

- Very likely
- Possibly
- Unlikely
- Not likely at all



Setting Small Drinking Water System Rates for a Sustainable Future



One of the Simple Tools for Effective
Performance (STEP) Series

What is your level of expertise with rate setting?

- None
- Beginner
- Moderate
- Expert



Overview of Presentation

- Four Pillars of Sustainable Infrastructure
- Benefits of sustainable pricing
- 7 steps for setting sustainable rates
- Q & A



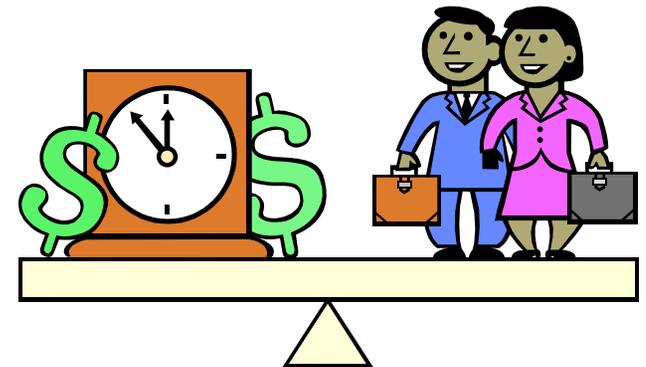
Four Pillars of the Sustainable Water Infrastructure Initiative

- **Better Management**
- **Full-Cost Pricing**
- **Water Efficiency**
- **Watershed Approach**



Full-Cost Pricing

- Charging customers for the actual cost of water service
- Recovering costs of operation, treatment, storage, and distribution

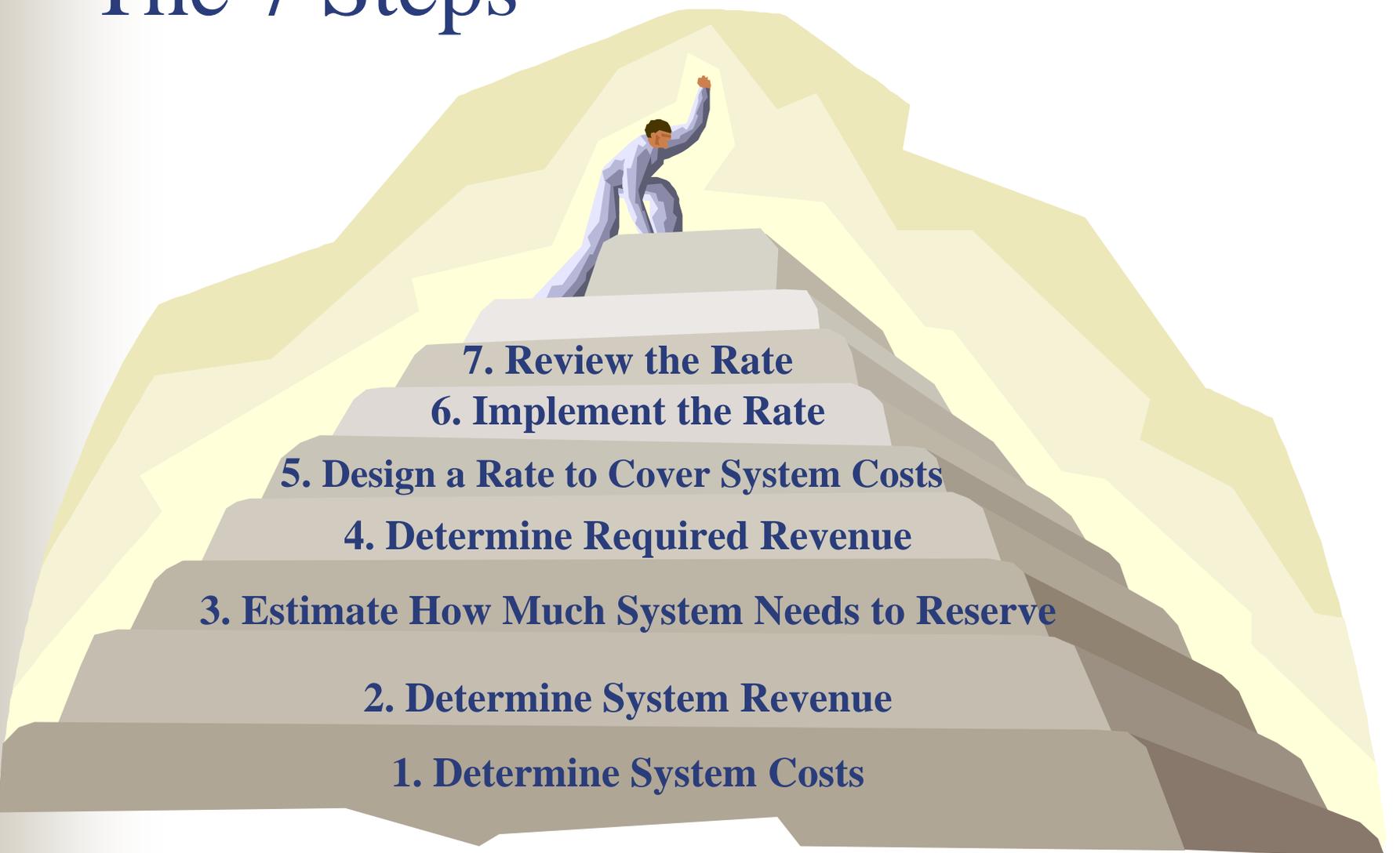




Benefits of Sustainable Pricing

- Maintain financial stability by ensuring a sufficient revenue stream
- Reserve funds to cover future asset rehabilitation and repair projects, security upgrades, etc.
- Deliver fairly priced, high-quality drinking water
- Help to achieve and maintain water system capacity

The 7 Steps



7. Review the Rate

6. Implement the Rate

5. Design a Rate to Cover System Costs

4. Determine Required Revenue

3. Estimate How Much System Needs to Reserve

2. Determine System Revenue

1. Determine System Costs

Step 1: Determine System Costs

Knowing all costs

+

Understanding how costs have changed in the past and can change in the future

=

Knowing how much money the system will need to collect from its customers every year

Annual Costs worksheet

Annual Costs worksheet	
Date worksheet Completed/Updated:	
Personnel Costs	_____
Non-Personnel Costs (excluding debt service)	_____
Debt Service	_____
Total Costs	_____

Example Annual Costs worksheet

Example Annual Costs worksheet	
Date worksheet Completed/Updated: <i>6/19/05</i>	
Personnel Costs	<u><i>\$126,627,</i></u>
Non-Personnel Costs (excluding debt service)	<u><i>\$84,857</i></u>
Debt Service	<u><i>\$25,570</i></u>
Total Costs	<i>\$235,054</i>

Step 2: Determine System Revenue



- Annual revenues
 - Rates, interest, and other sources of revenue
- Subsidy and transfer payments



Annual Revenue worksheet

Date worksheet Completed/Updated:

Operating Revenue and Interest

Water Sales _____

Fees and Service Charges
(include late fee, connection fee, fire fee, system development fee, etc). _____

Interest _____

Other _____

Subtotal Operating Revenue and Interest _____

Additional Revenue (Subsidies)

Grants _____

Transfer Payments _____

Other _____

Subtotal Additional Revenue (Subsidies) _____

Total Annual Revenue _____

Example Annual Revenue worksheet

Date worksheet Completed/Updated: 6/19/05	
Operating Revenue and Interest	
Water Sales	\$221,465
Fees and Service Charges (include late fee, connection fee, fire fee, system development fee, etc).	\$4,881
Interest	\$967
Other	\$711
Subtotal Operating Revenue and Interest	\$228,024
Additional Revenue (Subsidies)	
Grants	\$1,824
Transfer Payments	\$4,000
Other	\$432
Subtotal Additional Revenue (Subsidies)	\$6,256
Total Annual Revenue	\$234,280



Step 3: Estimate How Much To Reserve

- Reserves help fund asset replacement and rehabilitation
- Based on Capital Improvement Plan
- How to estimate the costs of maintaining and replacing system assets
 - Develop an inventory
 - Prioritize assets
 - Determine costs of asset rehabilitation and replacement
 - Decide what percentage of the costs will be covered with cash vs. grants or loans

Resources To Help Determine Reserves

- *EPA's Asset Management: A Handbook for Small Water Systems*
 - (EPA 816-R-03-016)
- *EPA's Strategic Planning: A Handbook for Small Water Systems*
 - (EPA 816-R-03-015)



Step 4: Determine Required Revenue

- System revenue should equal total costs minus any subsidies or transfer payments
- Need to estimate short and long-term costs (20 years and beyond)



Short-term Revenue Required from Your Customers worksheet

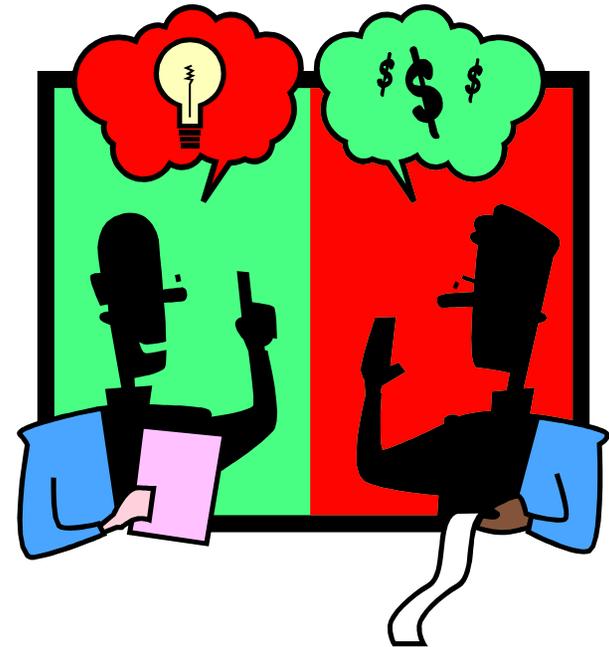
Date worksheet Completed/Updated:					
	Year:	Year:	Year:	Year:	Year:
Annual Operating Costs:					
Annual Reserve Fund Contribution:					
Total Annual Cost of Business:					
Total Additional Revenue (subsidies):					
Total Annual Revenue Needed: (Total Annual Cost of Business - Total Additional Revenue)					
Projected Revenue:					
Revenue Surplus or Deficit:					
Cumulative Surplus/Deficit:					

Example Short-term Revenue Required from Your Customers worksheet

Date worksheet Completed/Updated: <i>6/29/05</i>					
	Year: <i>2006</i>	Year: <i>2007</i>	Year: <i>2008</i>	Year: <i>2009</i>	Year: <i>2010</i>
Annual Operating Costs:	<i>\$235,054</i>	<i>\$258,555</i>	<i>\$284,250</i>	<i>\$312,000</i>	<i>\$342,850</i>
Annual Reserve Fund Contribution:	<i>\$87,400</i>	<i>\$89,350</i>	<i>\$83,300</i>	<i>\$85,670</i>	<i>\$82,670</i>
Total Annual Cost of Business:	<i>\$322,454</i>	<i>\$347,905</i>	<i>\$367,550</i>	<i>\$397,670</i>	<i>\$425,520</i>
Total Additional Revenue (subsidies):	<i>\$6,256</i>	<i>\$8,100</i>	<i>\$7,900</i>	<i>\$8,000</i>	<i>\$8,600</i>
Total Annual Revenue Needed: (Total Annual Cost of Business – Total Additional Revenue)	<i>\$316,198</i>	<i>\$339,805</i>	<i>\$359,650</i>	<i>\$389,670</i>	<i>\$416,920</i>
Projected Revenue:	<i>\$228,024</i>	<i>\$230,500</i>	<i>\$235,820</i>	<i>\$239,600</i>	<i>\$245,200</i>
Revenue Surplus or Deficit:	<i>(\$88,174)</i>	<i>(\$109,305)</i>	<i>(\$123,830)</i>	<i>(\$150,070)</i>	<i>(\$171,720)</i>
Cumulative Surplus/Deficit:	<i>(\$88,174)</i>	<i>(\$197,479)</i>	<i>(\$321,309)</i>	<i>(\$471,379)</i>	<i>(\$643,099)</i>

What if a System's Costs Exceed Its Revenue?

- Reduce operating costs
- Find additional sources of revenue
- Restructure
 - Purchase water
 - Consolidate operations
 - Contract out operation and maintenance





Step 5 - Design a Rate to Cover Costs

- Choosing a rate structure
 - Rate stability
 - Rate predictability
 - Number of customers
 - Customer classes
 - Water use
 - Customer needs



Step 5 - Design a Rate to Cover Costs

- Common rate structures:
 - Flat rate or fixed fee
 - Uniform rate
 - Decreasing block rate
 - Increasing block rate
 - Seasonal rate
 - Single tariff rate
- Fixed and variable rates



Estimating Water Usage worksheet

Date worksheet Completed/Updated: _____

Customer Class: _____

Unit of measure of monthly usage: _____

Water Usage per Month per Customer	Number of Service Connections	Subtotal Usage per Month
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Example Estimating Water Usage worksheet

Date worksheet Completed/Updated: <u>6/17/05</u>		
Customer Class: <u>Single Family Residential</u>		
Unit of measure of monthly usage: <u>Gallons</u>		
Water Usage per Month per Customer	Number of Service Connections	Subtotal Usage per Month
<u>0-7,000</u>	<u>520</u>	<u>2,790,000</u>
<u>>7,000</u>	<u>610</u>	<u>4,902,000</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u>Total</u>	<u>1,130</u>	<u>7,692,000</u>

Step 6 – Implementing the Rate

- Public perception
- Regulatory requirements
- Public service agency requirements
- Administration
- Security planning

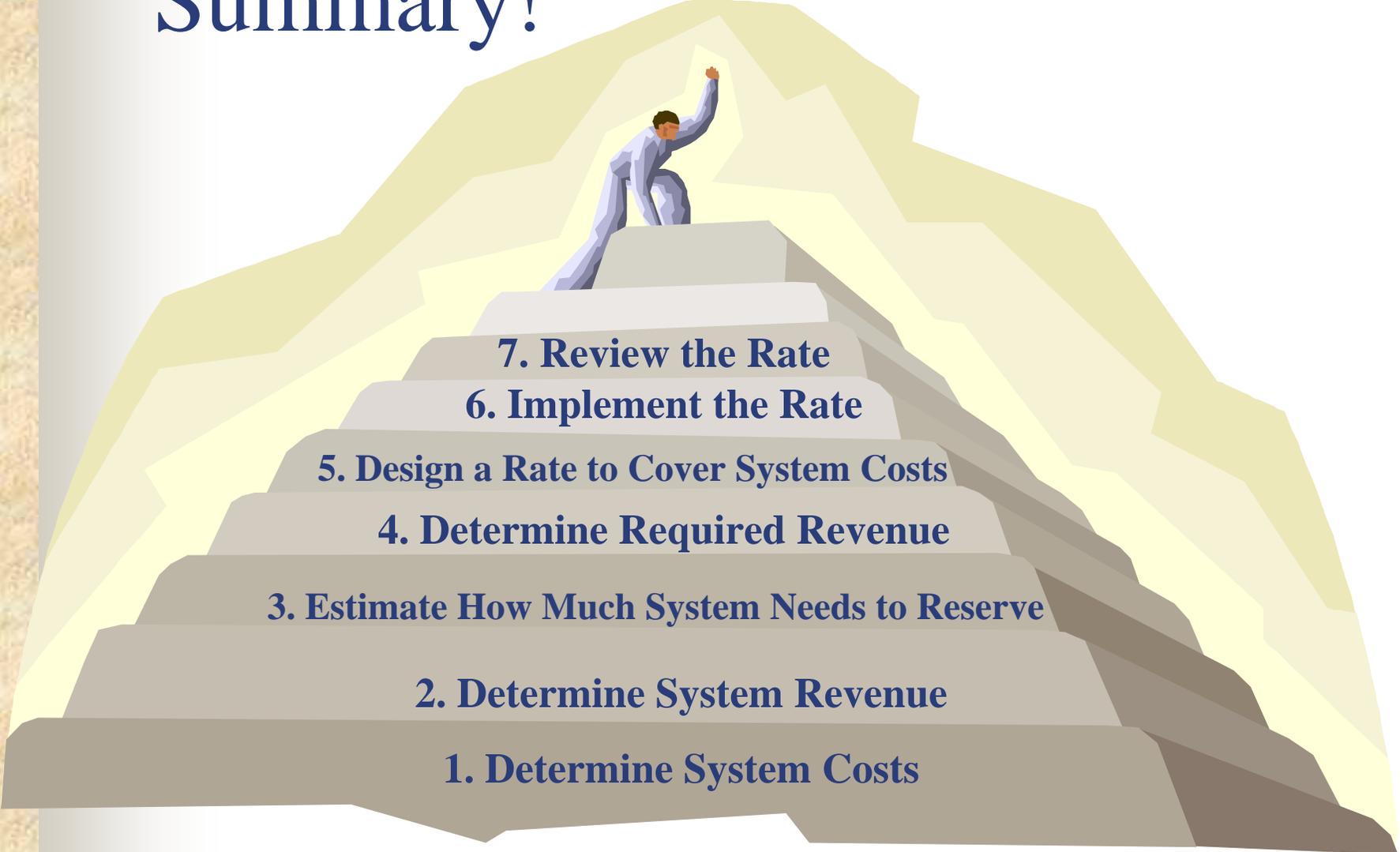




Step 7 – Reviewing the Rate

- Annual review
- Account for:
 - Regulatory changes
 - Increasing/decreasing customer base
 - Increasing costs
- Potential external review

Summary!



7. Review the Rate

6. Implement the Rate

5. Design a Rate to Cover System Costs

4. Determine Required Revenue

3. Estimate How Much System Needs to Reserve

2. Determine System Revenue

1. Determine System Costs



Additional Information

- Sources for More Information on Rate Setting
 - Electronic programs
- Other documents
- Organizations

For More Information!

Jenny Bielanski
bielanski.jenny@epa.gov

202-564-3836



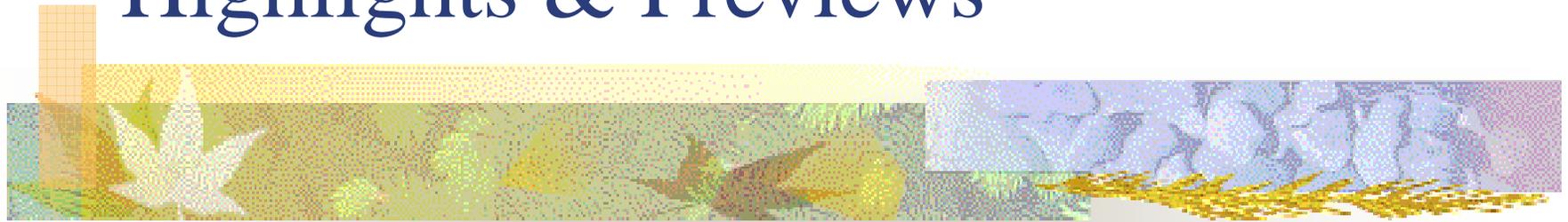


Questions?



Press *8 to ask a question or make a comment over the phone or you may ask a question via the web console

Highlights & Previews



More Capacity Building Tools from
EPA and our partners!



Safe Drinking Water Tools CD

- Compendium of most relevant and useful EPA and non-EPA drinking water tools
- Includes more than 500 items, including fact sheets, presentations and more
- Full-text searches!
- <http://www.epa.gov/safewater/pws/tools/>
- EPA #816-C-05-003



Macromedia Flash Player 7

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Safe Drinking Water Tools

for public water systems



Safe Drinking Water Tools Online

Purpose of this CD

Search by Keyword

Browse by Category

Environmental Protection Agency
www.epa.gov (Text Version)

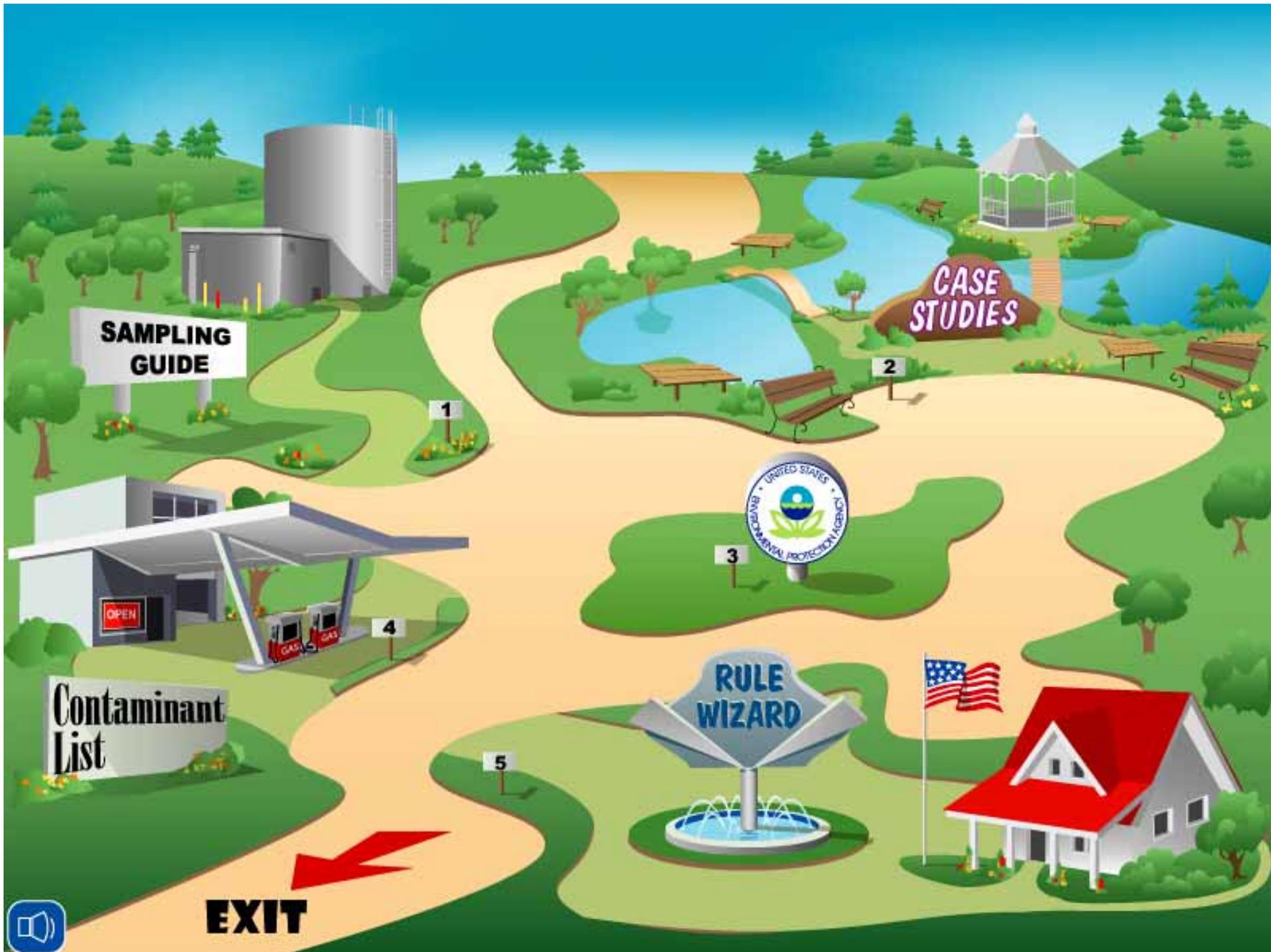
All information on this CD is current as of March 1, 2005.



Interactive Sampling CD

- Interactive CD-ROM tool with video instruction for sample collection, storage and shipment of various contaminants
- CD-ROM also includes:
 - Case Studies
 - Rule Wizard
 - Contaminant List
- Coming in March 2006







Financial Analysis Calculator for Exemptions

- For use by regulators in evaluating the financial capacity of water systems that apply for an exemption from compliance with a drinking water regulation
- Developed by the Environmental Finance Center at Boise State University
- The tool and user manual can be downloaded from <http://sspa.boisestate.edu/efc/services.htm>



Screenshot of the exemptions tool developed by the Environmental Finance Center

Microsoft Excel - Financial Analysis Calculator for Exemptions_ver1.0

Type a question for help

File Edit View Insert Format Tools Data Window Help Adobe PDF

Reply with Changes... End Review...

D43

Financial Analysis Calculator for Exemptions

Enter System Name

Enter Type of Utility Fund

<input type="button" value="Checklist"/>	Provides a checklist of the data needed to complete the financial analysis calculator.
<input type="button" value="Financial Data"/>	Collects key financial information used for ratio analysis and to determine financial viability.
<input type="button" value="Economic Data"/>	Collects economic data that provides information about the community's relative economic status. These economic factors are related to affordability.
<input type="button" value="Customer Data"/>	Collects customer billing and rate information to determine the ability of the customer to pay for water service.
<input type="button" value="Project Data"/>	Collects project cost information.
<input type="button" value="Reports"/>	Click here to select and view reports.

This tool is used to analyze the financial condition of a Public Water System with regard to affordability for exemption

Ready NUM

What new products would you like to see? What are your needs? What topics should new tools cover? What format should we use?

Press *8 to ask a question or make a comment over the phone or you may contact us via the web console in the bottom right



What do you think of the web cast format in general? What can we do to improve?

Press *8 to ask a question or make a comment over the phone or you may contact us via the web console in the bottom right



Did this training meeting you learning expectations?

- This web cast exceeded my expectations
- A majority of my expectations were met
- It only met some of my expectations
- None of my expectations were met





Webcast Materials

- Drinking Water Academy Website:
www.epa.gov/safewater/dwa.html
 - Webcast Presentation Slides
 - Written Q&A from Webcast
 - Will Be Emailed To All Registered Participants



Webcast Series

- See Handout DWA Calendar for Upcoming Webcast Trainings
 - <http://www.epa.gov/safewater/dwa/calendar.html>

For More Information!

Jenny Bielanski
bielanski.jenny@epa.gov
202-564-3836

Jennifer Moller
moller.jennifer@epa.gov
202-564-3891

